Sediment Risk Assessment
Lockheed Martin Middle River Complex
2323 Eastern Boulevard
Middle River, Maryland

Prepared for:

Lockheed Martin Corporation

Prepared by:

Tetra Tech, Inc.

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Michael Martin, P.G.
Regional Manager

Mike Whitten for Aaron Bernhardt

Aaron Bernhardt
Ecological Risk Specialist

Lee Ann Sinagoga
Human Health Risk Specialist

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ACRONYMS

ADAF	age dependent adjustment factors
ATSDR	Agency for Toxic Substances and Disease Registry
AUF	area use factor
AVS/SEM	acid volatile sulfides/simultaneously extracted metals
BaP	benzo(a)pyrene
BaPEq	benzo(a)pyrene equivalents
BEHP	bis(2-ethylhexyl)phthalate
BSAF	biota sediment-bioaccumulation factor
BTAG	Biological Technical Assistance Group
BW	body weight
CB-B-IBI	*Chesapeake Bay Benthic Index of Biotic Integrity*
CDI	chronic daily intake
CLT	critical tissue level
COPC	chemicals of potential concern
CSF	cancer slope factor
CSM	conceptual site model
CTL	critical-tissue level
DNA	deoxyribonucleic acid
DNR	Department of Natural Resources
Eco-SSL	ecological soil screening level
EEQ	ecological effects quotient
ED	exposure duration
EEQ	ecological-effects quotient
EF	exposure frequency
EPC	exposure point concentration
ERA	ecological risk assessment
ESA	environmental site assessment
EU	exposure unit
FI	fraction ingested from contaminated source
HHRA	human health risk assessment
HI	hazard index

HQ	hazard quotient
ILCR	incremental lifetime cancer risk
IRIS	Integrated Risk Information System
LOAELs	lowest observed adverse effect levels
MCL	maximum contaminant level
MDE	Maryland Department of the Environment
µg/dL	microgram(s) per deciliter
µg/kg	microgram(s) per kilogram
µmol/g	micromoles(s) per gram
MRAS	Middle River Aircraft Systems
MRC	Middle River Complex
MS2	Maritime Systems & Sensors
MTBE	methyl tert-butyl ether
NCEA	National Center for Environmental Assessment
NOAELs	no observed adverse effect levels
NPDES	National Pollutant Discharge Elimination System Permit"
ORNL	Oak Ridge (Tenn.) National Laboratory
OSWER	Office of Solid Waste and Emergency Response
PAHs	polycyclic aromatic-hydrocarbons
PCBs	polychlorinated biphenyls
PEC	probable effects concentration
PEL	probable effects level
PPRTV	provisional peer reviewed toxicity value
ppt	parts per trillion
PRG	preliminary remediation goal
RBC	risk based concentration(s)
REC	Recognized Environmental Condition
RfD	reference dose
RME	reasonable maximum exposure
RSL	regional screening level
SDWA	Safe Drinking Water Act
SMDP	scientific management decision points
SVOCs	semi-volatile organic compounds
TAL	target analyte list
TCEQ	Texas Council on Environmental Quality
TCL	target compound list
TEC	threshold effects concentration

TEF	toxicity equivalence factor
TEL	threshold-effects level
TOC	total organic carbon
TRV	toxicity reference value
UCL	upper confidence limit
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
VOCs	volatile organic compounds
VPC	Voluntary Cleanup Program

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Executive Summary

On behalf of Lockheed Martin Corporation, Tetra Tech, Inc. has prepared this risk assessment for sediment adjacent to the Lockheed Martin Middle River Complex, 2323 Eastern Boulevard in Middle River, Maryland. To evaluate the environmental condition of the surface water and sediment of waterways adjacent to the Middle River Complex, Lockheed Martin initiated a baseline characterization in 2005. With respect to surface water and sediment studies, on March 17–18, 2005, surface water and sediment were sampled in these surface water bodies (i.e., Cow Pen Creek, Dark Head Cove, and Dark Head Creek) adjacent to the facility's southern and western property boundaries. Additional sediment samples were collected in October 2005 to further characterize and delineate chemicals identified during the March sampling event. The latter event included much more extensive investigation of Dark Head Cove, as well as vertical profiling of chemical concentrations in sediments.

Further sediment sampling in November 2008 sought to better define the distribution of polychlorinated biphenyls, polycyclic aromatic hydrocarbons, and metals that had been identified during the March and October 2005 sampling events. The objective of the most recent sediment sampling (in 2010) was to obtain analytical data to better define the distribution of polychlorinated biphenyls, polycyclic aromatic hydrocarbons, and metals, and to collect other physical and chemical data to help understand the hydraulic and geochemical parameters of these surface water bodies. Data generated during the 2005, 2008, and 2010 investigations were used as input for human health and ecological risk assessments to evaluate the potential for adverse health effects that might be experienced by individuals or ecological receptors potentially exposed to the concentrations of chemicals found in sediments adjacent to the Middle River Complex.

The data set representing background reference conditions in this report consists of sediment samples from four locations: Marshy Point, Bowleys Quarters, and two sampling locations in upper Cow Pen Creek. The two background locations in Cow Pen Creek (SD-1 and SD-78) are

upgradient of the MRC facility's first outfall in the creek (slightly south of Eastern Boulevard), and are well upstream of the tidally influenced portion of the creek. Marshy Point is northeast of the subject site in an area with little shoreline development. Bowleys Quarters is east of the subject site in an area with waterfront development typical of the region (i.e., residential and light industrial marine-oriented facilities). None of the four background locations are near any known industrial point sources of contamination, and all have substrates similar to the sampling locations near the subject site.

Four background data-sets were created: one for surface sediment and one for each of three subsurface sediment depths evaluated in this report. The objective of the risk assessments is to evaluate the potential that regulatorily unacceptable risks could be posed to potentially exposed receptors in Cow Pen Creek and Dark Head Cove. The results of the risk assessment can then be used as a tool to support future actions and risk management decisions.

In general, the available datasets were adequate for the development of the human health and ecological risk assessments, and will be for risk management decision-making. Two exceptions are the potential metals "hot spot" at location SD-84, which should be resolved, and sediment toxicity tests that should be conducted in support of the development of remedial goals for ecological receptors.

Nature and extent of contamination—Volatile organic compounds were generally detected infrequently in sediment, and most detections are less than screening benchmarks. No volatile organic compounds are considered significant chemicals of concern requiring further evaluation, so the sediment samples collected in the more recent sampling events (2008 and 2010) were not analyzed for volatile organic compounds. Sediment samples collected in the 2005 sampling event were analyzed for Target-Compound-List semivolatile organic compounds. Polycyclic aromatic hydrocarbons were the primary semivolatile organic compounds detected in sediments in 2005, so they were the only semivolatile organic compounds analyzed for in the sediment samples collected in 2008 and 2010.

The highest concentrations of polycyclic aromatic hydrocarbons were found in sampling locations along the northern shoreline of Dark Head Cove. In surface sediment, the highest polycyclic aromatic hydrocarbon concentrations were in samples collected from the eastern

portion of Dark Head Cove (near Martin State Airport) and adjacent to the Middle River Complex property (near Outfall 05). Polycyclic aromatic hydrocarbon concentrations tended to be greater in the middle two depth intervals (>6–18 inches and >18–30 inches) than in surface sediment. Polycyclic aromatic hydrocarbon concentrations in most samples from the top two intervals were less than maximum background concentrations.

Sediment samples were analyzed for individual polychlorinated biphenyl Aroclors. Three Aroclors (Aroclor-1248, -1254, and -1260) were detected in sediment. Aroclor-1254 was detected in only one of 101 surface sediment samples and was not detected at other sediment depths. Aroclor-1248 was not detected in surface sediment nor in the >30–52 inch interval, but was detected in two of 71 samples at >6–18 inches and in one of 68 samples at >18–30 inches. Therefore, although positive detections of all Aroclors were summed to derive concentrations of total Aroclors, the total Aroclor concentrations predominantly represent concentrations of Aroclor-1260. Total Aroclor concentrations were highest in surface sediments, and decreased with increasing depth. Surface sediment concentrations were highest in the middle of Dark Head Cove and adjacent to the shoreline of the Middle River Complex (i.e., near Outfall 05).

The highest concentrations of metals were generally found in samples collected from the >6-18 inch and >18–30 inch depth intervals, indicating that sediment with higher concentrations has been buried under cleaner sediments and the higher concentrations are probably due to historical releases. Some exceptions were observed in Cow Pen Creek, which would be expected because the deposition rate is lower in the creek and the rate of scour is higher than in the cove, a conclusion supported by the age-dating analysis and hydraulic analysis discussed in the *Additional Characterization and Sediment Sampling Report* (Tetra Tech, 2011). Among metals detected in sediment, cadmium concentrations tended to be the most elevated relative to sediment guidelines.

Human health risk assessment—The human health risk assessment for the Middle River Complex characterizes potential risks to humans who come into contact with sediments in the study area, and who are called “receptors” under current and potential future land uses. The potential receptors evaluated include current/future adult, adolescent, child, and lifelong recreational users. Risks were evaluated for potential receptor exposure to sediments in Cow Pen Creek and Dark Head Cove through direct contact with sediments (i.e., incidental ingestion and

dermal contact) and indirectly through fish ingestion. Risks to recreational users ingesting fish were estimated based on chemical concentrations detected in tissue samples from fish collected in the immediate Cow Pen Creek/Dark Head Cove area.

The following chemicals of potential concern were selected for human health risk assessment based on a comparison of maximum chemical concentrations found in sediments and fish tissue samples to human health screening levels for sediments (considering both direct contact and consumption of fish exposure pathways) and to U.S. Environmental Protection Agency human health screening levels for the fish tissue, respectively:

Table ES-1
Summary of Human Health Chemicals of Potential Concern

Parameter	Sediment	Fish tissue
	Direct contact (ingestion, dermal contact)	Ingestion (recreational fisher)
Semivolatile organic compounds		
Benzo(a)pyrene equivalents (BaPEq)	X	
Polychlorinated biphenyls (PCBs)		
PCBs	X	X
Inorganics		
Antimony	X	X
Arsenic	X	
Cadmium	X	
Cobalt	X	
Hexavalent chromium	X	
Lead	X	
Mercury		X

Notes:

X—chemical retained as a chemical of potential concern (COPC)

The human health risk assessment evaluated concentrations of chemicals of potential concern in sediments at four different sediment depth intervals: 0–6 inches, >6–18 inches, >18–30 inches, and >30 inches below the surface water/sediment interface. Cancer and non-cancer risk estimates

were developed based on the conservative 95% upper confidence-limit on the arithmetic mean, as well as on area-weighted average concentrations of chemicals of potential concern. Risk estimates are summarized in Table ES-2.

Table ES-2
Risk Summary for Direct Contact Exposure Pathways

	Cancer risk estimates [1],[2] 95% UCL/area weighted[3]	Non-cancer risk estimates[2] (hazard index) 95% UCL/area weighted [3]
Sediment depth interval		
0–6"	4E-05 (BaPEq, PCBs, As) / 2E-05 (BaPEq, As)	0.8 / 0.07
6 –18"	3E-05 (BaPEq, PCBs, As) / 2E-05 (BaPEq, As)	0.4 / 0.06
18–30"	5E-05 (BaPEq, As) / 2E-05 (BaPEq, As)	0.4 / 0.06
>30"	6E-06 / 5E-06	0.2 / 0.05

[1] The U.S. Environmental Protection Agency target cancer risk range is 1E-04 to 1E-06 (or a one in 10,000 to one-in-one-million probability of developing cancer). The Maryland cancer risk benchmark is 1E-05 (or a one in one hundred thousand probability of developing cancer).

[2] Primary chemicals of potential concern for cancer risks are listed where applicable. Primary chemicals of potential concern for non-cancer effects are not listed because no hazard indices exceed 1. Hazard indices exceeding 1 are an indicator of the potential for adverse non-carcinogenic health effects.

[3] Risk estimates based on area-weighted average-concentrations were calculated for primary risk drivers only (i.e., benzo(a)pyrene equivalents [BaPEq], arsenic [As], and polychlorinated biphenyls [PCBs]).

Cancer risk estimates developed for the direct contact exposure pathways (i.e., incidental ingestion, dermal contact) are within U.S. Environmental Protection Agency's target risk range (1E-04 to 1E-06, or a one-in-10,000 to one-in-one-million probability of developing cancer). However, risk estimates (ranging from 3E-05 to 5E-05) do exceed the Maryland risk-benchmark of 1E-05 (i.e., a one-in-100,000 probability of developing cancer) for the 0–6 inch, 6–18 inch, and 18–30 inch sediment intervals based on the conservative 95% upper confidence-limit on the arithmetic mean. In contrast, the cancer risk estimates do not exceed 2E-05 for these depth intervals when the area weighted average concentration is used as the exposure-point concentration (the cancer risk estimate is 2E-05 for each of these depth intervals). Area weighted average concentrations take into account the spatial distribution of the data and, thus, may more accurately represent the concentration to which a receptor is potentially exposed.

Benzo(a)pyrene and related polycyclic aromatic hydrocarbons (represented as the benzo(a)pyrene equivalents) and polychlorinated biphenyls are the primary risk drivers for the cancer risk estimates. It should be noted that most of the study area sediments are continuously submerged. Thus, the potential for actual direct-contact exposure is limited and the cancer risk estimates presented above are very conservative. Hazard indices for the direct contact exposure pathways do not exceed 1, indicating that adverse non-carcinogenic health effects are not anticipated for these particular exposure pathways.

Cancer and non-cancer risk estimates developed based on actual fish tissue samples (primarily Channel Catfish) from Cow Pen Creek and Dark Head Cove and from reference areas selected for the project are summarized in Table ES-3. Table ES-3 also presents a risk evaluation of polychlorinated biphenyls detected in fish tissue samples collected in the general Chesapeake Bay area by the State of Maryland. The State has issued fish consumption advisories for several State of Maryland waterways in the Chesapeake Bay area including the Middle River. These advisories provide "Recommended Maximum Meals Each Year for Maryland Waters" for several species of fish and crabs. A table summarizing the State's fish advisories is included in Appendix A of this report. The advisory table specifically recommends that consumers avoid eating Channel Catfish (and a few other species) taken from several of the State of Maryland waterways including the Middle River because of the area-wide presence of polychlorinated biphenyls and/or other contaminants. The State has also issued "Recommended Meals/Year" advisories for consumption of Blue Crabs in the Patapsco River/Baltimore Harbor (e.g., it is recommended that the general population consume no more than 96 meals per year of Blue Crab). In contrast, the State advisory recommends that the "mustard" portion of the Blue Crab not be consumed. These advisories reflect the polychlorinated biphenyls detected in the various species of fish and shellfish tested by the State. Additional detailed PCB information from the State is presented in Appendix A and Table 4-29 of this report. As summarized in Appendix A, polychlorinated biphenyl concentrations in the State's Blue Crab samples are often an order of magnitude less than those reported in the "mustard" portion of the Blue Crab or in Channel Catfish fish tissue samples.

This chart offers a comparison of Middle River Complex data with other regional data sources:

Table ES-3

Summary of Data and Risk Estimates Assuming 1 Meal Consumed Per Week (Reasonable Maximum Exposure, RME)

Data Grouping (Polychlorinated biphenyl data)	Exposure Point Concentration (ug/kg wet weight)	Cancer Risk Estimate[2]	Hazard Index[2]
Regional Data[1]:			
All Channel Catfish (UCL)[1]	847	2E-04	11
Patapsco River Channel Catfish (Max)[1]	1770	4E-04	23
Patapsco River Channel Catfish (Mean)[1]	1028	2E-04	14
Back River Channel Catfish (UCL)[1]	785	2E-04	10
Middle River Channel Catfish (Max)[1]	1005	2E-04	13
Middle River Channel Catfish (Mean)[1]	785	2E-04	10
Gunpowder River Channel Catfish (Max)[1]	276	6E-05	4
Gunpowder River Channel Catfish (Mean)[1]	265	6E-05	3
All fish tissue data presented in Table 4-29 (UCL)[1]	579	1E-04	8
Middle River Complex Data:			
MRC Site Data (Table 5-13) (UCL)[3]	980	2E-04	13
MRC Site Data (excluding Max)[3] (UCL)	321	7E-05	4
Reference fish tissue data (Table 5-29) (UCL)	150	3E-05	2

MRC – Middle River Complex
Max – Maximum detected concentration
Mean – Arithmetic mean concentration
UCL – 95 percent upper confidence limit on the arithmetic mean
EPC – Exposure point concentration

1) Regional fish tissue data received courtesy of the State of Maryland, Science Services Administration. Fish tissue samples are routinely collected at locations throughout the Chesapeake Bay area and analyzed by the State of Maryland. The regional fish tissue concentrations detected are comparable to those detected in fish tissue samples collected at the Middle River Complex.
2) The US. Environmental Protection Agency target cancer risk range is 1E-04 to 1E-06 (or a one in 10,000 to one-in-one-million probability of developing cancer). The Maryland cancer risk benchmark is 1E-05 (or a one-in-100,000 probability of developing cancer over a lifetime of exposure). The target hazard index for both Agencies is 1.
3) The maximum concentration in site fish tissue data collected at the Middle River Complex was 1630 ug/kg, considerably greater than the second-greatest concentration of 478 ug/kg. The 95% UCL including and excluding the maximum concentration is presented for informational purposes.

As detailed in Table ES-3, cancer and non-cancer risk estimates for fish tissue data for samples (primarily Channel Catfish) collected in the vicinity of the Middle River Complex site exceed both U.S. Environmental Protection Agency and Maryland risk benchmarks. However, the risk estimates for site samples are strongly influenced by the PCB concentrations detected in one site

fish tissue sample (a Channel Catfish). The upper 95% confidence level on the mean, identified as the exposure point concentration for risk calculations, is 980 µg/kg with and 321 µg/kg without the one most elevated fish sample. Cancer risk estimates for reference area (non-MRC-site) fish-tissue data exceed the Maryland cancer risk benchmark but not the U.S. Environmental Protection Agency cancer risk benchmark. The primary risk drivers for the site and reference area fish tissue samples are PCBs; risk estimates developed from the actual fish tissue data are similar to those developed using area weighted average polychlorinated biphenyl concentrations in sediments (detailed in the following paragraphs).

The PCB concentrations (and, thus, the associated risks) reported for fish tissue samples collected in Cow Pen Creek and Dark Head Cove fall within the range of PCB concentrations reported for the general Chesapeake Bay area as part of the Maryland's ongoing monitoring program. As detailed in Table ES-3, the cancer and non-cancer risk estimates for the site fish tissue data are similar to those reported for the general Chesapeake Bay area. For example, the cancer risk estimates determined for maximum and arithmetic mean polychlorinated biphenyl concentrations in Channel Catfish samples collected from the Patapsco River are 4E-04 and 2E-04, respectively. The cancer risk estimate for the site fish tissue data was 2E-04.

Uncertainty is associated with the exposures to site chemicals that are assumed in the human health risk assessment. For example, as noted above, sediments in the study area are, for the most part, underwater. In many cases, the water is eight feet or more deep; this will significantly reduce or even eliminate the levels of exposure posed to a recreational receptor via dermal contact and incidental ingestion. The direct-contact risk estimates are conservative in that they tend to overestimate any actual risks, in this particular case perhaps by a large margin. Given the current State fish-consumption advisories previously discussed, the risk estimates presented above for the fish-ingestion scenario are also likely to be over estimated.

Although a significant level of uncertainty is associated with it, this human health risk assessment includes a risk evaluation of predicted fish tissue concentrations estimated based on chemical concentrations detected in sediments (i.e., bioaccumulation from sediment to fish was assumed). This analysis is included because some chemicals (i.e., mainly chemicals not expected to be primary risk contributors based on past investigations) that were target analytes for the sediment sampling program(s) were not target analytes for fish tissue samples because either the

chemicals were not significant site-wide contaminants or the chemicals were not expected to bioaccumulate in fish tissue. The following chemicals exceeded calculated risk based screening levels in sediment and were selected as chemicals of potential concern for the analysis:

- ***Semivolatile organic compounds—***(1-methylnaphthalene, benzo(a)pyrene equivalents, bis(2-ethylhexyl)phthalate, fluoranthene, phenanthrene, pyrene)
- ***Polychlorinated biphenyls—***(Aroclor-1248, Aroclor-1254, Aroclor-1260)
- ***Metals—***(antimony, arsenic, beryllium, cadmium, cobalt, hexavalent chromium, copper, mercury, nickel, silver, vanadium, zinc).

The results of this analysis are presented below.

Table ES-4
Risk Summary for Consumption of Fish Based on Sediment Data

	Cancer risk estimates [(1)] 95% UCL/area weighted[(3)]	Non-cancer risk estimates[(2)] (hazard index) 95% UCL/area weighted[3]
Sediment depth interval		
0–6"	1E-03 (BaPEq, PCBs) / 3E-04 (BaPEq, PCBs)	15 (Aroclor-1254/antimony/cobalt)/ 4 (antimony/cobalt)
6–18"	9E-04 (BaPEq, PCBs) / 2E-04 (BaPEq, PCBs)	6 (cobalt)/ 2(cobalt)
18–30"	5E-04 (BaPEq, PCBs) / 2E-04 (BaPEq, PCBs)	6 (antimony/cobalt)/ 2 (cobalt)
>30"	5E-05 (BaPEq, PCBs) / 5E-05 (BaPEq, PCBs)	3 (cobalt)/ 2 (cobalt)

[(1)] The U.S. Environmental Protection Agency target cancer risk range is 1E-04 to 1E-06 (or a one-in-10,000 to one-in-one-million probability of developing cancer). The Maryland cancer risk benchmark is 1E-05 (or a one–in-100,000 probability of developing cancer).

[(2)] Primary chemicals of potential concern for non-cancer effects are listed.

[(3)] Risk estimates based on area weighted average concentrations were calculated for primary risk drivers only (i.e., the benzo(a)pyrene equivalents (BaPEq)), the polychlorinated biphenyls (PCBs), antimony, and cobalt).

Benzo(a)pyrene and related polycyclic aromatic hydrocarbons (represented as the benzo(a)pyrene equivalents), polychlorinated biphenyls, and two metals (e.g., cobalt and antimony) are the primary risk drivers for the fish consumption exposure pathway based on sediment concentrations. However, as noted above, polychlorinated biphenyls are the only risk drivers identified when actual fish tissue samples collected from biota taken from Cow Pen Creek and Dark Head Cove are evaluated. (The actual fish tissue samples were analyzed for

polychlorinated biphenyls and Priority Pollutant metals only. Metals concentrations in actual fish tissue samples were not significant risk drivers.) Also, based on the nature and extent of metals contamination at the site sediments, neither antimony nor cobalt is identified as significant, site-wide metal of concern in the sediments. Antimony, a Priority Pollutant metal, was not selected as a chemical of concern when the actual site fish tissue samples were evaluated. Additionally, fish have the ability to metabolize polycyclic aromatic hydrocarbons and, therefore, these chemicals are often not detected or only detected at low concentrations in fish tissue samples (U.S.EPA, November 2000).

Several sources of uncertainty can influence risk estimates calculated using fish tissue concentrations calculated from sediment concentrations. Conservative assumptions made in developing fish consumption screening levels include the use of a biota sediment accumulation factor, the use of standard U.S. Environmental Protection Agency exposure assumptions for biota (finfish or crabs), and the inherent assumption that any fish caught in the Cow Pen Creek or Dark Head Cove have only been exposed to the sediments of the Cow Pen Creek or Dark Head Cove, as well as the assumption that people are consuming only fish from this area. Despite the uncertainties, as noted above, risk estimates for polychlorinated biphenyls in fish tissue estimated from sediment concentrations are not significantly different from risk estimates based on actual fish tissue data when area weighted average polychlorinated biphenyl concentrations in the sediments are used as the exposure-point concentration.

The risk estimates above must also be interpreted bearing in mind that chemicals of potential concern concentrations detected at background sediment locations exceed the conservative screening levels used in this human health risk assessment. Risk estimates for maximum background concentrations also exceed both State of Maryland and U.S. Environmental Protection Agency cancer risk benchmarks. Additionally, a review of both study area data and data reported in the open scientific literature indicate that the chemicals of potential concern concentrations detected in the Middle River Complex study area are a function of both study area specific and regional sources of contamination, as well as naturally occurring conditions.

Table ES-5 summarizes whether risks do or do not exceed benchmarks for each data set/environmental medium evaluated, the associated chemicals of concern if applicable, and any additional comments or risk management considerations.

Table ES-5
Human Health Risk Assessment Summary

Environmental Medium/Data Evaluated	Do Risk Estimates for Recreational User Direct Contact With Sediments Exceed Risk Benchmarks: 1E-05 CRL or HI of 1? (Chemicals of Concern)	Do Risk Estimates for Recreational Fisher Exceed Risk Benchmarks: 1E-05 CRL or HI of 1? (Chemicals of Concern)	Comments/Risk Management Considerations
Sediments : 0-6" - 95%UCL 0-6" - Wt. Avg.	Yes (CRL = 4E-05)/ Yes (CRL = 2E-05) [***BaPEq/PCBs(95%UCL only)***/As]	*Yes (CRL = 1E-03; HI >1)* *Yes (CRL =3E-04; HI >1)* *[BaPEq/PCBs/Sb/Co]*	Direct contact risks do not exceed USEPA target cancer risk range (1E-06 to 1E-04). Most of the study area sediments are continuously submerged therefore frequency of direct contact exposure is likely to be very limited. Arsenic concentrations likely reflect background conditions. *Risk estimates presented in italics* are based on the modeled transfer of chemicals from sediments to fish and are presented for informational purposes only because actual fish tissue data (see below) were evaluated in the human health risk assessment. ***Chemicals of concern recommended for further evaluation in the Feasibility Study are presented in bold italics.***
Sediments : 6-18" - 95%UCL/ 6-18" - Wt. Avg.	Yes (CRL = 3E-05)/ Yes (CRL = 2E-05) [***BaPEq /PCBs(95%UCL only)***/As]	*Yes (CRL =9E-04; HI >1)* *Yes (CRL =2E-04; HI >1)* *[BaPEq/Sb/PCBs/Co]*	Direct contact risks do not exceed USEPA target cancer risk range. Direct contact with deeper, subsurface sediments is very unlikely unless sediments are disturbed. Arsenic concentrations likely reflect background conditions. *Risk estimates presented in italics* are based on the modeled transfer of chemicals from sediments to fish and are presented for informational purposes only because actual fish tissue data (see below) were evaluated in the human health risk assessment. ***Chemicals of concern recommended for further evaluation in the Feasibility Study are presented in bold italics.***
Sediments : 18-30" - 95%UCL/ 18-30" - Wt. Avg.	Yes (CRL = 5E-05)/ Yes (CRL = 2E-05) [***BaPEq*** /As]	*Yes (CRL =5E-04; HI >1)* *Yes (CRL =2E-04; HI >1)* *[BaPEq/PCBs/Sb(minor contributor-wt avg scenario)/Co]*	Direct contact risks do not exceed USEPA target cancer risk range. Direct contact with deeper, subsurface sediments is very unlikely unless sediments are disturbed. Arsenic concentrations likely reflect background conditions. *Risk estimates presented in italics* are based on the modeled transfer of chemicals from sediments to fish and are presented for informational purposes only because actual fish tissue data (see below) were evaluated in the human health risk assessment. ***Chemicals of concern recommended for further evaluation in the Feasibility Study are presented in bold italics.***

Table ES-5
Human Health Risk Assessment Summary

Environmental Medium/Data Evaluated	Do Risk Estimates for Recreational User Direct Contact With Sediments Exceed Risk Benchmarks: 1E-05 CRL or HI of 1? (Chemicals of Concern)	Do Risk Estimates for Recreational Fisher Exceed Risk Benchmarks: 1E-05 Cancer Risk Level CRL or HI of 1? (Chemicals of Concern)	Comments/Risk Management Considerations
Sediments : >30" - 95%UCL/ >30" - Wt. Avg.	No/ No	*Yes (CRL =5E-05; HI >1)* *Yes (CRL =5E-05; HI >1)* *[BaPEq/PCBs/Sb(minor contributor-95%UCL scenario)/Co]*	Direct contact risks do not exceed USEPA target cancer risk range or State of Maryland Department of the Environment cancer risk benchmark (1E-05). Direct contact with deeper, subsurface sediments is very unlikely unless sediments are disturbed. Arsenic concentrations likely reflect background conditions. *Risk estimates presented in italics* are based on the modeled transfer of chemicals from sediments to fish and are presented for informational purposes only because actual fish tissue data (see below) were evaluated in the human health risk assessment. ***No chemicals of concern are recommended for further evaluation in the Feasibility Study, so none are presented in bold italics.***
Fish Tissue Data from MRC Study Area	NA	Yes (CRL = 2E-04; HI>1) [***PCBs***]	Cancer risk estimates for study area fish tissue samples exceed USEPA target cancer risk range and are twice those calculated for the reference area fish tissue samples. Cancer risk estimates for PCBs approximately equal to 2E-04. ***Chemicals of concern recommended for further evaluation in the Feasibility Study are presented in bold italics.***
Fish Tissue Data from Reference Area	NA	Yes (CRL = 3E-05; HI>1) [PCBs]	Cancer risk estimates do not exceed USEPA target cancer risk range. Cancer risk estimates for PCBs equal to approximately 3E-05.

Sb –Antimony
As – Arsenic
BaPEq-Benzo(a)pyrene equivalents
Co – Cobalt
PCBs – Polychlorinated biphenyls
CRL – Cancer risk level
HI – Hazard index
Wt Avg –Weighted average concentration scenario
95%UCL – 95% upper confidence limit scenario

Ecological risk assessment—The ecological risk assessment assumes that receptors could be exposed to surface and subsurface sediment in the study area, which includes Cow Pen Creek, Dark Head Cove, and Dark Head Creek. However, under current conditions, ecological receptors would be exposed only to the surface sediment (0–6 inch interval), which is considered the biologically active zone. The primary receptors evaluated in this ecological risk assessment are benthic invertebrates, fish, piscivorous birds, and piscivorous mammals. The results of the ecological risk assessment are presented below.

Multiple lines of evidence were used to evaluate potential risks to benthic invertebrates. Sediment chemistry was the primary measure for evaluating potential risks, but acid volatile sulfides/simultaneously extracted metals data, pore water data, and benthic macroinvertebrate-community data were also used in the evaluation. Several chemicals were initially selected as chemicals of potential concern for risks to benthic invertebrates because they were detected at concentrations that exceeded screening levels or did not have a screening level.

The above lines of evidence suggest that risks could be posed to benthic invertebrates from inorganics in sediment, with the greatest likelihood of those effects occurring in the areas where the chemical concentrations exceeded higher-effects sediment criteria. Although concentrations of metals at some of these locations are similar to background concentrations, concentrations at many locations, especially for cadmium, copper, lead, mercury, and zinc, are greater than background values. Generally, the highest concentrations of metals are in the >6–18 inch and >18–30 inch intervals, with much lower concentrations in the >30–52 inch interval.

Table ES-6
Ecological Risk Assessment Summary

Assessment Endpoint	Final Chemicals of Potential Concern
Protection of benthic invertebrates from adverse effects on their survival, reproduction, and growth	Total Aroclor Cadmium Copper Lead Mercury Zinc
Protection of fish from adverse effects on their survival, reproduction, and growth.	None (negligible ecological risk)
Protection of piscivorous birds from adverse effects on their survival, reproduction, and growth	None (negligible ecological risk)

Assessment Endpoint	Final Chemicals of Potential Concern
Protection of piscivorous mammals from adverse effects on their survival, reproduction, and growth	None (negligible ecological risk)

The sediment data indicate that polychlorinated biphenyls pose potential risks to benthic invertebrates, especially in Dark Head Cove, but the benthic data results do not conclusively indicate whether contaminants such as polychlorinated biphenyls in sediment near the Middle River Complex are adversely affecting sediment invertebrates. The sediment data indicate that polycyclic aromatic-hydrocarbons pose potential risks to benthic invertebrates but the background data indicate that potential risks in most samples near the Middle River Complex are similar to risks throughout the region. In addition, polycyclic aromatic-hydrocarbon forensic data in the *Additional Characterization and Sediment Sampling Data Summary Report* (Tetra Tech, 2011a) suggest that polycyclic aromatic-hydrocarbons in most Middle River Complex samples are probably due to typical urban runoff. The sediment data and pore water data indicate that volatile organic compounds pose negligible risks to benthic invertebrates in Cow Pen Creek, Dark Head Cove, and Dark Head Creek. In summary, although concentrations of some metals are more elevated in subsurface sediment, under current conditions (i.e., surface sediment), cadmium and total Aroclors pose the greatest potential risk to benthic receptors.

Based on tissue concentrations in fish collected from Cow Pen Creek and Dark Head Cove, fish do not appear to be at risk from sediment contamination and/or risks are similar to risks throughout the region.

The ecological risk assessment concludes that bioaccumulative chemicals in sediment in all four depth intervals pose negligible risks to upper-trophic-level receptors based on the results of food-chain modeling. The modeling addressed the transfer of contaminants from sediment to food sources that were consumed by piscivorous birds and mammals, including benthic organisms and fish. The results indicate that, under current conditions (where contamination in the upper six inches of sediment is available to receptors) and under possible future conditions (where deeper sediment may be exposed through dredging) potential risks to piscivorous receptors are negligible.

Section 1
Introduction

On behalf of Lockheed Martin Corporation, Tetra Tech, Inc. has prepared the following sediment risk assessment to assess the risk to human health and the environment in the waterways adjacent to the Lockheed Martin Middle River Complex (MRC), 2323 Eastern Boulevard in Middle River, Maryland (see Figure 1-1), particularly potential human health and ecological risk posed by contaminants that may have originated, historically, on the MRC. The risk assessment is based on characterization studies conducted in March and October 2005, November 2008, and August 2010. The objective of these risk assessments was to provide sufficient information to identify areas that may pose the potential for regulatorily unacceptable risks to potentially exposed receptors, and to provide a tool to support future action and risk management decisions.

This report is organized as follows:

Section 2—Site Background: Briefly describes site history, site conditions, and previous investigations.

Section 3—Previous Investigations: Summarizes the 2005, 2008, and 2010 sediment investigations.

Section 4—Nature and Extent: Evaluates the horizontal and vertical extent of the primary contaminants.

Section 5—Human health Risk: Evaluates the potential for adverse effects on human receptors.

Section 6—Ecological Risk: Evaluates the potential for adverse effects on ecological receptors.

Section 7—Overall Summary and Conclusions: Presents the summary and conclusions of the human health and ecological risk assessments.

Section 8—References: Cites references used to compile this report.

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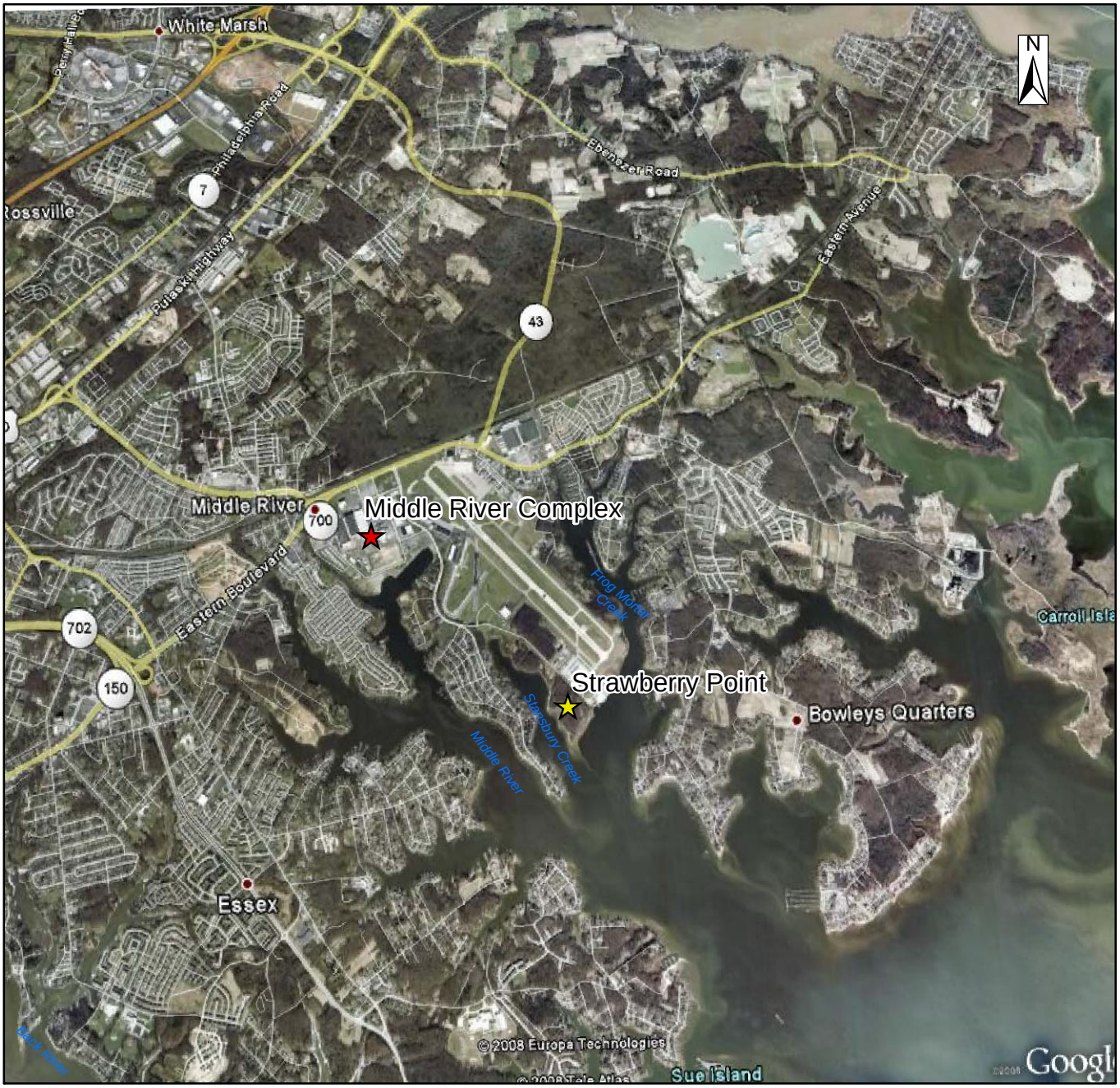

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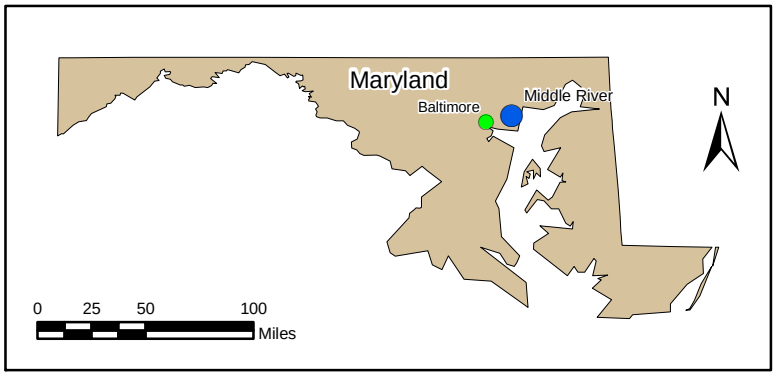

Figure 1-1

Middle River Complex
Site Location Map

Lockheed Martin Middle River Complex
Middle River, Maryland

DATE MODIFIED:	CREATED BY:
6/29/09	MP

Tetra Tech, Inc.

Section 2
Site Background and Description

The Middle River Complex (MRC), part of the Chesapeake Industrial Park, is at 2323 Eastern Boulevard in Middle River, Maryland, approximately 11.5 miles northeast of downtown Baltimore. A facility location map is provided as Figure 1-1. The site consists of approximately 180 acres of land and 12 main buildings. The property includes an active industrial area and yard, perimeter parking lots, an athletic field, a vacant concrete covered lot, a trailer and parts storage lot, and numerous grassy areas along the facility perimeter. Locked chain-link fences surround all exterior lots and the main industrial area. The site is bounded by Eastern Boulevard (Route 150) to the north, Dark Head Cove to the south, Cow Pen Creek to the west, and Martin State Airport (MSA) to the east. A facility layout map is provided as Figure 2-1.

Lockheed Martin Corporation (Lockheed Martin) activities at the site are primarily facility and building management and maintenance. Two main tenants occupy the site: Middle River Aircraft Systems (MRAS) and Mission Systems & Sensors (MS2). MRAS designs, manufactures, fabricates, tests, overhauls, repairs, and maintains aeronautical structures, parts, and components for military and commercial applications. MS2 fabricates, assembles, tests, and otherwise supports vertical launch systems. Historically, the property has been used for aircraft and missile launching systems design, development, and sales. The terrestrial environment at the MRC is stable, with paved or concrete surfaces being the predominant feature. Areas without pavement have well established grass cover, which is maintained by frequent mowing.

2.1 PHYSICAL SETTING

2.1.1 Land Use

The MRC is an industrial facility within the broader Chesapeake Industrial Park. The area surrounding the property primarily consists of commercial, industrial, and residential establishments. Six other facilities, comprising the remainder of the Chesapeake Industrial Park,

lie adjacent to the MRC. These include Tilley Chemical Company, Inc. (a distributor of food- and pharmaceutical chemicals for the personal care and other industries), North American Electric (an industrial and commercial electrical contractor), Johnson and Towers (a heavy-duty diesel equipment, truck, and boat repair and maintenance company), Poly-Seal Corp. (a producer of flexible packaging for various items), Exxon (a gasoline filling station and convenience store), and the Middle River Post Office. Residential developments lie on the opposite shores of Cow Pen Creek, Dark Head Cove, and Dark Head Creek (not shown in the figures but flowing from Dark Head Cove to Middle River, which is a tributary to Chesapeake Bay), as well as north of Eastern Boulevard (Route 150).

2.1.2 Physiography

The site lies in the Western Shore of the Coastal Plain Physiographic Province. The Coastal Plain topography is generally characterized by low relief. The topography of the MRC slopes gently, ranging from sea level to approximately 32-feet above mean sea level (Cassell, 1977). The topography slopes from Eastern Boulevard to the southwest and south, toward Cow Pen Creek and Dark Head Cove.

2.1.3 Hydrology

The MRC lies at the junction of Cow Pen Creek and Dark Head Cove. Both are tidal surface water bodies that feed into Dark Head Creek, a tributary to Middle River, which is a tributary to Chesapeake Bay. The facility lies approximately 3.2 miles upstream of Chesapeake Bay. No surface-water bodies lie within or cross the MRC.

Excluding areas immediately adjacent to Cow Pen Creek and Dark Head Creek, surface water runoff discharges from the facility via storm drains, soil infiltration, and evaporation. Nine current stormwater drain systems at the facility discharging to Cow Pen Creek and Dark Head Cove were mapped by TAI Consulting Engineers in 2001 (see Figure 2-1). Other outfalls may have been used historically but are no longer in service. Stormwater runoff from the Chesapeake Industrial Park and a portion of the MSA (across Wilson Point Road), as well as from some of the area along Eastern Boulevard, is collected through a stormwater-conveyance system and discharged to Cow Pen Creek and Dark Head Cove.

MRC maintains a Maryland National Pollutant Discharge Elimination System (NPDES) permit (State discharge permit No.: 00-DP-0298, NPDES permit No.: MD0002852) issued by the Maryland Department of the Environment (MDE) Industrial Discharge Permits Division, Water Management Administration (Earth Tech, 2003). MRAS generates sanitary and process wastewater and is categorized as an Industrial User. The facility pre-treats and discharges its wastewater under an Industrial User Discharge Permit (permit No.: WWDP#1390), issued to MRAS by the Baltimore County Department of Public Works, Bureau of Utilities (Earth Tech, 2003). The permit authorizes the facility to discharge its processed and sanitary wastewater from seven permitted discharge points (i.e., outfalls).

2.2 SUBSURFACE CONDITIONS

2.2.1 Soils

The United States Department of Agriculture (USDA) Soil Conservation Service has mapped soils underlying the MRC as Mattapex-Urban Land Complex and Sassafras-Urban Land Complex. Mattapex-Urban Land soils consist of deep, well-drained, silty soils, the original texture of which has been disturbed, graded over, or otherwise altered before construction. Sassafras-Urban Land soils consist of deep, well-drained, sandy soils, the original texture of which has been disturbed, graded over, or otherwise altered before construction (USDA, 1993). MRC site assessments indicate that a high percentage of these soils contain a very high clay and silt content, with poor surface drainage.

2.2.2 Geology

Geologic maps of Baltimore County show that the MRC is underlain by the Potomac Group, a Cretaceous-age interbedded gravel, sand, silt, and clay unit ranging in thickness from 0–800 feet. The Potomac Group is composed of three units: the Raritan and Patapsco Formations, the Arundel Clay, and the Patuxent Formation. The Raritan and Patapsco Formations range up to 400 feet thick and are composed of a gray, brown, and red variegated silt and clay unit with lenticular lenses of sand and few gravels. The Arundel Clay is composed of dark gray and maroon lignitic-clays ranging from 25–200 feet thick. The Patuxent Formation is described as a white or light gray to orange brown, moderately sorted sand unit with quartz gravels, silts, and clays ranging up to 250 feet thick (Reinhardt, 1977).

The geologic map of the Middle River Quadrangle (Reinhardt, 1977) maps the entire survey area as either the clay or the sand facies of the Patapsco Formation. The sands are more concentrated on the peninsulas east of MSA and in areas north of Eastern Boulevard, whereas all of the peninsulas (except for the Wilson Point Road area) west of the airport are mapped as belonging to the clay facies. The Arundel Clay is mapped as outcropping northwest of the MRC facility (Reinhardt, 1977).

Lithologic logging of soils beneath the MRC (conducted during extensive site characterization) has identified a very heterogeneous substrate. The underlying soils are composed primarily of silty sands, fine-grained to medium grained sands, silty clays, clayey silts, and plastic clay, with the primary lithology being clay to silty clay. Sand lenses were encountered but in general do not appear continuous beneath the facility. Shallow groundwater tends to flow in the more sandy lenses toward the surface water bodies, and the water table is generally a subdued representation of the surface topography.

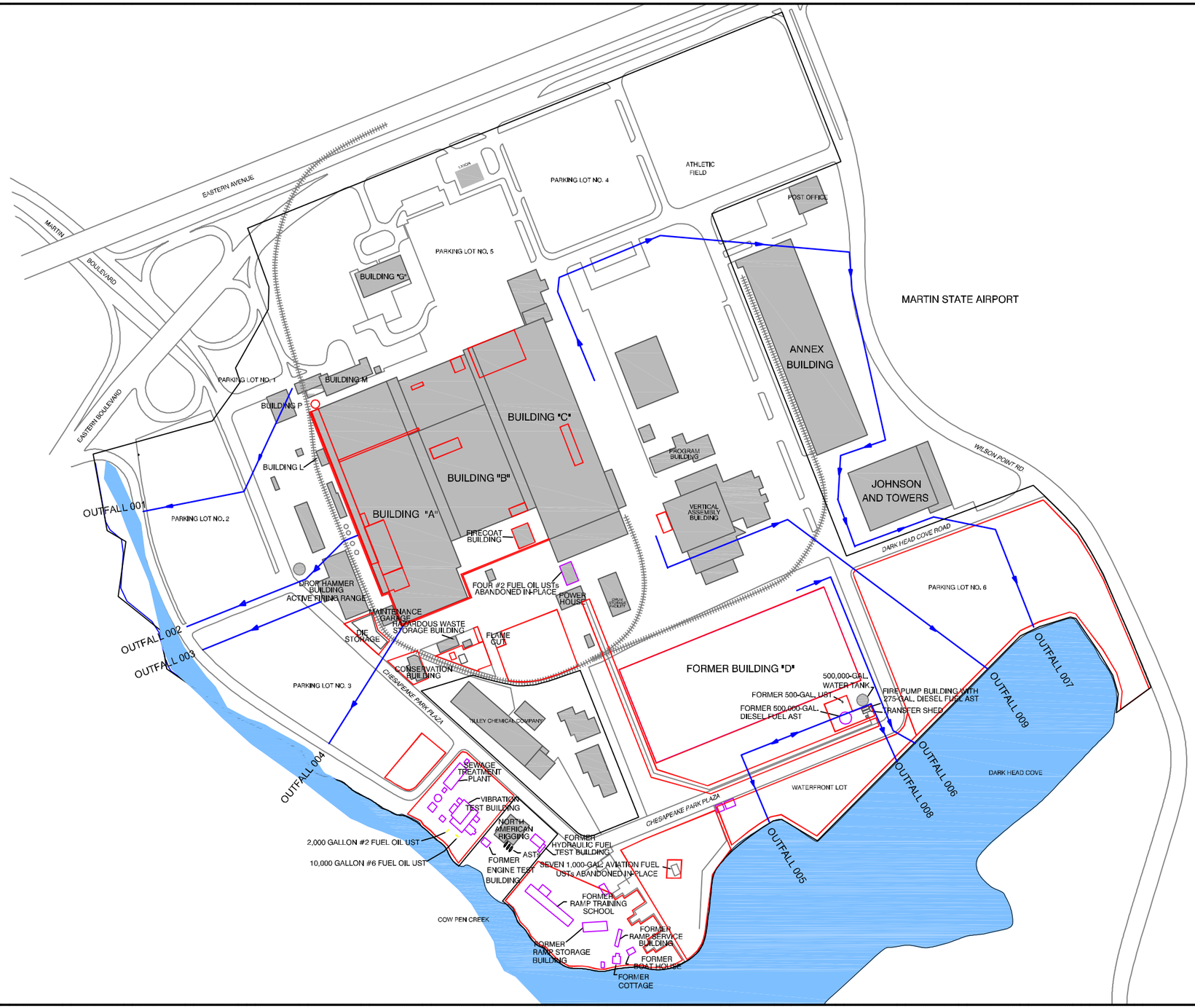

FIGURE 2-1

MIDDLE RIVER COMPLEX FACILITY MAP

LEGEND

OUTFALL 004 NPDES PERMITTED OUTFALL

STORMWATER AND FLOW DIRECTION

EXISTING STRUCTURE

FORMER STRUCTURE

Lockheed Martin Middle River Complex
Middle River, Maryland

0 200 400

N

DATE MODITFIED 7/20/10

CREATED BY MP

Tetra Tech Inc.

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Section 3
Previous Investigations

Numerous environmental investigations have been conducted at the Middle River Complex (MRC). These include underground storage tank closures and abandonments, soil excavations, Phase I environmental site assessments (ESAs), and extensive Phase II ESA characterization studies for soils and groundwater. A facility-wide Phase I ESA of the MRC was conducted in 2003. The Phase I ESA investigation identified 13 Recognized Environmental Conditions (RECs) at the facility associated primarily with current site conditions (Earth Tech, 2003). Subsequent review of historical site activities identified another 18 RECs at the facility (Tetra Tech, 2004).

Many of the RECs are in the southern portion of the facility along the waterfront. Soil and groundwater sampling at the RECs identified sporadic soil and groundwater impacts to environmental media underlying the facility. The MRC has entered into the Maryland Department of the Environment (MDE) Voluntary Cleanup Program (VCP) and studies of soil and groundwater at the MRC are ongoing. Sediment and surface water investigations of the adjacent water bodies were conducted between 2005 and 2010.

3.1 2005 SEDIMENT INVESTIGATION AND RISK ASSESSMENT

Beginning in March 2005, seven surface water samples (SW-1 through SW-7) and 12 sediment samples (SD-1 through SD-12) were collected from Cow Pen Creek and Dark Head Cove. Two (SW/SD-1 and SW/SD-2) were collected as background reference samples, one (SW/SD-1) was hydraulically upgradient of the facility's first outfall (along Cow Pen Creek), and one (SW/SD-2) was from a cove in Dark Head Creek. The remaining sampling locations were positioned along the facility waterfront approximately 10 feet from the shoreline and spaced to generally coincide with outfall locations.

In October 2005, 10 surface water samples (SW-8 through SW-17) and 50 sediment samples from 30 locations (SD-13 through SD-42) were collected from Cow Pen Creek and Dark Head Cove. Surface-water sampling locations were distributed to provide data sufficient to broadly

evaluate surface water quality. Sediment sampling locations were chosen to evaluate the horizontal distribution of potential contaminants previously identified in March 2005.

Surface sediments were collected from all 30 sediment sampling locations (approximately the top six inches of unconsolidated material). At nine of the 30 sampling locations (SD-13, 14, 16, 19, 27, 28, 29, 40, and 42), samples were collected at depths of approximately 1–2 feet below the sediment/surface water interface. Sampling locations selected for coring were relatively close to the MRC shoreline and were intended to confirm previous sampling results and evaluate the vertical distribution of chemicals. Sampling locations from 2005 are shown in Figures 3-1 and 3-2.

In 2006, a human health risk assessment (HHRA) evaluated direct-contact exposures (namely, incidental ingestion and dermal contact) with surface waters and sediments as direct-contact exposure pathways (based on data from the 2005 sampling events). Risks associated with consumption of fish from the study area were not evaluated in the 2006 HHRA. The 2006 HHRA concluded that non-carcinogenic effects for both surface water and sediment were regulatorily acceptable because the hazard index (HI) calculated for a hypothetical recreational receptor was less than 1.0. Carcinogenic risks of exposures to surface water (via incidental ingestion or dermal contact) were less than the MDE threshold limit of 1E-05, or a one–in-100,000 probability of developing cancer. The primary contributors to carcinogenic risk in sediment include: arsenic, polycyclic aromatic-hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) (Tetra Tech, 2006). Carcinogenic risks for exposures to sediment exceed this MDE threshold for carcinogenic effects; however, the estimated risks are within the U.S. Environmental Protection Agency (USEPA) acceptance range of 1E-04 to 1E-06, or a one-in-10,000 to one-in-one-million probability of developing cancer.

The ecological risk assessment (ERA) determined that the receptors potentially at risk are: lower-trophic-level organisms, including water column communities and benthic invertebrates (through direct contact), and upper-trophic-level organisms (represented by the great blue heron, through the potential food web exposure). One surface-water chemical of potential concern (COPC) (cadmium) and five sediment COPC (barium, silver, benzo(a)pyrene, benzo(g,h,i,)perylene, and indeno(1,2,3-cd)pyrene) are the primary contributing COPC. Mercury

in the diet of the great blue heron was identified as an ecological concern through food-chain modeling (Tetra Tech, 2006).

Risks to human health and ecological receptors were evaluated in the 2006 *Surface Water and Sediment Sampling Report* (Tetra Tech, 2006). Risks to these receptors were not re-evaluated using the historical surface water data because the concentrations would not be the same, for many reasons, (e.g., tidal influence, changes in amount or rainfall and runoff, etc.). Although chemicals from sediment may dissolve and move into surface water, any remedial efforts would focus on sediment, not surface water. Risks to aquatic receptors at the site are probably greater from exposure to sediment, including sediment pore water, than from exposure to surface water, because sediment is the primary current source of contamination. Historical surface water data are therefore not discussed further in this document.

3.2 2008 SEDIMENT CHARACTERIZATION

Further sediment sampling in November 2008 sought to better define the distribution of PCBs and other contaminants, primarily PAHs and metals (identified during the March and October 2005 sampling events). The November 2008 sampling effort focused on areas where initial sampling indicated potential site contaminants were elevated, to delineate the lateral extent of contamination in these areas and to further characterize subsurface sediments (i.e., depths >6 inches). Sampling locations from 2008 are shown in Figure 3-1.

3.3 2010 ADDITIONAL SEDIMENT CHARACTERIZATION

Additional characterization in 2010 of sediment in Dark Head Cove, Cow Pen Creek, and the confluence of these two water bodies was completed to further identify and characterize the nature and extent of contamination potentially resulting from current and past MRC activities. The objectives of this sediment and biological sampling program were to finalize characterization of Dark Head Cove and Cow Pen Creek (with respect to area wide environmental conditions), to establish the basis for risk assessment, and, if necessary, to evaluate remedial action alternatives (see the *Additional Characterization and Sediment Sampling Data Summary Report* [Tetra Tech, 2011a] and *Fish Tissue Report* [Tetra Tech, 2011b]). Sampling locations from 2010 are shown in Figures 3-1 through 3-8.

The 2010 sediment investigation focused on areas where insufficient data were available from previous investigations to meet the objective stated above. Sediment samples were collected in 2010 from 24 site locations (see Figure 3-1). Sediment samples were also collected from three locations distant from potential MRC influences to determine background conditions reflecting an urbanized coastal area (see Figure 3-8). Sediment samples were collected from 0–6, 6–18, 18-30, and 30–52 inches below the surface water/sediment interface. Sediment samples were analyzed for PAHs, PCBs, and metals. Some sediment samples were also analyzed for acid volatile sulfides (AVS)/simultaneously extracted metals (SEM).

Detected concentrations of PAHs range from 1.2 micrograms per kilogram (µg/kg) to 457,300 µg/kg. The highest concentrations of total PAHs were found in samples along the shoreline of MRC and in Dark Head Cove. In surface sediment, the highest PAH concentrations were in samples collected from the eastern portion of Dark Head Cove (near Martin State Airport [MSA]) and in the middle of the cove adjacent to the MRC property. PAH concentrations tended to be higher in the middle two depth intervals (6–18 inches and 18–30 inches) than in surface sediment although the upper reaches of Cow Pen Creek also had elevated PAH concentrations in the 0–6, 6–18, and 18–30 inch intervals. PAH concentrations in excess of the screening level for total PAHs were also detected in a few samples from the middle two intervals in a small area near Outfall 09. Overall, PAH results are consistent with previous findings.

Detected concentrations of total Aroclor range from 11–54,000 µg/kg. Total Aroclor concentrations were highest in surface sediments, and decreased with increasing depth. Surface sediment PCB concentrations were highest in the middle of Dark Head Cove and adjacent to the shoreline of the MRC complex. The areas with the most elevated concentrations were well bounded by other samples. These findings are similar to the conclusions of the previous investigation.

Several metals were detected in sediment at concentrations in excess of screening values, but concentrations of most metals tended to be less than or only slightly greater than regional background concentrations. Metals of particular interest and their ranges of concentrations include cadmium (0.016–306 µg/kg), chromium (6–2,460 µg/kg), copper (1.6–183 µg/kg), lead (1.5–31,500 µg/kg), mercury, (0.0079–6.1 µg/kg), and zinc (2–4,370 µg/kg). Cadmium and chromium generally had the greatest concentrations with respect to their sediment guidelines compared to the other metals. The greatest concentrations of metals in Dark Head Cove were

generally found in the samples collected from the 6–18 inch and 18–30 inch intervals, which indicates that the sediment with higher concentrations is being buried under cleaner sediments. Some exceptions were observed in Cow Pen Creek, which would be expected because the deposition rate (as estimated from the age-dating analysis) is probably lower in the creek, and the scour appears to be greater than in the cove.

Various samples were collected and analyses performed to evaluate whether the chemicals in the sediment might be bioavailable to ecological receptors, including comparison of sediment AVS to SEM, sediment pore water chemistry analyses, and a benthic-macroinvertebrate community study. Sediment samples from seven locations were collected from each depth interval and analyzed for AVS/SEM (an index of potential bioavailability). Metals included in the SEM analysis consist of cadmium, chromium, copper, lead, nickel, silver, and zinc. In general, the concentrations of AVS were higher than SEM in most samples, indicating that the SEM metals are not expected to be bioavailable or directly toxic to benthic invertebrates.

One sample in the >6–18 inch depth interval (sample SD-87), and two in the >18–30 inch depth interval (samples SD-87 and SD-89), had AVS/SEM ratios within a range USEPA considers "uncertain" for potential toxicity to benthic invertebrates (USEPA, 2005). These are the only sampled locations where a potential for toxicity is indicated throughout the vertical sediment column. Note that the AVS/SEM samples do not correspond to sediment samples with the highest whole sediment concentrations of these metals.

Sediment pore water was extracted via centrifugation at the laboratory from core depths corresponding to the top three intervals sampled for chemical compounds in sediments (0–6, >6-18, and >18–30 inches) to determine the equilibrium concentrations of COPC in pore water (both horizontally and vertically) near the MRC. Pore water concentrations of various metals (arsenic, cadmium, selenium, and PAHs) exceeded surface water ecological screening values at all three intervals in one or more samples. Pore water concentrations of lead exceed surface water ecological screening values in one interval. Aroclor-1260 concentrations exceed surface water ecological screening values in all pore water samples in which it was detected. Aroclor-1260 was reported as not detected in the 18–30 inch interval; however, the detection limit for Aroclor-1260 is greater than its screening level. Although this may introduce

uncertainty, biological activity is typically minimal below depths of 18 inches in sediment environments such as that found at the MRC.

Benthic-macroinvertebrate samples were collected to evaluate the status of benthic communities residing in sediment at the site. Benthic invertebrate samples were also collected from two background/reference locations (i.e., locations not affected by potential contaminants from the site) and used for comparison to site samples. One reference site (Marshy Point), representing the most pristine local area environmental conditions (comparatively), had relatively good benthic conditions. The other local reference site (Bowleys Quarters), and a proposed reference site (Middle River Downstream), both showed indications of some stressful conditions for the benthic macroinvertebrates, even in locations removed from the MRC. Some indications of stress to benthic organisms were present at all sites local to the MRC. However, some of the sites local to the MRC have a greater density of benthic organisms than the reference sites.

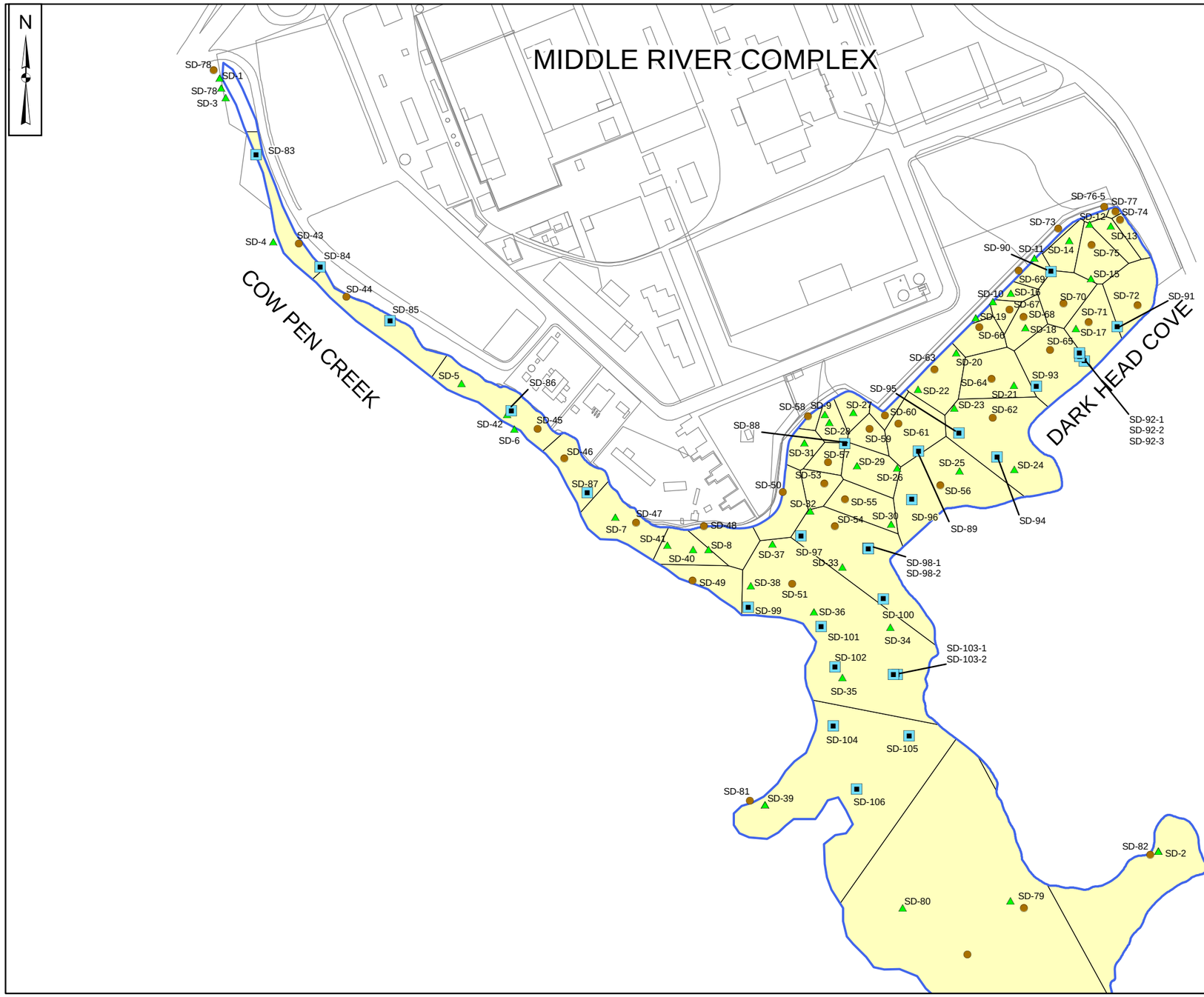
Fish samples were collected from five site locations and three reference locations to measure chemical concentrations in their tissue. The site associated locations for fish collections include one in Cow Pen Creek, two in Dark Head Cove, and two at the confluence of the two water bodies. To compare these locations with similar environments in the Middle River area, samples were also collected of the same fish species at reference areas at Marshy Point, Bowleys Quarters, and Middle River.

Concentrations of detected chemicals in fish tissue samples collected in the immediate vicinity of the MRC study area are similar to reference or regional concentrations. Average total PCB concentrations in channel catfish, the species most frequently collected in this study, are less than average concentrations reported for regional samples collected from the Back River and Middle River (which most likely represent the region from which the site data were collected). Metals concentrations in channel catfish from the site are generally similar to reference concentrations, based on a comparison of site versus reference area average concentrations. The PCB concentrations detected do not appear to correlate to the lipid content and size of fish collected at any location (i.e., from the site, from reference locations, and compiled from regional data). Fish bioaccumulate PCBs with higher chlorine content through the food chain, resulting in a different level of residue in fish tissue when compared to those detected in sediment samples. Several

metals detected in the sediment were not detected in fish tissue, including cadmium, which had elevated concentrations in sediment samples collected from the site.

Analytical data from sediment samples collected in Cow Pen Creek, Dark Head Cove, and Dark Head Creek in 2005, 2008, and 2010 were evaluated to determine the nature and extent of chemical contamination in sediment. Sediment samples were collected from four depth intervals: 0–6 inch, >6–18 inch, >18–30 inch, and >30–52 inch. Chemical concentrations of COPC in surface sediment are generally highest at locations immediately adjacent to the MRC. In the deeper intervals in Dark Head Cove, the highest concentrations are generally farther away from the MRC shoreline. The highest concentrations of PAHs were in sampling locations along the northern shoreline of Dark Head Cove. PAH concentrations tend to be higher in the middle two depth intervals (>6–18 inches and >18–30 inches) than in surface sediment. PAH concentrations in most samples from the top two intervals were less than maximum background concentrations.

PCB concentrations tend to be highest in surface sediments, decreasing with increasing depth. Surface sediment concentrations of PCBs are highest in the middle of Dark Head Cove and adjacent to the shoreline of the MRC complex (i.e., near Outfall 05). The highest concentrations of metals are generally found in samples from the >6–18 inch and >18–30 inch intervals, indicating that sediment with higher concentrations has been buried under cleaner sediments and that the higher concentrations are probably due to historical releases. This conclusion is supported by sediment age-dating and hydraulic analyses of the watershed. Among metals detected in sediment, cadmium concentrations tended to be the most elevated relative to sediment guidelines.



TETRA TECH

Figure 3-1
Sediment Sample Locations
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sediment Sample Locations- 2005
- Sediment Sample Locations- Nov 2008
- Delineation Sample - 2010
- Middle River Complex
- Water

500 250 0 500
Feet

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Checked By: SB
Approved By: SB

Contract Number: 112IC02903

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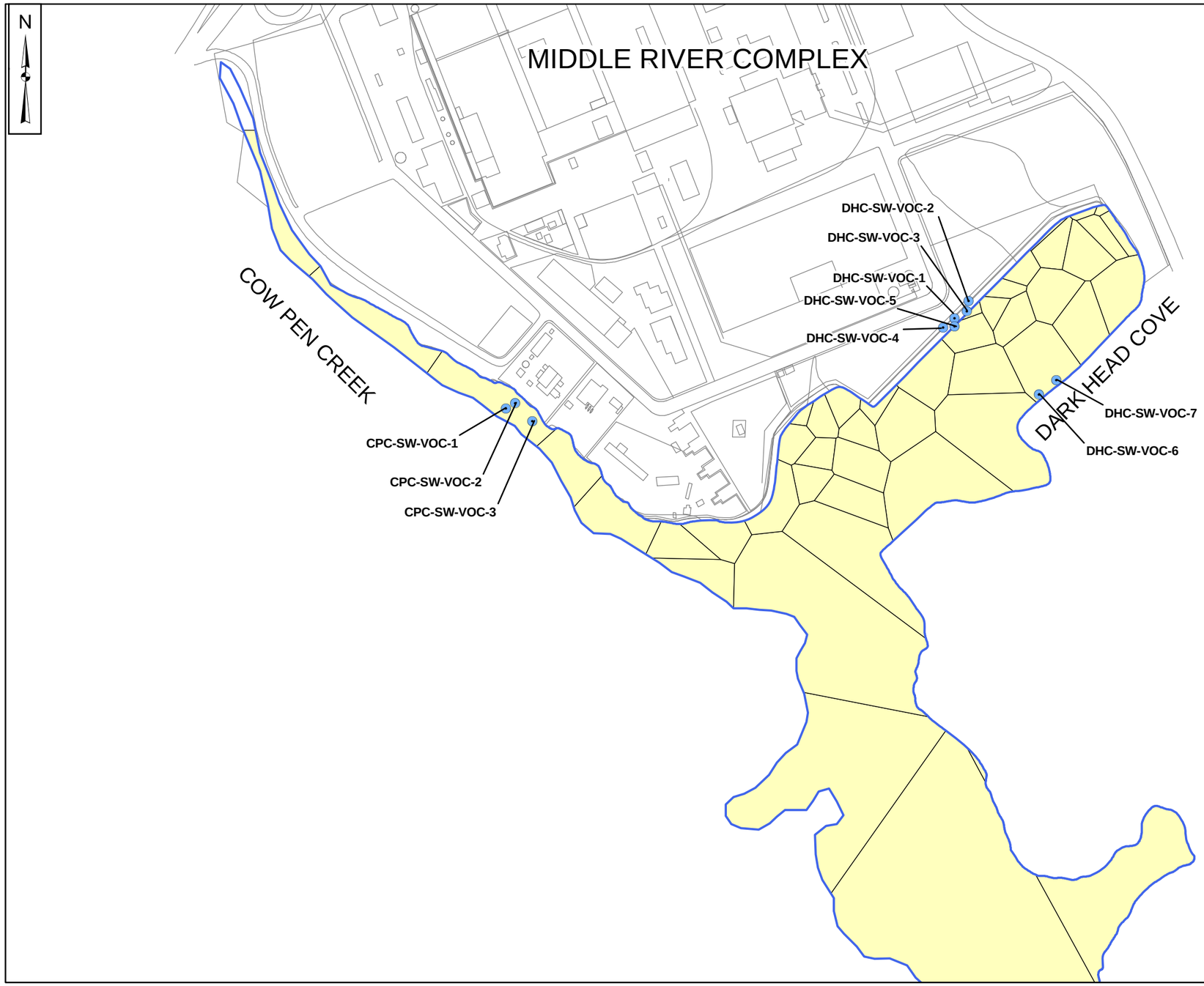

TETRA TECH

Figure 3-2
Surface Water Sample Locations
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Surface Water Samples - 2010
- Middle River Complex
- Water

500 250 0 500
Feet

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Checked By: SB
Approved By: SB

Contract Number: 112IC02903

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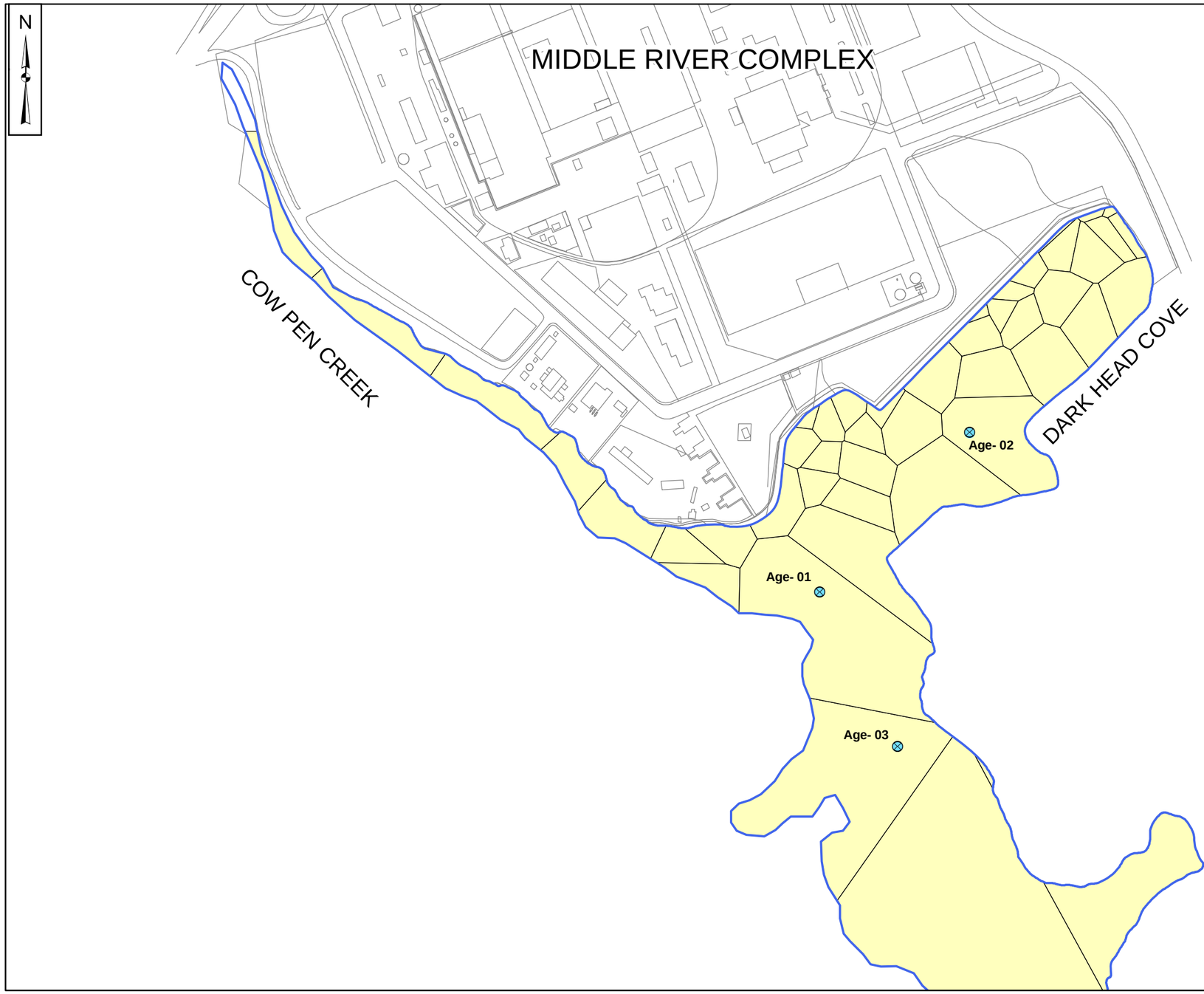

TETRA TECH

Figure 3-3
Age Dating Sample Locations
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Surface Water Samples - 2010
- Middle River Complex
- Water

500 250 0 500
Feet

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Contract Number: 112IC02903

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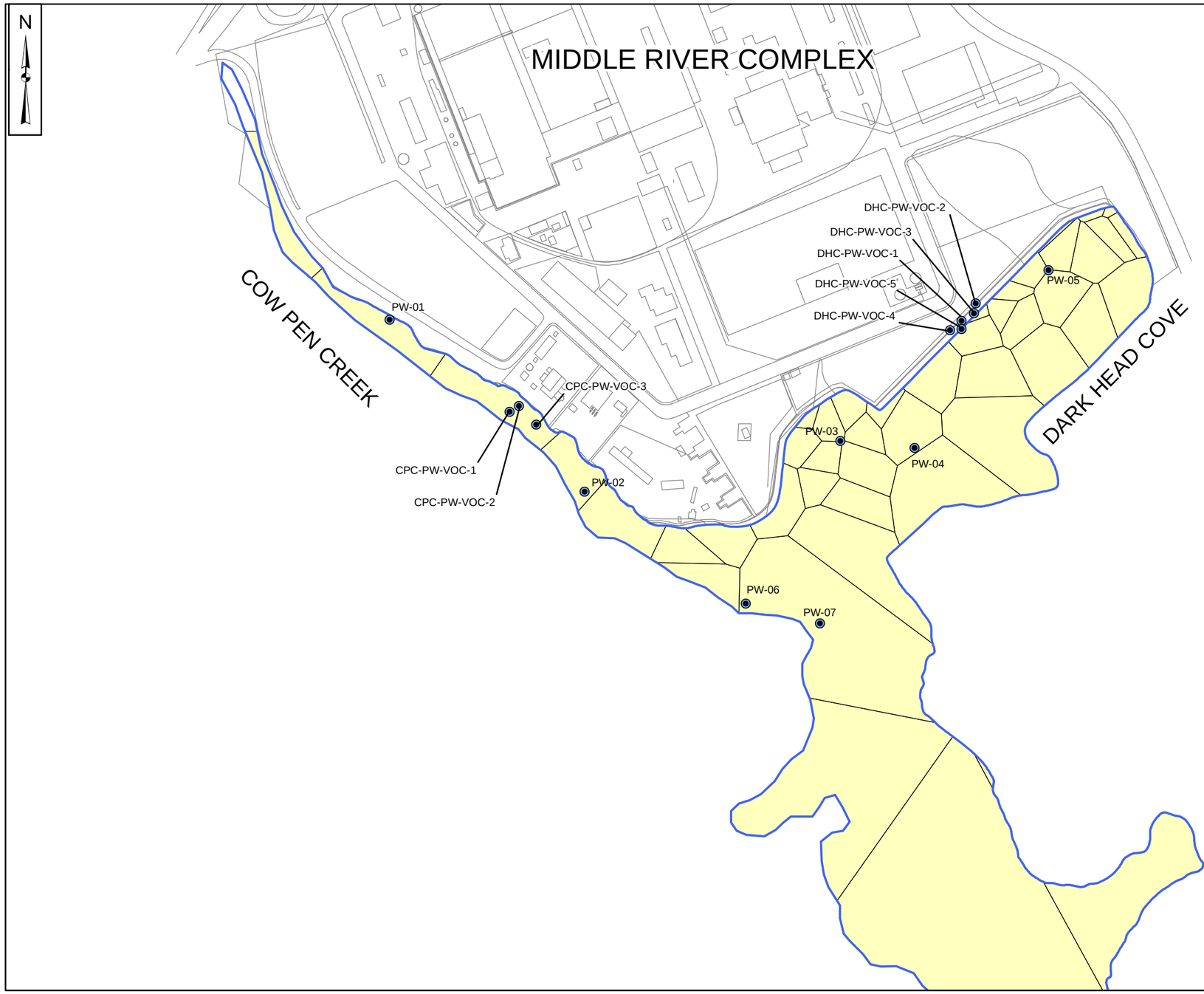

TETRA TECH

Figure 3-4
Porewater Sample Locations
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Porewater Sample (VOCs) - 2010
- Middle River Complex
- Water

500 250 0 500
Feet

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Contract Number: 112IC02903

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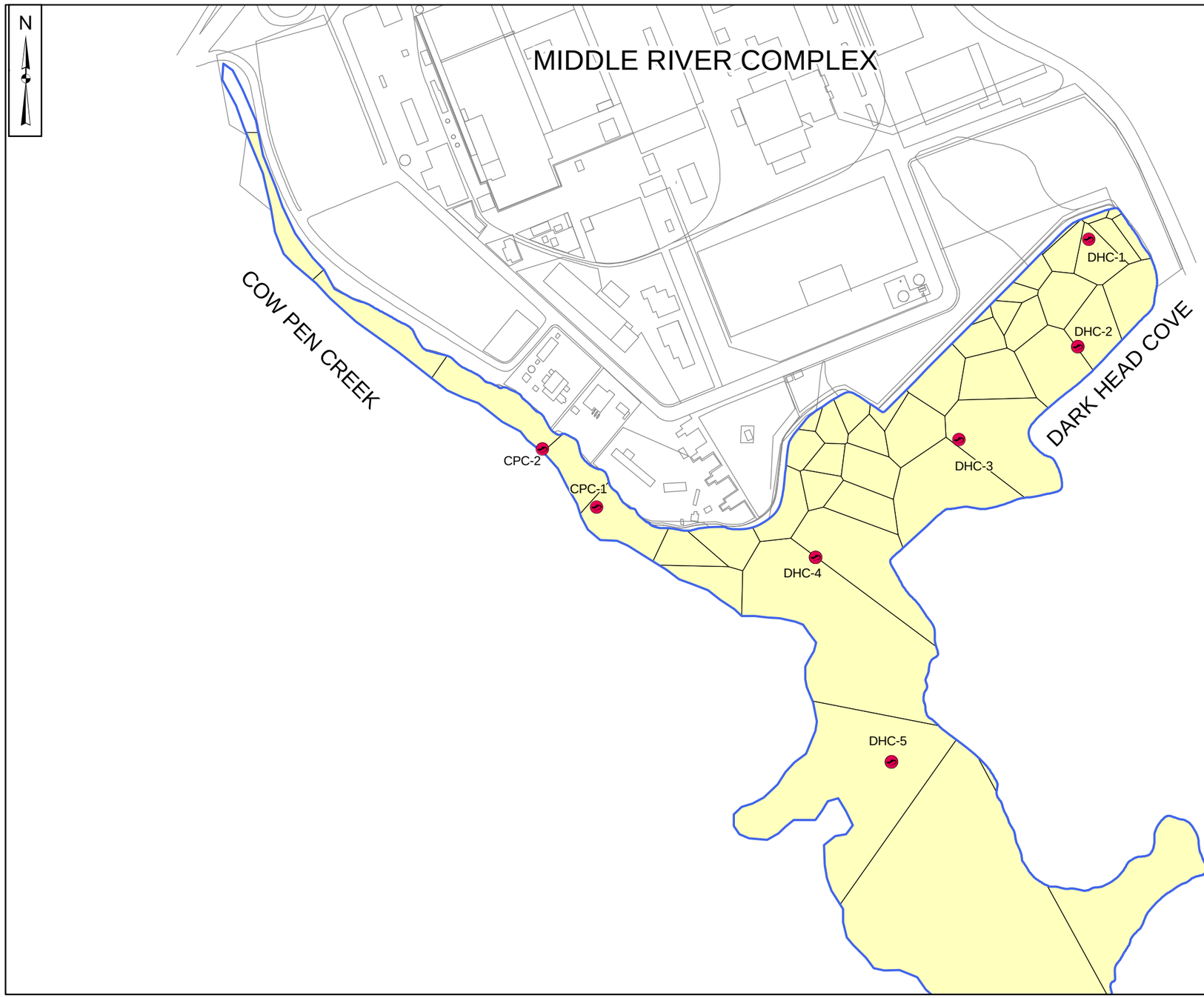

TETRA TECH

Figure 3-5
Benthic Sample Locations
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Benthic Sample Location - 2010
- Middle River Complex
- Water

500 250 0 500
Feet

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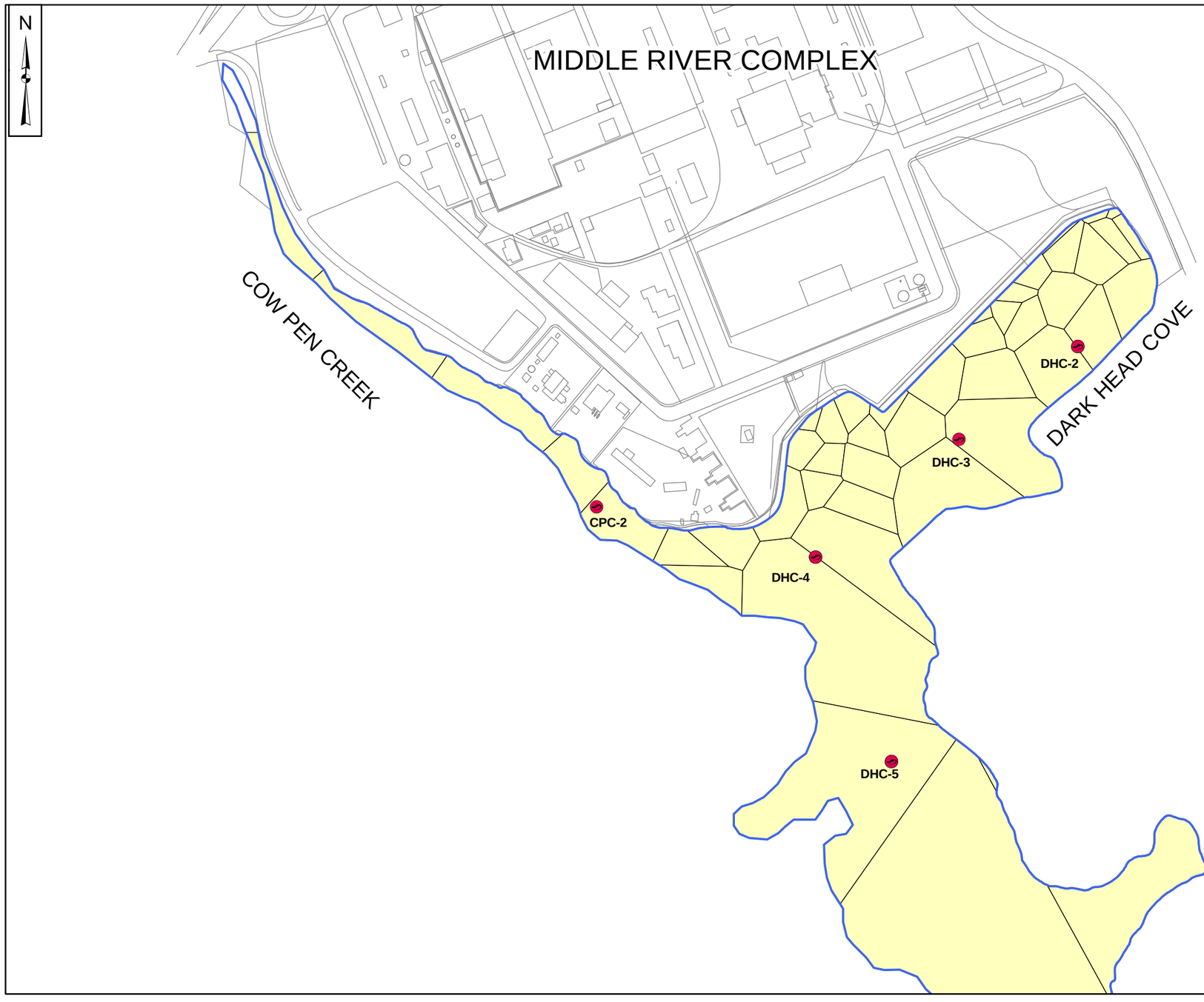

TETRA TECH

Figure 3-6
Fish Tissue Sample Locations
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Fish Tissue Sample Location - 2010
- Middle River Complex
- Water

500 250 0 500
Feet

Drawn By: MP 3/7/11
Checked By: SB
Approved By: SB

Contract Number: 112IC02903

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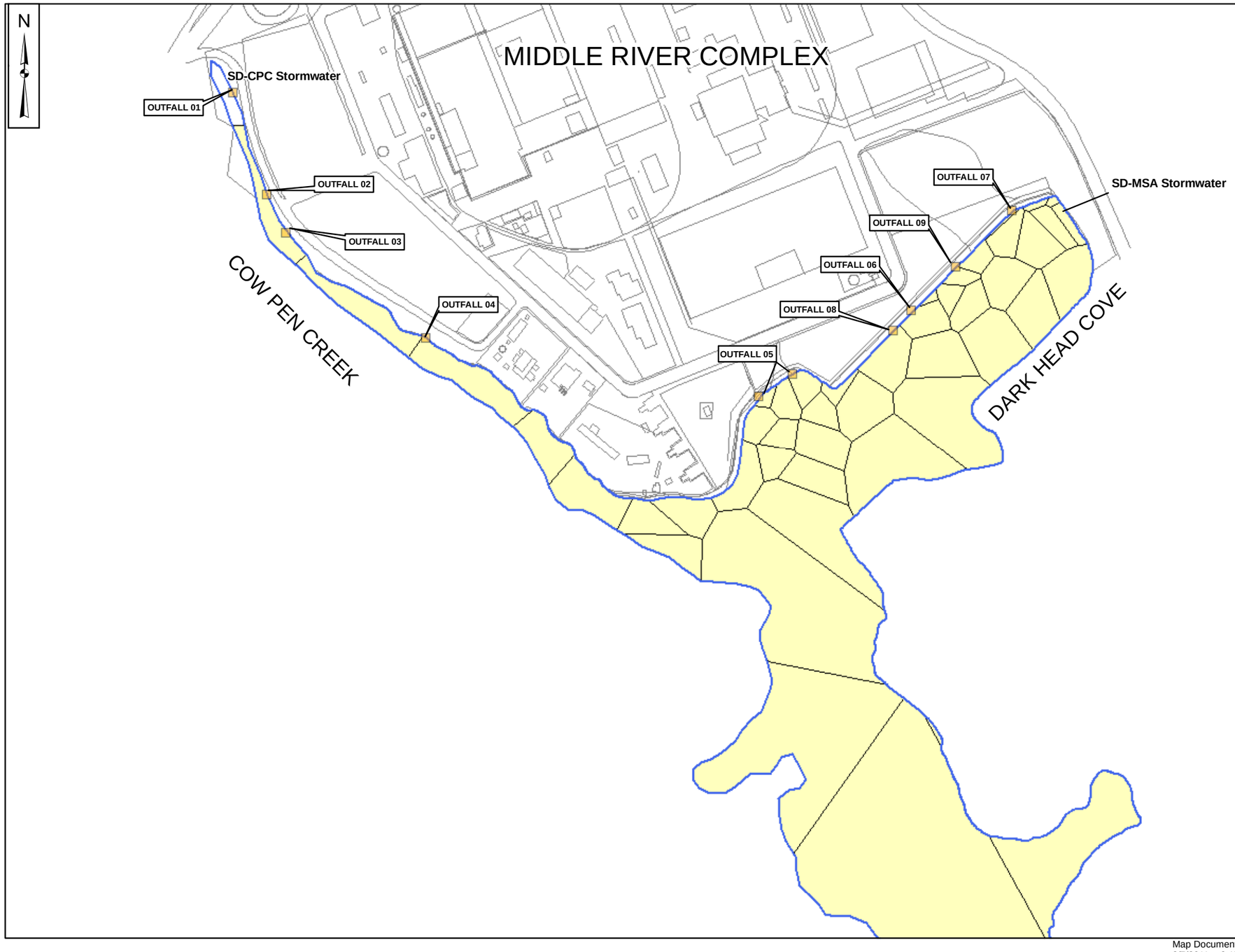

TETRA TECH

Figure 3-7
Stormwater Outfall Locations
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Stormwater Outfall Locations
- Middle River Complex
- Water

500 250 0 500
Feet

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Contract Number: 112IC02903

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TETRA TECH

Figure 3-8
Reference Locations
August 2010
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Benthic Sample Location - 2010
- Sediment Sample Location - 2010

0 2,000 4,000 6,000
Feet

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Contract Number: 112IC02903

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Section 4
Nature and Extent of Contamination

As described in Section 3, previous sediment sampling events sought to characterize Dark Head Cove and Cow Pen Creek sediments in relation to area wide environmental conditions and to establish the basis for risk assessment and future risk management decisions. The purpose of this section is to present the results of the sampling investigations and discuss the magnitudes and distribution of chemicals detected in site media. This section characterizes the chemicals detected in the study area by:

- identifying the chemicals in sediment, pore water, and surface water samples collected at the site
- comparing detected chemical concentrations to human health and ecological sediment benchmarks/screening levels to better understand the magnitude of the concentrations detected and identify the primary chemicals potentially contributing to risks
- evaluating the horizontal and vertical extent of the primary contaminants

The comparison of concentrations detected to contaminant screening level in this section focuses the nature and extent discussion on those chemicals most likely to be evaluated in the risk assessments. The actual selection of chemicals of potential concern (COPC) to be quantitatively evaluated in the human health risk assessment (HHRA) and ecological risk assessment (ERA) is performed in Sections 5 and 6, respectively. Sections 5 and 6 also provide the rationale by which screening levels were selected for the HHRA and ERA. The screening values used are presented in Tables 4-1A and 4-1B for sediment and surface water, respectively. To specifically examine contaminant sources and begin defining site dynamics, the following sections describe the types, distribution, and trends of contaminants present in study area environmental media.

4.1 CONTAMINANT SOURCES

Water bodies surrounding the Middle River Complex (MRC) are subject to a variety of influences due to the area's highly developed nature. The MRC has operated for a long time, since the 1920s. In the 1970s, Lockheed Martin sold adjacent land, including Martin State Airport and other commercial and industrial businesses. Some of the facilities currently or formerly on the MRC site near surface water bodies include a maintenance garage, sewage treatment plant, engine test facilities, a wind tunnel, barracks, a boat fueling and launch area, and large parking areas (see Figure 2-2 for a facility map).

Contamination in the sediment of the adjacent water bodies may have originated from historical industrial discharges, possibly from historical or current stormwater outfalls draining the facility. Nine such outfalls have been identified at the MRC to date, discharging sanitary wastewater into Cow Pen Creek and Dark Head Cove. Figure 3-1 shows MRC stormwater outfalls. The heavy recreational use of these water bodies, as well as runoff from surrounding commercial and residential properties and public roadways, may also significantly affect sediment quality in Dark Head Cove and Cow Pen Creek. Relationships between sources contributing contaminants to the waterways surrounding the MRC, contaminated media in the waterways, and potential human and ecological receptors and their potential exposure to contaminated environmental media are presented in the conceptual site model (CSM) developed for both the HHRA and ERA (see Sections 5 and 6, respectively).

4.2 SEDIMENT

Some of the 2005 sediment samples evaluated in this report were analyzed for a comprehensive suite of analytes: target-compound list (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), target-analyte list (TAL) metals, hexavalent chromium, organic tin compounds, and total organic carbon (TOC). Evaluation of the 2005 sampling data led to the decision to analyze sediment samples from the 2008 and 2010 sampling events only for polycyclic aromatic-hydrocarbons (PAHs), PCBs, TAL metals, and TOC. Select samples from the 2010 sampling event were analyzed for acid volatile sulfide (AVS)/simultaneously extracted metals (SEM) parameters to assess bioavailability. All sediment data (2005, 2008, and 2010) were incorporated into this report.

4.2.1 Background Locations

Previous investigations at the MRC used sediment data collected from eight locations near the facility to represent background regional sediment-data (Tetra Tech, 2008). Two previously sampled background locations (SD-1 and SD-78) are upgradient of the facility's first outfall in Cow Pen Creek, slightly south of Eastern Boulevard (see Figure 3-1) and above the area of tidal influence. The other six previous background reference-locations (SD-2, SD-39, SD-79, SD-80, SD-81, and SD-82) are in Dark Head Creek, south of the confluence of Cow Pen Creek and Dark Head Cove. Sediment at these locations may have been affected by facility operations because they are approximately 1,200–2,400 feet downgradient from the MRC facility. Sediment data from these six locations were therefore excluded from the background data set and included instead in the "site" data set.

Sediment samples were collected in 2010 from three locations distant from possible MRC influences to determine background conditions reflecting an urbanized coastal area (see Figure 3-2). Benthic-invertebrate samples were also collected from these same three reference locations for comparison to site samples. The three reference locations are in an area with little to no shoreline development (i.e., Marshy Point), and in two other areas having typical regional waterfront development (i.e., Bowleys Quarters and Middle River). Field observations at the time of sample collection indicate that the three background locations do not seem to be near any industrial point sources, and they have similar substrates to site locations.

One of the three 2010 reference locations (Middle River) is approximately 4,000 feet south of MRC. Sediment analytical data indicate that concentrations of some metals in the surface and 6-18 inch depths for this sampling location (identified as "Middle River Downstream") are elevated relative to sediment concentrations in the Bowleys Quarters and Marshy Point samples. Whether the metals concentrations at this sampling location are due to MRC influence or to other sources is not clear; however, data from this sampling location suggests that it might not represent regional background conditions. Therefore, data from this location were excluded from the background data set.

In summary, the data set representing background reference conditions in this report consists of samples from four locations: Bowleys Quarters, Marshy Point, and sampling locations SD-1 and

SD-78. Background statistics such as mean, median, or 95% upper confidence level (UCL) were not calculated because only four background locations were sampled, and because samples were not collected from all depth intervals at SD-1 and SD-78. Instead, the MRC sample concentrations were compared to the maximum background concentration for each sediment depth interval. The term "background value," as used herein, refers to the maximum concentration from among the four background locations of a specific chemical at a specific depth interval. Individual data for each background sample are provided in Tables 4-2, 4-4, 4-6, and 4-8.

4.2.2 Sediment Results

Tables 4-2 through 4-9 provide the analytical results for chemicals detected at least once in either new or historical samples, grouped according to depth intervals (0–6, 6–18, 18–30, and 30-52 inches below the surface-water/sediment interface). Tables 4-2, 4-4, 4-6, and 4-8 provide the sediment analytical results for individual samples. Tables 4-3, 4-5, 4-7, and 4-9 summarize the descriptive statistics for chemicals detected at least once in the data set. The sediment analytical results are compared to screening levels based on the U.S. Environmental Protection Agency (USEPA) regional screening level (RSLs) for residential soil (USEPA, 2010b), adjusted by a factor of 10 [as discussed in Section 5] and to USEPA Region III freshwater or marine sediment benchmarks (USEPA, 2006a, 2006b).

Figures were created for cadmium, chromium, copper, lead, mercury, zinc, total Aroclor, total polycyclic aromatic hydrocarbons (PAHs), and benzo(a)pyrene equivalent (BaPEq) concentrations in sediment to display the horizontal and vertical extent of the primary risk contributing contaminants detected in the sediments. These chemicals represent the primary site contaminants potentially posing risk to humans and/or ecological receptors potentially exposed to MRC sediments (Tetra Tech, 2008). The BaPEq value is the sum of the concentrations of benzo(a)pyrene (BaP) and related PAHs (i.e., benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a)anthracene, indeno(1,2,3-cd)pyrene) after applying toxicity-equivalence factors (TEFs) to each constituent. BaPEq values were calculated two ways: (1) using one-half the detection limits for non-detected results, and (2) using positive results only. Section 5 provides additional detail regarding the BaPEq calculation methods.

The chemical-concentration figures display Thiessen polygons constructed around each sampling location, the boundaries of which define the area closest to each point relative to all other points or physical site features (i.e., walls). Therefore, sampling locations close to one another have smaller polygons and sampling locations farther apart have larger polygons. The chemical concentration assigned to each polygon is assumed to be the chemical concentration from the sample taken within the polygon boundaries. Concentrations of each chemical were then evaluated over four separate depth intervals: one surface sediment interval (0–6 inches) and three subsurface sediment intervals (>6–18 inches, >18–30 inches, and >30–52 inches).

Polygon boundaries vary among PAHs, PCBs, and metals, and across the depth intervals, because different numbers of sampling results were available for various chemicals and depth intervals. Figures 4-1 through 4-4 show the sediment-location identifiers and polygon boundaries for the metals listed above for each of the four depth intervals. Figures 4-5 through 4-8 show the sediment-location identifiers and polygon boundaries for the PAHs and PCBs listed above. Figures 4-9 through 4-19 present the chemical concentrations for the parameters listed above as compared to background levels and various sediment benchmarks. Ecological sediment benchmarks are described in Section 6.3.

The figures described above helped determine which samples and areas exceed background concentrations and criteria. Each Thiessen polygon figure contains four figures, to allow the data from all four depths to be observed in one figure. The figures were created for each selected chemical and include one surface sediment interval (0–6 inches) and three subsurface sediment intervals (>6–18 inches, >18–30 inches, and >30–52 inches). Concentrations were then compared to background and relevant criteria.

Chemical concentrations presented in Figures 4-9 through 4-19 were compared to background concentrations in the background data-set defined in Section 4.2.1. Background concentrations are the maximum concentration for each chemical detected in the background samples per depth interval. Background samples are included in the detected concentrations presented in Tables 4-2, 4-4, 4-6, and 4-8 (but not the descriptive statistics tables). The maximum background concentrations used for cross-hatching the polygon figures per depth interval are also listed on each figure. The maximum concentration was considered appropriate for comparison to study

area concentrations, due to the small size of the background data set and because background concentrations represent regional conditions. The maximum background concentration was used, based on the objective to determine whether chemical concentrations at specific locations exceed background concentrations, not on whether the entire site's sampling–data-set was greater than background concentrations. Any remediation that might occur would not need to achieve study area concentrations below regional levels.

Chemical concentrations for all chemicals except PCBs and BaPEq were compared to ecological benchmarks for sediment invertebrates (as discussed in Section 6.3). Ecological benchmarks consist of freshwater-sediment threshold effects concentrations (TECs) and probable effects concentrations (PECs) (derived by MacDonald, et al. [2003]), or marine-sediment threshold-effects levels (TELs) and probable-effects levels (PELs) derived by MacDonald, et al. (1996). In accordance with USEPA Region III guidance, the lower of either the freshwater or the marine sediment benchmark was used as the initial value to which MRC sediment data were compared in the Thiessen polygon figures.

The Thiessen figures also include comparisons to 2 times the PEC (or PEL) and 5 times the PEC (or PEL). The TEC and TEL are the concentrations below which effects on sediment invertebrates are not expected, whereas PECs and PELs are defined as concentrations above which adverse effects to sediment invertebrates are probable (MacDonald, et al., 1996, 2003). The significance of exceeding ecological benchmarks will be discussed in the ERA in Section 6. Total Aroclor concentrations are shown in Figure 4-16 in relation to 1,000 micrograms per kilogram (µg/kg), which is a federal Toxic Substances Control Act soil cleanup level for high occupancy areas (USEPA, 2005). Figures 4-18 and 4-19 summarize BaPEq concentrations compared to 1E-05 risk based values (calculated as described in the HHRA [see Section 5]).

The concentrations and locations of organic and inorganic chemicals detected in study-area sediments are presented below. Table 4-10 summarizes concentrations of organic chemicals detected in soil and sediment as reported in the scientific literature. Table 4-11 summarizes concentrations of inorganic chemicals detected in soil and sediment as reported in available literature.

***Volatile organics*—**Only sediment samples collected in the 2005 sampling event were analyzed for VOCs. No VOCs exceeded a human health screening level. Methyl tert-butyl ether (MTBE) was detected in 24 of 39 surface sediment samples at concentrations ranging from 2-9 micrograms per kilogram (µg/kg). Human health screening benchmarks for MTBE are 430,000 µg/kg and 4,700 µg/kg for the direct contact and fish consumption pathways, respectively. No ecological screening benchmark was available for MTBE. However, MTBE was only detected in two of 10 samples from the >6-18 inch (3–4 µg/kg) and >18–30 inch (2-3 µg/kg) intervals. Thus, the concentrations in subsurface sediment are also less than the available screening benchmarks. Generally, VOCs were detected infrequently in the sediment, and most of the detections were less than the screening benchmarks (see Tables 4-2 through 4-9).

Carbon disulfide was the only volatile compound exceeding its ecological screening level, and its exceedances occurred in surface sediment and subsurface sediment to a depth of 30 inches. All positive detections of carbon disulfide exceed the ecological screening level. However, only two positive detections of carbon disulfide occurred in 38 surface sediment samples. Carbon disulfide was detected in six of 10 and four of 10 samples in the >6–18 inch and the greater than 18-30 inch depth intervals, respectively. Most samples in which carbon disulfide was detected were in samples collected along the study area shoreline, and in many cases, these samples also contained several other chemicals of interest (e.g., PAHs, PCBs), as discussed below. Carbon disulfide is produced naturally in sediments (WHO, 2005).

***Semivolatile organics*—**Only the sediment samples collected in the 2005 sampling event were analyzed for TCL SVOCs; sediment samples collected in 2008 and 2010 were analyzed for PAHs only. PAHs are the primary SVOCs detected in sediments, in terms of both the frequency of detection and the magnitude of the concentrations detected (see Tables 4-2 through 4-9).

The most frequently detected non-PAH chemical in surface sediment is bis(2-ethylhexyl)phthalate, which was detected in 35 of 37 total samples. Most of the reported concentrations in surface sediment exceed the ecological screening level used in the ERA. Fewer samples were analyzed for this chemical in the subsurface sediment; however, bis(2-ethylhexyl)phthalate (BEHP) was detected in six of nine samples and five of nine samples collected from the >6–18 inch and >18–30 inch intervals, respectively. Several samples'

concentrations exceed the ERA screening level, but none exceed the direct contact screening level used in the HHRA. The maximum concentration of BEHP reported was at SD-13, which also corresponds with an area of elevated impacts for the PAHs. However, the frequent detections of BEHP do not indicate any recognizable patterns. Bis(2-ethylhexyl)phthalate is a common laboratory contaminant (USEPA, 2008), so its presence in the sediment samples is not necessarily due to site related activities.

The greatest concentrations of total PAHs (used to evaluate potential ecological risk) are reported for locations along the shoreline of Dark Head Cove and the MRC property (Figure 4-17). Specifically, in surface sediment, the highest PAH concentrations are in samples collected from the eastern portion of Dark Head Creek (near Martin State Airport [MSA]) and in the middle of the cove adjacent to the MRC property (near Outfall 05). Elevated PAH concentrations (greater than the PEC of 22,800 µg/kg) were detected in four surface sediment samples, nine samples from the >6–18 inch interval, eight from the >18–30 inch interval, and none from the >30-52 inch interval.

PAH concentrations tend to be greater in the middle two depth intervals (>6–18 inches and >18-30 inches) than in the surface sediment. PAH concentrations in most samples from the top two intervals are less than the maximum background concentration, as indicated by the cross-hatched polygons in Figure 4-17. Total PAH concentrations in nearly all sediment samples from the deepest interval are less than criteria and background concentrations.

Concentrations of BaPEq tend to show the same trends as observed for total PAHs. The BaPEq concentrations depicted in Figures 4-18 and 4-19 are compared to human health risk based concentrations (RBCs) specifically calculated for a recreational-user scenario in which the receptor is hypothetically exposed to the sediment. The 700 µg/kg RBC assumes that the recreational user is exposed even as a small child. The 1,600 µg/kg RBC assumes that the recreational user is not exposed as a small child (exposure occurs as an older child, adolescent, and adult). The benchmarks represent the one-in-100,000 cancer risk level.

As shown in Figures 4-18 and 4-19, BaPEq concentrations calculated for several polygons (primarily in the shallower zones, less than 30 inches below the sediment floor) exceed these benchmarks. Concentrations exceeding the 1,600-µg/kg benchmark are most frequently reported

for polygons abutting the MRC shoreline. This pattern of concentrations is as expected, given that PAHs are typically bound to sediment particles that would tend to settle out quickly once introduced into a surface water body.

PCBs—Three Aroclors (Aroclor-1248, -1254, and -1260) were detected in sediment. Aroclor-1254 was detected in only one of 101 surface sediment samples and was not detected at other sediment depths. Aroclor-1248 was not detected in surface sediment nor in the >30–52 inch interval, was detected in two of 71 samples at >6–18 inches, and in one of 68 samples at >18-30 inches. Therefore, although positive detections of all Aroclors were summed to derive concentrations of total Aroclors, total Aroclor concentrations predominantly represent Aroclor-1260.

Total Aroclor concentrations are highest in surface sediments, and decrease with increasing depth (Figure 4-15). Surface sediment concentrations are highest in the middle of Dark Head Cove and adjacent to the shoreline of the MRC complex (i.e., near Outfall 05). The maximum surface sediment concentration is 54,000 µg/kg (SD-9), and the next highest surface sediment concentration is 20,000 µg/kg (SD-27). The maximum total Aroclor concentration in subsurface sediments in the >6–18 inch depth interval is 14,000 µg/kg at SD-58 (near Outfall 05). Aroclors were detected in 26 of 68 samples collected from the >18–30 inch interval, but its concentration exceeded 1,000 µg/kg (in only one sample (1,300 µg/kg at SD-89). All concentrations detected in the >30–52 inch interval are less than 1,000 µg/kg. PCBs were not detected at the reference locations for this investigation.

Table 4-10 summarizes concentrations of PCBs reported in the literature for various locations in the Chesapeake Bay region. Studies used to generate the table include areas of elevated PCBs, so some of the values do not represent background concentrations; the table is included for informational purposes only.

Inorganics (metals)—Several metals were detected in sediment at concentrations in excess of ecological screening values, but concentrations of metals in several samples tended to be less than or slightly greater than regional background concentrations. Thus, Thiessen polygons were generated for the metals posing the highest potential risk to ecological receptors: cadmium,

chromium, copper, lead, mercury, and zinc (Figures 4-9 through 4-14). Ecological risks due to other metals in sediment are minor, and will be discussed in detail in the ERA.

Cadmium concentrations in surface sediment are highest in Cow Pen Creek and along the shoreline of MRC in Dark Head Cove near Outfalls 05 and 08 (Figure 4-9). The area near Outfall 05 is the same area with the greatest concentrations of total Aroclors (see PCB discussion above). Several samples had cadmium concentrations in excess of the PEL (4.21 milligrams per kilogram [mg/kg]). Cadmium concentrations in Dark Head Cove sediments tend to be higher in the >6–18 inch and >18–30 inch intervals than in surface sediments, and the highest concentrations are found in these intervals. The highest cadmium concentrations in the >18-30 inch interval are reported for locations away from the MRC shoreline, into Dark Head Cove and Dark Head Creek.

Elevated chromium concentrations (Figure 4-10) follow a pattern similar to cadmium, with the highest concentrations in the two middle-depth intervals in Dark Head Cove. Several samples had chromium concentrations in excess of the PEC (111 mg/kg). The highest chromium concentration in surface sediment was 699 milligrams per kilogram (mg/kg) in a sample from location SD-43. The highest concentration in the >6–18 inch interval is 2,460 mg/kg (SD-46), the highest in the >18–30 inch interval is 2,060 mg/kg (SD-86) and the highest in the >30–52 inch interval is 597 mg/kg (SD-105).

Copper concentrations follow a different pattern from cadmium and chromium, with concentrations decreasing with increasing depth (Figure 4-11). Most samples with concentrations exceeding the PEL (108 mg/kg) are in surface sediments either south of Outfall 05 or in Dark Head Creek. Detected copper concentrations did not exceed the PEL in the two deepest intervals.

The highest lead concentration (31,500 mg/kg) was found in surface sediment sample SD-84 in the upper reaches of Cow Pen Creek. Most surface sediment concentrations are less than background (Figure 4-12). Most of the elevated (i.e., greater than the PEL [112 mg/kg] and background) lead concentrations are in the two middle-depth intervals, and tend to be in Dark Head Cove and Dark Head Creek. In the deepest interval, lead concentrations exceed the PEL in only one sample (SD-105 at 163 mg/kg).

Most mercury concentrations are less than background in surface sediment samples (Figure 4-13). Mercury concentrations are highest in the >6–18 inch and >18–30 inch intervals, with some concentrations in the >18–30 inch interval in Dark Head Cove more than twice the PEL (0.70 mg/kg). In the deepest interval (>30–52 inches), at sampling location SD-105 in Dark Head Creek,, the detected mercury concentration (1.5 mg/kg) also exceeds the PEL. This is the same sampling location (at this depth) where the highest concentrations of copper (84.1 mg/kg) and lead (163 mg/kg) were detected. Maximum concentrations of copper and lead at >30–52 inches were also detected in sample SD-105.

Zinc concentrations in surface sediment are similar to those in the >6–18 inch interval; concentrations in these two intervals exceed the PEC in few samples, with PEC exceedances reported for samples near the MRC shoreline (Figure 4-14). More samples exceed the zinc PEC (459 mg/kg) in the >18–30 inch interval than in the shallower intervals. The deepest interval (>30-52 inches) has the fewest PEC exceedances, but the highest overall zinc concentration, (4,370 mg/kg) was detected in a sample, SD-88, collected from that depth.

In summary, the highest concentrations of metals are generally found in the samples collected from the >6–18 inch and >18–30 inch intervals. This indicates that the sediment with higher concentrations is being buried under cleaner sediments, and therefore, the highest concentrations are probably due to historical releases. Some exceptions were observed in Cow Pen Creek, which is expected because the deposition rate is lower in the creek than in the cove, a conclusion supported by the age-dating analysis and hydraulic analysis discussed in the *Additional Characterization and Sediment Sampling Report* (Tetra Tech, 2011a). The highest bed stresses are located in the upper reaches of Cow Pen Creek. Cadmium and chromium generally have the greatest concentrations with respect to their sediment guidelines, compared to the other metals.

4.3 ACID-VOLATILE SULFIDES/SIMULTANEOUSLY EXTRACTED METALS

AVS/SEM analysis was conducted for all four depth intervals on sediment samples collected from seven locations. AVS binds, on a molar basis, some cationic metals of environmental concern. In sediment samples where the AVS molar concentrations are greater than SEM molar concentrations, the SEM metals are not expected to be bioavailable or directly toxic to benthic

invertebrates. However, in sediment samples where the AVS molar concentrations are less than SEM molar concentrations, the SEM metals are not necessarily bioavailable or directly toxic to benthic invertebrates because other parameters, such as TOC, may reduce the bioavailability and toxicity of metals in the sediment. Sediments that are anoxic typically have greater AVS concentrations than well-aerated sediments. Metals included in the SEM analysis in 2010 consist of cadmium, chromium, copper, lead, nickel, silver, and zinc. The results of the AVS/SEM analyses are presented in Tables 4-2 through 4-9.

The concentrations of AVS are higher than SEM in most samples. After normalizing the AVS and SEM data to account for organic carbon (see Section 6), the data indicate that cadmium, chromium, copper, lead, nickel, silver, and zinc are not likely to be bioavailable in the seven samples collected from surface sediment and the >30–52 -inch interval. However, these metals may be bioavailable in sample SD-87 in the >6–18 inch interval, and in the >18–30 inch interval, they may be bioavailable in samples SD-87 and SD-89. The AVS/SEM data are discussed further in the ERA (Section 6).

4.4 *EX SITU* PORE WATER

Sediment pore water was collected to determine the equilibrium concentrations of COPC in pore water, both horizontally and vertically, near the MRC to determine whether chemicals in the sediment are bioavailable. These data will be used to evaluate the potential for risk posed to sediment dwelling organisms by estimating the steady state concentrations of COPC in pore water at areas with elevated COPC concentrations in sediment. Pore water was extracted at the laboratory by centrifugation from core-depths corresponding to the top three intervals sampled for chemical compounds in sediments (0–6 inches, >6–18 inches, and >18–30 inches). Pore water data are provided in Tables 4-12 through 4-17 and are grouped according to three depth intervals (0–6 inches, 6–18 inches, and 18–30 inches below the surface-water/sediment interface). Tables 4-12, 4-14, and 4-16 provide the pore water analytical results for individual samples. Tables 4-13, 4-15, and 4-17 provide a summary of the analytical data.

Pore water concentrations of PCBs, PAHs, and five of the 13 target metal analytes (i.e., arsenic, cadmium, copper, lead, and selenium) exceed surface water ecological screening values at all three intervals in one or more samples (Tables 4-13, 4-15, and 4-17), as follows:

- arsenic concentrations exceed the ecological screening value in six, five, and six of seven samples for the 0–6 inch, 6–18 inch, and 18–30 inch depth intervals, respectively

- cadmium concentrations exceed the ecological screening value in four, two, and one of seven samples for the 0–6 inch, 6–18 inch, and 18–30 inch depth intervals, respectively

- copper concentrations exceed the ecological screening value in one of seven samples at each depth interval

- lead concentrations in only one sample (from the 6–18 inch depth interval) exceed the ecological screening value

- selenium concentrations exceed the screening value in six of seven samples in each depth interval

- Aroclor-1260 concentrations exceed surface water ecological screening values in all pore water samples in which it was detected (i.e., three of three samples in the 0–6 inch and 6-18 inch depth ranges). Aroclor-1260 was not detected in the three samples for which it was analyzed in the 18–30 inch depth interval

- PAH concentrations exceed the ecological screening value in three, two, and two of three samples for the 0–6 inch, 6–18 inch, and 18–30 inch depth intervals, respectively

The significance of these exceedances will be discussed in the ERA (see Section 6). Human health criteria are presented, as points of reference only, in Tables 4-12, 4-14, and 4-16, as the ecological criteria are generally the more relevant criteria for the pore water data.

Tables 4-18, 4-19, and 4-20 provide pore water data for the seven *ex situ* pore water samples and sediment concentrations at the corresponding sampling locations and depths. These three tables were generated to visually evaluate whether any readily apparent relationships exist between concentrations in pore water and sediment. Generally, chemical concentrations in pore water do not appear correlated to those found in sediment.

4.5 *IN SITU* PORE WATER AND ASSOCIATED SURFACE WATER

The objective of *in situ* pore water and surface water sampling was to quantify sediment pore water and surface water concentrations of VOCs that may be due to the VOC groundwater plumes that may be discharging into adjacent surface-water bodies at the MRC. Several VOCs were detected in samples collected from three locations in Cow Pen Creek and five locations in Dark Head Cove. However, all VOC concentrations detected in pore water were less than federal

Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) (for human health), when available, and less than RSLs for tap water (also for human health) when an MCL was not available. Table 4-21 shows positive detections of chemicals from Cow Pen Creek. The concentration of carbon disulfide exceeds the ecological screening level (0.92 µg/L) in one sample (0.95 µg/L at CPC-PW-1) from Cow Pen Creek. Carbon disulfide was not detected at the two other locations in Cow Pen Creek. 2-Butanone was detected in all three samples from collected Cow Pen Creek, whereas other VOCs were only detected in one of the three samples. Chlorinated VOCs (1,1-dichloroethane, cis-1,2-dichloroethene, and vinyl chloride) were detected in sample CPC-PW-3. Summary statistics for samples from Cow Pen Creek are presented in Table 4-22.

No chemical concentrations reported for samples collected from Dark Head Cove exceed ecological screening levels (see Table 4-23). 2-Butanone and acetone were detected in all five samples from Dark Head Cove. Carbon disulfide was detected in three samples and cis-1,2-dichloroethene was detected in two samples. 4-Methyl-2-pentanone, methylene chloride, tetrachloroethene, toluene, and trichloroethene were detected in single samples from Dark Head Cove, at concentrations well below ecological screening levels. Summary statistics for samples from Dark Head Cove are presented in Table 4-24. Human health screening levels are presented, as points of reference only, in Tables 4-21 and 4-23, as the ecological screening levels are generally the more relevant levels for the pore water data.

No chlorinated VOCs were detected in any surface water sample co-located with the pore water VOC samples (Table 4-25). Very low concentrations of acetone and 2-butanone were detected in the co-located surface water samples. DHC-SW-VOC-1 had a 2-butanone concentration of 0.65 µg/L that was J-qualified, indicating an estimated result. Results in all other samples were reported as non-detected. Acetone was identified in seven surface water samples at concentrations ranging from 2.3–12 µg/L. All positive detections were J-qualified, two samples were reported as blank contaminated (CPC-SW-VOC-2, CPC-SW-VOC-3), and the remaining samples were reported as non-detected. Although VOCs were detected in pore water at low concentrations, the discharge of contaminated groundwater to surface water is limited due to the low groundwater flux to surface water, caused by the low permeability soil at the site and very slow groundwater flow rates.

4.6 FISH TISSUE

Table 4-26 presents a summary of the fish tissue samples collected and analyzed. Concentrations of detected chemicals in fish tissue for site and reference area samples are presented in Table 4-27 and displayed in Figures 4-20 through 4-23. Table 4-27 also displays ecological screening values, which are described in more detail in Section 6. Statistics for the site and reference fish-tissue data are summarized in Table 4-28. The *Fish Tissue Report* (Tetra Tech, 2011b) includes data tables of all analytical results and detection limits for non-detect results. Regional data for total PCBs by congener analysis are presented in Table 4-29, with sampling locations identified in Figure 4-24.

Regional data were provided by Maryland Department of the Environment (MDE) Science Services Administration and were not a result of the sampling effort. Figure 4-25 provides a visual comparison of site, reference areas, and regional fish tissue data. Figure 4-26 displays the range of total PCB congeners for various fish species in the Baltimore region. The following sections discuss the fish tissue analytical results, and compare site data to reference areas and regional data. Fish tissue analytical results are also compared to sediment data.

The fish collected ranged in size from 10.5–21.1 inches, which is greater than the minimum legal catch size of 10 inches for channel catfish and white catfish (Maryland DNR, 2011). Only channel catfish were collected from the site. White catfish were collected at two reference locations. The lengths of white catfish collected (12.3–15.6 inches) are within the size range of channel catfish collected at both site (10.5–21.1 inches) and reference locations (10.6-20.3 inches).

PCBs—PCBs were detected in fish samples collected from both site and reference areas. The lowest concentrations of PCBs in site data were detected in the sample from Cow Pen Creek (CPC-2-FS-CC1; 16.9-inch channel catfish containing 0.32% lipids in fillet), which had a total PCB concentration of 32 µg/kg. The maximum concentration of PCBs in site data was reported for a sample collected from Dark Head Cove, with a total PCB concentration of 1,630 µg/kg. This channel catfish (DHC-3-FS-CC1), which measured 20-inches, was the second longest fish collected at the site. The lipid content of this fish tissue sample (with a reported 2% lipid component) exceeds all others reported for the site samples.

Concentrations of total PCBs are significantly lower in all other fish tissue samples. For example, those collected at the confluence of the two water bodies had a maximum total PCB concentration of 478 µg/kg in the most downgradient site sample (DHC-5-FS-CC1). The longest (21 inches) and fattiest (3.8% lipids) site fish collected (DHC-4-FS-CC3) had a total PCB concentration of 236 µg/kg, indicating that size and lipid content do not directly correlate with the total PCB concentration in these fish samples. The average total PCB concentration at the site was determined with and without the sample with the maximum total PCB concentration, because of the range between the maximum concentration and the other site-samples' concentrations, as discussed in the following narrative.

The average total PCB concentration at the site is 375 µg/kg, however, as indicated above, the average is strongly influenced by the site maximum-detected total PCB concentration of 1,630 µg/kg. Total PCB concentrations for all other site samples range from 32–478 µg/kg, resulting in an average site concentration of 195 µg/kg when calculated without using the maximum total PCBs concentration. Given the relatively close proximity of site sampling locations, the average concentration is considered an accurate representation of the area in closer proximity to MRC.

Aroclor-1262 and Aroclor-1268, which were detected in the fish tissue samples, were not detected in sediment samples from the site. The results of sediment sampling near the MRC are discussed in detail in the *Additional Characterization and Sediment Sampling and Data Summary Report* (Tetra Tech, 2011a). Sediment samples collected at the site had detected concentrations of Aroclor-1260 in most samples. PCB-congener distributions most likely differ between the sediment and fish tissue samples because fish tend to accumulate congeners with higher chlorine content (BEST, 2001). Aroclor-1262 and Aroclor-1268 have a higher chlorine content than Aroclor-1260. The fish tissue residues are different from the original Aroclors deposited into the sediment (Cogliano, 1998) because congeners with higher chlorine content have bioaccumulated through the food chain.

Total PCB concentrations in the reference area samples range from 12.4–217 µg/kg. Maximum and minimum concentrations were detected in samples collected from Marshy Point, an area of little or no shoreline development. Total PCB concentrations for samples from reference areas with typical regional waterfront development (i.e., Bowleys Quarters and Middle River) are

generally similar to those reported for samples from Marshy Point, with concentrations ranging from 25.6–89 µg/kg (Table 4-28). A comparison of site data to the reference area concentrations indicates that PCBs are generally greater in site data than reference data. Concentrations of total PCBs in half of site fish-tissue samples are greater than the maximum concentration of total PCBs in the reference fish-tissue samples.

The State of Maryland routinely monitors PCB concentrations (as PCB congeners) in fish tissue samples collected from numerous locations in the general Chesapeake Bay area, in support of the fish advisories in effect for the area. Table 4-30 presents the State's consumption recommendations for fish advisories affecting Middle River. Fish tissue data for samples collected by the State from 2001–2008 are summarized in Table 4-29; sampling locations are identified in Figure 4-24. (The referenced data are courtesy of the MDE Science Services Administration.) Total PCB concentrations, as determined from PCB-congener analysis, in regional fish tissue data, presented by fish species, are displayed in Figure 4-25.

Regional data for channel catfish and white bullhead catfish were compared to site fish-tissue data. This comparison indicates that site data (maximum and average) are less than the maximum regional data concentration of 1,770 µg/kg and the average regional concentration of 1,525 µg/kg observed for channel catfish in the Patapsco River, an area with a long industrial history. Site data appear to be below regional data collected from the Back River and Middle River, with average concentrations of channel catfish species of 638 µg/kg and 785 µg/kg, respectively, observed in these regional areas. Both the Back River and Middle River are less industrialized than the Patapsco River area. Table 4-31 compares site data to Back River and Middle River data, as they are most representative of the region where site data were collected.

Regional data collected from the northernmost sampling area, Gunpowder River, are slightly lower than the site data, with a maximum total PCB concentration of 276 µg/kg and average concentration of 265 µg/kg reported in channel catfish for this regional area; no regional data are available for the white catfish species. Fish tissue data for channel catfish in Gunpowder River appear consistent with reference area fish-tissue data for the same species collected in Marshy Point, the northernmost reference area for this study. Total PCB concentrations in the Marshy Point reference area for the channel catfish are 172 µg/kg and 217 µg/kg (Figure 4-22).

Some uncertainty is associated in comparing site data to regional data because of different analytical methods used in the studies. Total PCB concentrations in the site data are a measure of Aroclors, which are commercial mixtures of PCB compounds, whereas the regional data are a measure of congeners, which are individual PCB compounds. In relation to congener specific analyses, Aroclor-specific analyses may sometimes underestimate PCB concentrations.

Site, reference areas, and regional fish-sample characteristics were reviewed to determine any correlation between the size of the fish (which indicates fish age), and PCB concentrations detected in the associated fish tissue. Figure 4-27 displays the total PCB concentrations for site, reference areas, and regional fish tissue samples relative to fish length. These data indicate no obvious direct correlation between fish length and total PCB concentration in fish tissue samples.

***Metals*—**Seven metals were detected in fish tissue samples collected from the site and reference areas. In general, metals concentrations in fish tissue are similar across the site and in the reference areas (Figures 4-22 and 4-23). Comparing site data to maximum reference-area concentrations indicates that copper, lead, mercury, selenium, and zinc are detected at greater concentrations in the site data than in the reference data. However, except for zinc, the site data are only greater than reference area concentrations at one site sampling-location. Zinc was greater than reference concentrations in four of eight site sampling-locations; concentrations are only slightly greater than the maximum reference-areas concentration (e.g., maximum site concentration of 9.8 mg/kg, as compared to the maximum reference concentration of 7.6 mg/kg). Average metals concentrations in site data and reference area data, as presented in Table 4-28, further support the similarity of the metals concentrations in these areas.

Several metals detected in sediment samples collected at the site were not detected in fish tissue samples. Metals not detected in fish tissue include arsenic, beryllium, cadmium, nickel, silver, and thallium. Cadmium is one example of a metal elevated in sediment samples collected near the MRC. In surface sediment (0–6 inches), the maximum concentration of cadmium is 296 mg/kg, with an average concentration of 10.9 mg/kg at the site. As detailed in the *Fish Tissue Report* (Tetra Tech, 2011), the sample specific quantitation limits (SQLs) (i.e., the non-detect results) reported for cadmium for site fish-tissue samples range from 0.019–0.024 mg/kg. As a point of comparison, the USEPA RSL published by USEPA Region III for cadmium for fish tissue consumption is 1.4 mg/kg. Consequently, the SQLs achieved for the site-specific fish-tissue

sampling are lower than the USEPA Region III RSL for fish tissue consumption. This indicates that cadmium levels in the site-specific fish tissue samples do not exceed conservative, risk based screening levels established by USEPA Region III.

Table 4-1A

Sediment Screening Levels
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Freshwater Sediment Ecological Screening Value (ESV)[1]	Marine Sediment ESV[1]	Adjusted USEPA Regional Screening Level (RSL) for Residential Soil[2]
Volatile Organic Compounds (ug/kg)			
1,3-DICHLOROBENZENE	4,430	**842**	NA
1,4-DICHLOROBENZENE	599	**460**	24,000 C
2-BUTANONE	**25,710**[3]	NA	28,000,000 N
ACETONE	**60,030**[3]	167,230[3]	61,000,000 N
CARBON DISULFIDE	**0.851**	NA	820,000 N
CHLOROBENZENE	**8.42**	162	290,000 N
CHLOROMETHANE	17,800[3]	**8,740**[3]	120,000 N
CIS-1,2-DICHLOROETHENE	**1,050**[4]	NA	780,000 N
ISOPROPYLBENZENE	**86**	NA	2,100,000 N
METHYL TERT-BUTYL ETHER	NA	NA	430,000 C
NAPHTHALENE	176	**34.6**	36,000 C
SEC-BUTYLBENZENE	**880**[3]	NA	NA
TERT-BUTYLBENZENE	**1,210**[3]	NA	NA
TOLUENE	2,880[3]	**1090**	5,000,000 N
Semivolatile Organic Compounds (ug/kg)			
1,2-DICHLOROBENZENE	**16.5**	989	1,900,000 N
1,3-DICHLOROBENZENE	4,430	**842**	NA
1,4-DICHLOROBENZENE	599	**460**	24,000 C
1-METHYLNAPHTHALENE	**20.2**[5]	**20.2**[5]	220,000 C
2-METHYLNAPHTHALENE	**20.2**	**20.2**	310,000 N
ACENAPHTHENE	**6.7**	6.71	3,400,000 N
ACENAPHTHYLENE	5.9	**5.87**	3,400,000 N[6]
ANTHRACENE	57.2	**46.9**	17,000,000 N
BAP EQUIVALENT-1/2 NON-DETECTS	NA	NA	150 C
BAP EQUIVALENT-POSITIVE RESULTS	NA	NA	150 C
BENZO(A)ANTHRACENE	108	**74.8**	1,500 C
BENZO(A)PYRENE	150	**88.8**	150 C
BENZO(B)FLUORANTHENE	NA	**130**[14]	1,500 C
BENZO(G,H,I)PERYLENE	170	**67**[14]	1,700,000 N[7]
BENZO(K)FLUORANTHENE	240	**70**[14]	15,000 C
BIS(2-ETHYLHEXYL)PHTHALATE	**180**	182	350,000 C
BUTYL BENZYL PHTHALATE	**10,900**	16,800	2,600,000 C
CARBAZOLE	NA	NA	NA
CHRYSENE	166	**108**	150,000 C
DIBENZO(A,H)ANTHRACENE	33	**6.22**	150 C
DIBENZOFURAN	**415**	7300	78,000 N
FLUORANTHENE	423	**113**	2,300,000 N
FLUORENE	77.4	**21.2**	2,300,000 N
INDENO(1,2,3-CD)PYRENE	**17**	68[14]	1,500 C

Table 4-1A

Sediment Screening Levels
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Freshwater Sediment Ecological Screening Value (ESV)[1]	Marine Sediment ESV[1]	Adjusted USEPA Regional Screening Level (RSL) for Residential Soil[2]
Semivolatile Organic Compounds (Continued) (ug/kg)			
NAPHTHALENE	176	**34.6**	36,000 C
PHENANTHRENE	204	**86.7**	1,700,000 N[7]
PYRENE	195	**153**	1,700,000 N
TOTAL PAHS	**1,610**	2,900	NA
PCBs (ug/kg)			
AROCLOR-1248	59.8[8]	**40**[8]	2200 C
AROCLOR-1254	**59.8**[8]	63.3	1,100 N[9]
AROCLOR-1260	59.8[8]	**40**[8]	2,200 C
TOTAL AROCLOR	59.8	**40**	2,200 C[10]
Inorganics (mg/kg)			
ANTIMONY	2	**0.63**[14]	31 N
ARSENIC	9.8	**7.24**	3.9 C
BARIUM	NA	**130**[14]	15,000 N
BERYLLIUM	NA	NA	160 N
CADMIUM	0.99	**0.68**	70 N
CHROMIUM	**43.4**	52.3	120,000 N[11]
COBALT	50	**10**[14]	23 N
COPPER	31.6	**18.7**	3,100 N
HEXAVALENT CHROMIUM	**43.4**	NA	2.9 C[12]
IRON	**20000**	220,000[14]	55000 N
LEAD	35.8	**30.2**	400
MANGANESE	**460**	NA	1800 N
MERCURY	0.18	**0.13**	23 N[13]
MOLYBDENUM	NA	NA	390 N
NICKEL	22.7	**15.9**	1,500 N
SELENIUM	2	**1**[14]	390 N
SILVER	1	**0.73**	390 N
THALLIUM	NA	NA	NA
VANADIUM	NA	**57**[14]	390 N
ZINC	**121**	124	23,000 N
Miscellaneous Organics (ug/kg)			
DIBUTYLTIN	NA	NA	NA
Miscellaneous Parameters (%)			
PERCENT SOLIDS	NA	NA	NA
Miscellaneous Parameters (mg/kg)			
TOTAL ORGANIC CARBON	NA	NA	NA
AVS/SEM (UMOLES/G)			
ACID VOLATILE SULFIDE	NA	NA	NA
CADMIUM	NA	NA	NA
CHROMIUM	NA	NA	NA

Table 4-1A

Sediment Screening Levels
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Freshwater Sediment Ecological Screening Value (ESV)[(1)]	Marine Sediment ESV[(1)]	Adjusted USEPA Regional Screening Level (RSL) for Residential Soil[(2)]
AVS/SEM (Continued) (UMOLES/G)			
COPPER	NA	NA	NA
LEAD	NA	NA	NA
NICKEL	NA	NA	NA
SILVER	NA	NA	NA
ZINC	NA	NA	NA

Notes:
1 - Unless otherwise noted, values are USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for freshwater sediment (USEPA, August 2006) and marine sediment (USEPA, July 2006). The shaded value indicates the lower of the ESVs, which is used as the screening level.
2 - Screening criteria for sediment are based on USEPA Regional Screening Levels (RSLs) for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment, the screening criteria presented in the table for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.

3 - TCEQ Ecological Benchmarks for Sediment. January 2006.
4 - Value for trans-1,2-dichloroethene used as a surrogate for cis-1,2-dichloroethene.
5 - Value for 2-methylnaphthalene used as a surrogate for 1-methylnaphthalene.
6 - The value for acenapthene is used as a surrogate for acenaphthylene.
7 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
8 - Value for Total PCBs used as a surrogate for Aroclor-1248, Aroclor-1254, and Aroclor-1260.
9 - One tenth the noncarcinogenic value is less than the carcinogenic value; the noncarcinogenic value is presented.
10 - The value is for high risk PCBs.
11 - The value is for trivalent chromium.
12 - The value is for hexavalent chromium.
13 - The value is for mercuric chloride (and other mercury salts).
14 - NOAA Quick Reference Tables (Buchman, 2008).

Definitions:
C = Carcinogenic
N = Non-carcinogenic
NA = Not applicable or not available

Table 4-1B

Pore Water and Surface Water Screening Levels
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Freshwater Ecological Screening Value (ESV)[1]	Marine Surface Water ESV[1]	Adjusted USEPA Regional Screening Level (RSL) for Tap Water[2]	USEPA Maximum Contaminant Level (MCL)[3]
Volatiles (ug/L)				
1,1-DICHLOROETHANE	**47**	NA	24 C	NA
2-BUTANONE	**14000**	NA	7100 N	NA
4-METHYL-2-PENTANONE	**170**	123000	2000 N	NA
ACETONE	**1500**	564000	22000 N	NA
CARBON DISULFIDE	**0.92**	NA	1000 N	NA
CIS-1,2-DICHLOROETHENE	**590[4]**	NA	73 N	70
METHYLENE CHLORIDE	**98.1**	2560	48 C	5
TETRACHLOROETHENE	111	**45**	1.1 C	5
TOLUENE	**2**	215	2300 N	1000
TRICHLOROETHENE	**21**	1940	20 C	5
VINYL CHLORIDE	**930**	NA	0.16 C	2
Polycyclic Aromatic Hydrocarbons (ug/L)				
ACENAPHTHENE	**5.8**	6.6	2,200 N	NA
ANTHRACENE	**0.012**	0.18	11,000 N	NA
BENZO(A)ANTHRACENE	**0.018**	2.227[9]	0.29 C	NA
BENZO(A)PYRENE	**0.015**	0.9573[9]	0.029 C	0.2
BENZO(B)FLUORANTHENE	**0.6774[9]**	**0.6774[9]**	0.29 C	NA
BENZO(G,H,I)PERYLENE	**0.4391[9]**	**0.4391[9]**	1,100 N[5]	NA
BENZO(K)FLUORANTHENE	**0.6415[9]**	**0.6415[9]**	2.9 C	NA
CHRYSENE	**2.042[9]**	**2.042[9]**	29 C	NA
FLUORANTHENE	**0.04**	1.6	1,500 N	NA
FLUORENE	3	**2.5**	1,500 N	NA
INDENO(1,2,3-CD)PYRENE	**0.275[9]**	**0.275[9]**	0.29 C	NA
NAPHTHALENE	**1.1**	1.4	1.4 C	NA
PHENANTHRENE	**0.4**	1.5	1,100 N[5]	NA
PYRENE	**0.025**	0.24	1,100 N	NA
PCBs (ug/L)				
AROCLOR-1260	**0.000074[6]**	0.03[10]	0.34 C	0.5
Inorganics (ug/L)				
ANTIMONY	**30**	500	15 N	6
ARSENIC	**5**	12.5	0.45 C	10
BARIUM	**4**	200[10]	7,300 N	2000
CADMIUM	0.25	**0.12**	18 N	5
CHROMIUM	85[7]	**57.5[7]**	55,000 N[8]	100
COBALT	23	**1[10]**	11 N	NA
COPPER	9	**3.1**	1,500 N	1300
IRON	300	**50[10]**	26,000 N	NA
LEAD	**2.5**	8.1	NA	15
MANGANESE	120	**100[10]**	880	NA
MOLYBDENUM	73	**23[10]**	180 N	NA
NICKEL	52	**8.2**	730 N	NA
SELENIUM	**1**	71	180 N	50
VANADIUM	**20**	50[10]	180 N	NA
ZINC	120	**81**	11,000 N	NA
Miscellaneous Parameters (mg/L)				
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA
HARDNESS	NA	NA	NA	NA
Miscellaneous Parameters (S.U.)				
PH	NA	NA	NA	NA

Table 4-1B

Pore Water and Surface Water Screening Levels
Lockheed Martin, Middle River Complex
Middle River, Maryland

Notes:
1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for freshwater and marine surface water (USEPA, July 2006). The shaded value indicates the lower of the ESVs, which is used as the screening level.
2 - Screening criteria for pore water/surface water are based on USEPA Regional Screening Levels (RSLs) for tap water (November, 2010). To account for the anticipated reduced exposure to pore water/surface water, the screening criteria presented in the table for pore water/surface water are 10 times those typically used for tap water (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the pore water/surface water are set at 10 times the RSL for tap water. The screening criteria for non-carcinogens in the pore water/surface water are set equal to the RSL for tap water.
3 - 2009 Edition of the Drinking Water Standards and Health Advisories (USEPA, October 2009).
4 - The value for 1,2-dichloroethene is used as a surrogate for cis-1,2-dichloroethene.
5 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
6 - The value for total PCBs is used as a surrogate for Aroclor-1260.
7 - The value is for total chromium.
8 - The value is for trivalent chromium.
9 - USEPA Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures (USEPA, November 2003).
10 - NOAA Quick Reference Tables (Buchman, 2008).

Definitions:
C = Carcinogenic
N = Non-carcinogenic
NA = Not applicable or not available

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		BOWLEY	DOWNSTREAM	MARSHY_POINT	MRC-SW/SD-1
SAMPLE ID				BOWLEYS_QUARTERS-SS	MIDDLE_RIVER_DOWNSTREAM-	MARSHY_POINT-SS	MRC-SED-1
SAMPLE DATE				20100821	20100820	20100821	20101014
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				BACKGROUND	OFFSITE	BACKGROUND	UPGRADIENT STORMWATER
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	5.7 UJ	**11 J**	6 UJ	NA
ACENAPHTHYLENE	5.87	3400000	N[7]	6.7 UJ	**23 J**	7.2 UJ	NA
ANTHRACENE	46.9	17000000	N	29 J	31 J	18 J	NA
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	78.3	99.9	12.5	NA
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	75.0	97.8	5.4	NA
BENZO(A)ANTHRACENE	74.8	1500	C	53 J	67 J	24 J	NA
BENZO(A)PYRENE	88.8	150	C	49 J	64 J	6.3 UJ	NA
BENZO(B)FLUORANTHENE	130 [15]	1500	C	96 J	**150 J**	30 J	NA
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**93 J**	**120 J**	6.3 UJ	NA
BENZO(K)FLUORANTHENE	70 [15]	15000	C	12 UJ	7.6 UJ	13 UJ	NA
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	68 J	80 J	32 J	NA
DIBENZO(A,H)ANTHRACENE	6.22	150	C	6.5 UJ	4.2 UJ	7 UJ	NA
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**140 J**	**130 J**	67 J	NA
FLUORENE	21.2	2300000	N	**23 J**	12 J	8.3 UJ	NA
INDENO(1,2,3-CD)PYRENE	17	1500	C	**110 J**	**120 J**	6.5 UJ	NA
NAPHTHALENE	34.6	36000	C	**51 J**	**36 J**	**50 J**	NA
PHENANTHRENE	86.7	1700000	N[8]	82 J	65 J	54 J	NA
PYRENE	153	1700000	N	100 J	140 J	49 J	NA
TOTAL PAHS	1610	NA		894	1049	324	NA
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	2.8 UJ	3 UJ	3 UJ	NA
AROCLOR-1254	59.8 [9]	1100	N[10]	4.2 UJ	4.5 UJ	4.5 UJ	NA
AROCLOR-1260	40 [9]	2200	C	4.2 UJ	4.5 UJ	4.5 UJ	NA
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	0 U	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		BOWLEY BOWLEYS_QUARTERS-SS 20100821 NORMAL SD BACKGROUND SS 0 6	DOWNSTREAM MIDDLE_RIVER_DOWNSTREAM- 20100820 NORMAL SD OFFSITE SS 0 6	MARSHY_POINT MARSHY_POINT-SS 20100821 NORMAL SD BACKGROUND SS 0 6	MRC-SW/SD-1 MRC-SED-1 20101014 NORMAL SD UPGRADIENT STORMWATER SS 0 6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.48 J	**2.1 J**	0.43 J	**1.9**
ARSENIC	7.24	3.9	C	**13.5 J**	**14.1 J**	**11.2 J**	2.9
BARIUM	130 [15]	15000	N	NA	NA	NA	57.5
BERYLLIUM	NA	160	N	1.6 J	1.8 J	1.7 J	0.26
CADMIUM	0.68	70	N	**0.95 J**	**2.5 J**	**0.84 J**	0.12 J
CHROMIUM	43.4	120000	N[12]	39.3 J	**119 J**	36.3 J	**122**
COBALT	10 [15]	23	N	NA	NA	NA	4.8
COPPER	18.7	3100	N	**110 J**	**224 J**	**67.1 J**	**255**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	**33700**
LEAD	30.2	400		**104 J**	**173 J**	**67.1 J**	5.8
MANGANESE	460	1800	N	NA	NA	NA	**518**
MERCURY	0.13	23	N[14]	**0.43 J**	**0.72 J**	**0.25 J**	0.034 J
MOLYBDENUM	NA	390	N	NA	NA	NA	4
NICKEL	15.9	1500	N	**44.2 J**	**41.5 J**	**46.8 J**	**32.3**
SELENIUM	1 [15]	390	N	**2 J**	**2 J**	**2.1 J**	0.26 J
SILVER	0.73	390	N	0.59 J	**1.4 J**	0.47 J	0.057 J
THALLIUM	NA	NA		0.24 J	0.25 J	0.27 J	0.023 B
VANADIUM	57 [15]	390	N	NA	NA	NA	13.4
ZINC	121	23000	N	**327 J**	**372 J**	**248 J**	53.4
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		35200 J	30800 J	34300 J	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-1	SD-78	SD-2	SD-3
SAMPLE ID				SD-1-031705	SD-78-SS	SD-2-031805	SD-3-031705
SAMPLE DATE				20050317	20081117	20050318	20050317
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				BACKGROUND	BACKGROUND	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		6.1 U	NA	12 U	5.9 U
1,4-DICHLOROBENZENE	460	24000	C	6.1 U	NA	12 U	5.9 U
2-BUTANONE	25,710 [4]	28000000	N	12 U	NA	24 U	12 U
ACETONE	60,030 [4]	61000000	N	12 J	NA	19 B	7.1 J
CARBON DISULFIDE	0.851	820000	N	6.1 U	NA	12 U	5.9 U
CHLOROBENZENE	8.42	290000	N	6.1 U	NA	12 U	5.9 U
CHLOROMETHANE	8,740 [4]	120000	N	12 U	NA	24 U	12 U
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	6.1 U	NA	12 U	5.9 U
ISOPROPYLBENZENE	86	2100000	N	6.1 U	NA	12 U	5.9 U
METHYL TERT-BUTYL ETHER	NA	430000	C	6.1 U	NA	12 U	5.9 U
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	6.1 U	NA	12 U	5.9 U
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	410 U	NA	800 U	390 U
1,3-DICHLOROBENZENE	842	NA		410 U	NA	800 U	390 U
1,4-DICHLOROBENZENE	460	24000	C	410 U	NA	800 U	390 U
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	1700 U	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	**30 J**	1700 U	800 U	390 U
ACENAPHTHENE	6.7	3400000	N	410 U	1700 U	800 U	390 U
ACENAPHTHYLENE	5.87	3400000	N[7]	**180 J**	1700 U	800 U	390 U
ANTHRACENE	46.9	17000000	N	**140 J**	**490 J**	800 U	**100 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**911**	**1973**	**616**	**736**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**706**	**188**	**172**	**541**
BENZO(A)ANTHRACENE	74.8	1500	C	**650**	1700 U	**140 J**	**410**
BENZO(A)PYRENE	88.8	150	C	**530**	1700 U	**140 J**	**420**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**800**	**1200 J**	**180 J**	**530**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**320 J**	1700 U	800 U	**300 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**190 J**	**1100 J**	800 U	**170 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	**730 J**	NA	**290 J**	**370 J**
BUTYL BENZYL PHTHALATE	10900	2600000	C	2500	NA	800 U	390 U
CARBAZOLE	NA	NA		410 U	NA	800 U	390 U
CHRYSENE	108	150000	C	**730**	**1600 J**	**190 J**	**450**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	410 U	1700 U	800 U	390 U
DIBENZOFURAN	415	78000	N	410 U	NA	800 U	390 U
FLUORANTHENE	113	2300000	N	**1000**	**3200**	**310 J**	**750**
FLUORENE	21.2	2300000	N	**54 J**	**210 J**	800 U	390 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**280 J**	**550 J**	800 U	**250 J**
NAPHTHALENE	34.6	36000	C	410 U	1700 U	800 U	390 U
PHENANTHRENE	86.7	1700000	N[8]	**550**	**2800**	**100 J**	**450**
PYRENE	153	1700000	N	**1200**	**4200 K**	**270 J**	**880**
TOTAL PAHS	1610	NA		**6654**	**15350**	1330	**4710**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	41 U	21 U	80 U	39 U
AROCLOR-1254	59.8 [9]	1100	N[10]	41 U	21 U	80 U	39 U
AROCLOR-1260	40 [9]	2200	C	41 U	21 U	**160**	**53**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	**160**	**53**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-1	SD-78	SD-2	SD-3
SAMPLE ID				SD-1-031705	SD-78-SS	SD-2-031805	SD-3-031705
SAMPLE DATE				20050317	20081117	20050318	20050317
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				BACKGROUND	BACKGROUND	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.54 B	0.12 U	1.1 B	0.94 B
ARSENIC	7.24	3.9	C	2.6	2.1	**5.7 K**	2.1
BARIUM	130 [15]	15000	N	NA	14.8 J	NA	NA
BERYLLIUM	NA	160	N	1.2	0.79 J	1.1 J	1
CADMIUM	0.68	70	N	0.47	0.072 B	**7.9 K**	0.42
CHROMIUM	43.4	120000	N[12]	**90.9**	13.3 J	**138**	**103**
COBALT	10 [15]	23	N	NA	6.3	NA	NA
COPPER	18.7	3100	N	12	7 J	**113**	14.9
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	0.49 U	NA	0.87 U	0.44 U
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**151**	5.2 J	**101**	**90.2**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.71**	0.046	**0.34**	0.016 U
MOLYBDENUM	NA	390	N	NA	0.69	NA	NA
NICKEL	15.9	1500	N	**69.4**	9	**23.2**	**51.5**
SELENIUM	1 [15]	390	N	0.48 U	0.8	**1.9**	**1.6 K**
SILVER	0.73	390	N	0.097 U	0.11 B	**1.3**	0.092 U
THALLIUM	NA	NA		0.29 U	0.21 U	0.56 U	0.28 U
VANADIUM	57 [15]	390	N	NA	14.2 J	NA	NA
ZINC	121	23000	N	80	30.8	**230**	54.7
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		81	80	42	85
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-4	SD-5	SD-6	SD-7
SAMPLE ID				SD-4-031705	SD-5-031805	SD-6-031805	SD-7-031805
SAMPLE DATE				20050317	20050318	20050318	20050318
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		6.9 U	10 U	12 U	10 U
1,4-DICHLOROBENZENE	460	24000	C	6.9 U	10 U	12 U	10 U
2-BUTANONE	25,710 [4]	28000000	N	14 U	20 U	24 U	21 U
ACETONE	60,030 [4]	61000000	N	14 U	15 B	24 U	91 B
CARBON DISULFIDE	0.851	820000	N	6.9 U	10 U	12 U	10 U
CHLOROBENZENE	8.42	290000	N	6.9 U	10 U	12 U	10 U
CHLOROMETHANE	8,740 [4]	120000	N	14 U	20 U	24 U	21 U
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	6.9 U	10 U	12 U	10 U
ISOPROPYLBENZENE	86	2100000	N	6.9 U	10 U	12 U	10 U
METHYL TERT-BUTYL ETHER	NA	430000	C	6.9 U	10 U	12 U	10 U
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	6.9 U	10 U	12 U	10 U
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	460 U	680 U	790 U	680 U
1,3-DICHLOROBENZENE	842	NA		460 U	680 U	790 U	680 U
1,4-DICHLOROBENZENE	460	24000	C	460 U	680 U	790 U	680 U
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	**34 J**	680 U	790 U	680 U
ACENAPHTHENE	6.7	3400000	N	460 U	680 U	790 U	680 U
ACENAPHTHYLENE	5.87	3400000	N[7]	**55 J**	680 U	790 U	680 U
ANTHRACENE	46.9	17000000	N	**200 J**	**290 J**	790 U	680 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1043**	**1678**	**970**	**537**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**813**	**1338**	**575**	**194**
BENZO(A)ANTHRACENE	74.8	1500	C	**750**	**1200**	**440 J**	**140 J**
BENZO(A)PYRENE	88.8	150	C	**630**	**1000**	**450 J**	**150 J**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**710**	**1500**	**490 J**	**200 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**390 J**	**670 J**	**370 J**	**110 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**270 J**	**550 J**	**270 J**	680 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	**400 J**	**1500 J**	**1200 J**	**430 J**
BUTYL BENZYL PHTHALATE	10900	2600000	C	460 U	680 U	790 U	680 U
CARBAZOLE	NA	NA		460 U	190 J	790 U	680 U
CHRYSENE	108	150000	C	**830**	**1300**	**410 J**	**140 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	460 U	680 U	790 U	680 U
DIBENZOFURAN	415	78000	N	460 U	680 U	790 U	680 U
FLUORANTHENE	113	2300000	N	**1400**	**2300**	**740 J**	**250 J**
FLUORENE	21.2	2300000	N	**130 J**	680 U	790 U	680 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**330 J**	**610 J**	**290 J**	**95 J**
NAPHTHALENE	34.6	36000	C	460 U	680 U	790 U	680 U
PHENANTHRENE	86.7	1700000	N[8]	**1400**	**1300**	**330 J**	**130 J**
PYRENE	153	1700000	N	**1800**	**2200**	**870**	**270 J**
TOTAL PAHS	1610	NA		**8929**	**12920**	**4660**	1485
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	46 U	68 U	79 U	68 U
AROCLOR-1254	59.8 [9]	1100	N[10]	46 U	68 U	79 U	68 U
AROCLOR-1260	40 [9]	2200	C	46 U	**420 J**	**540 J**	**110**
TOTAL AROCLOR	40	2200	C[11]	0 U	**420**	**540**	**110**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-4	SD-5	SD-6	SD-7
SAMPLE ID				SD-4-031705	SD-5-031805	SD-6-031805	SD-7-031805
SAMPLE DATE				20050317	20050318	20050318	20050318
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	**4.6**	1.9 B	1.7 B	0.47 B
ARSENIC	7.24	3.9	C	3.3	**4.6**	**4.8 K**	**4.3 K**
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	0.77	1 J	1.3 J	1.1 J
CADMIUM	0.68	70	N	**20.5**	**20.9 K**	**34.8 K**	**5.6 K**
CHROMIUM	43.4	120000	N[12]	**113**	**203**	**391**	**76.8**
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	**25**	**61.2**	**84.8**	**41.2**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	0.53 U	0.72 U	0.87 U	1.2
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**140**	**107**	**145**	**64.1**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	0.027	0.1	**0.32**	0.084
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	**17.2**	**30**	**27.3**	12.3
SELENIUM	1 [15]	390	N	1 U	0.87	1	0.9
SILVER	0.73	390	N	0.21 U	**0.77**	**2.6**	0.46
THALLIUM	NA	NA		0.62 UL	0.42 U	0.51 U	0.46 U
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**276**	**331**	**425**	**138**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		72	49	44	49
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-8	SD-9	SD-10	SD-11
SAMPLE ID					SD-8-031805	SD-9-031805	SD-10-031805	SD-11-031805
SAMPLE DATE					20050318	20050318	20050318	20050318
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		10 U	16 U	14 U	8.9 U
1,4-DICHLOROBENZENE	460		24000	C	10 U	16 U	14 U	8.9 U
2-BUTANONE	25,710	[4]	28000000	N	20 U	32 U	29 U	18 U
ACETONE	60,030	[4]	61000000	N	96 B	160 B	28 B	18 U
CARBON DISULFIDE	0.851		820000	N	10 U	**9.1 J**	14 U	8.9 U
CHLOROBENZENE	8.42		290000	N	10 U	16 U	14 U	8.9 U
CHLOROMETHANE	8,740	[4]	120000	N	20 U	32 U	29 U	18 U
CIS-1,2-DICHLOROETHENE	1,050	[5]	780000	N	10 U	16 U	14 U	8.9 U
ISOPROPYLBENZENE	86		2100000	N	10 U	16 U	14 U	8.9 U
METHYL TERT-BUTYL ETHER	NA		430000	C	10 U	16 U	14 U	8.9 U
NAPHTHALENE	34.6		36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880	[4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210	[4]	NA		NA	NA	NA	NA
TOLUENE	1090		5000000	N	10 U	16 U	14 U	8.9 U
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	670 U	1100 U	960 U	600 U
1,3-DICHLOROBENZENE	842		NA		670 U	1100 U	960 U	600 U
1,4-DICHLOROBENZENE	460		24000	C	670 U	1100 U	960 U	600 U
1-METHYLNAPHTHALENE	20.2	[6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2		310000	N	670 U	1100 U	960 U	600 U
ACENAPHTHENE	6.7		3400000	N	670 U	1100 U	**190 J**	600 U
ACENAPHTHYLENE	5.87		3400000	N[7]	**63 J**	1100 U	960 U	600 U
ANTHRACENE	46.9		17000000	N	**120 J**	**180 J**	**500 J**	600 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	**1005**	**1270**	**1919**	600 U
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	**670**	**1270**	**1439**	600 U
BENZO(A)ANTHRACENE	74.8		1500	C	**580 J**	**790 J**	**1300**	600 U
BENZO(A)PYRENE	88.8		150	C	**500 J**	**810 J**	**1100**	600 U
BENZO(B)FLUORANTHENE	130	[15]	1500	C	**800**	**1600**	**1400**	600 U
BENZO(G,H,I)PERYLENE	67	[15]	1700000	N[8]	**310 J**	**670 J**	**740 J**	600 U
BENZO(K)FLUORANTHENE	70	[15]	15000	C	**290 J**	**400 J**	**490 J**	600 U
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	180 J	**310 J**	**280 J**	78 J
BUTYL BENZYL PHTHALATE	10900		2600000	C	670 U	1100 U	960 U	600 U
CARBAZOLE	NA		NA		670 U	1100 U	250 J	600 U
CHRYSENE	108		150000	C	**710**	**1100**	**1300**	600 U
DIBENZO(A,H)ANTHRACENE	6.22		150	C	670 U	**160 J**	960 U	600 U
DIBENZOFURAN	415		78000	N	670 U	1100 U	960 U	600 U
FLUORANTHENE	113		2300000	N	**1500**	**2300**	**2700**	600 U
FLUORENE	21.2		2300000	N	670 U	1100 U	**250 J**	600 U
INDENO(1,2,3-CD)PYRENE	17		1500	C	**280 J**	**560 J**	**630 J**	600 U
NAPHTHALENE	34.6		36000	C	670 U	1100 U	960 U	600 U
PHENANTHRENE	86.7		1700000	N[8]	**410 J**	**810 J**	**2300**	600 U
PYRENE	153		1700000	N	**1100**	**1700**	**2700**	600 U
TOTAL PAHS	1610		NA		**6663**	**11080**	**15600**	0 U
PCBS (UG/KG)								
AROCLOR-1248	40	[9]	2200	C	67 U	11000 U	190 U	300 U
AROCLOR-1254	59.8	[9]	1100	N[10]	67 U	11000 U	190 U	300 U
AROCLOR-1260	40	[9]	2200	C	**370**	**54000**	**1300**	**1400**
TOTAL AROCLOR	40		2200	C[11]	**370**	**54000**	**1300**	**1400**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-8	SD-9	SD-10	SD-11
SAMPLE ID				SD-8-031805	SD-9-031805	SD-10-031805	SD-11-031805
SAMPLE DATE				20050318	20050318	20050318	20050318
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	1.1 B	2.1 B	1.9 B	1 B
ARSENIC	7.24	3.9	C	**5.9**	**11.6**	**9.4**	**5.3**
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	1.2 J	1.7 J	2.1 J	1 J
CADMIUM	0.68	70	N	**5 K**	**6.1 K**	**4.9 K**	**3.5 K**
CHROMIUM	43.4	120000	N[12]	**89.1**	**103**	**87.1**	**58.1**
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	**82.6**	**159**	**119**	**64.3**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	0.74 U	1.3 U	1.2 U	0.74
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**67.8**	**103**	**88.9**	**59.6**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.17**	**0.3**	**0.27**	**0.21**
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	**19.6**	**39**	**33**	**16.5**
SELENIUM	1 [15]	390	N	0.85	**2.1**	**2.1**	**1.4**
SILVER	0.73	390	N	**0.79**	**1.2**	**1.4**	**2.9**
THALLIUM	NA	NA		0.46 B	0.69 U	0.67 U	0.44 U
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**184**	**401**	**339**	**199**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		50	32	35	56
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-12	SD-13	SD-14	SD-15
SAMPLE ID					SD-12-031805	SD-13-SS	SD-14-SS	SD-15-SS
SAMPLE DATE					20050318	20051020	20051020	20051021
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		17 U	20 UJ	6 U	19 UJ
1,4-DICHLOROBENZENE	460		24000	C	17 U	20 UJ	6 U	19 UJ
2-BUTANONE	25,710	[4]	28000000	N	33 U	23 J	32 UR	95 UR
ACETONE	60,030	[4]	61000000	N	110 B	130 B	32 UR	95 B
CARBON DISULFIDE	0.851		820000	N	17 U	20 UJ	6 U	19 UJ
CHLOROBENZENE	8.42		290000	N	17 U	20 UJ	6 U	19 UJ
CHLOROMETHANE	8,740	[4]	120000	N	33 U	39 UJ	13 U	38 UJ
CIS-1,2-DICHLOROETHENE	1,050	[5]	780000	N	17 U	20 UJ	6 U	19 UJ
ISOPROPYLBENZENE	86		2100000	N	17 U	20 UJ	6 U	19 UJ
METHYL TERT-BUTYL ETHER	NA		430000	C	17 U	8 J	13 U	6 J
NAPHTHALENE	34.6		36000	C	NA	7 J	6 U	19 UJ
SEC-BUTYLBENZENE	880	[4]	NA		NA	20 UJ	6 U	19 UJ
TERT-BUTYLBENZENE	1,210	[4]	NA		NA	20 UJ	6 U	19 UJ
TOLUENE	1090		5000000	N	17 U	20 UJ	6 U	4 J
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	1100 U	1300 UJ	430 U	1300 UJ
1,3-DICHLOROBENZENE	842		NA		1100 U	1300 UJ	430 U	1300 UJ
1,4-DICHLOROBENZENE	460		24000	C	1100 U	230 J	430 U	1300 UJ
1-METHYLNAPHTHALENE	20.2	[6]	220000	C	NA	1300 UJ	430 U	1300 UJ
2-METHYLNAPHTHALENE	20.2		310000	N	1100 U	1300 UJ	430 U	1300 UJ
ACENAPHTHENE	6.7		3400000	N	1100 U	1300 UJ	430 U	1300 UJ
ACENAPHTHYLENE	5.87		3400000	N[7]	1100 U	1300 UJ	430 U	1300 UJ
ANTHRACENE	46.9		17000000	N	1100 U	**310 J**	**200 J**	1300 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	**1993**	**3941**	**1308**	**2223**
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	**1443**	**3291**	**1093**	**1573**
BENZO(A)ANTHRACENE	74.8		1500	C	**1100 J**	**2000 J**	**1100**	**1000 J**
BENZO(A)PYRENE	88.8		150	C	**1100 J**	**2500 J**	**790**	**1200 J**
BENZO(B)FLUORANTHENE	130	[15]	1500	C	**1600**	**3700 J**	**1400**	**1800 J**
BENZO(G,H,I)PERYLENE	67	[15]	1700000	N[8]	**760 J**	**2000 J**	**360 J**	**730 J**
BENZO(K)FLUORANTHENE	70	[15]	15000	C	**530 J**	**1800 J**	**560**	**750 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	**430 J**	**1400 J**	**210 J**	**820 J**
BUTYL BENZYL PHTHALATE	10900		2600000	C	160 J	1300 UJ	430 U	1300 UJ
CARBAZOLE	NA		NA		1100 U	1300 UJ	130 J	1300 UJ
CHRYSENE	108		150000	C	**1200**	**3000 J**	**1200**	**1400 J**
DIBENZO(A,H)ANTHRACENE	6.22		150	C	1100 U	1300 UJ	430 U	1300 UJ
DIBENZOFURAN	415		78000	N	1100 U	1300 UJ	430 U	1300 UJ
FLUORANTHENE	113		2300000	N	**2000**	**4200 J**	**2400**	**2000 J**
FLUORENE	21.2		2300000	N	1100 U	1300 UJ	**81 J**	1300 UJ
INDENO(1,2,3-CD)PYRENE	17		1500	C	**660 J**	**2000 J**	**460**	**840 J**
NAPHTHALENE	34.6		36000	C	1100 U	**250 J**	430 U	1300 UJ
PHENANTHRENE	86.7		1700000	N[8]	**550 J**	**1500 J**	**830**	**940 J**
PYRENE	153		1700000	N	**1900**	**6800 J**	**2400**	**3900 J**
TOTAL PAHS	1610		NA		**11400**	**30060**	**11781**	**14560**
PCBS (UG/KG)								
AROCLOR-1248	40	[9]	2200	C	220 U	66 UJ	22 U	68 UJ
AROCLOR-1254	59.8	[9]	1100	N[10]	220 U	66 UJ	22 U	68 UJ
AROCLOR-1260	40	[9]	2200	C	**1800**	**1400 J**	**480**	**1300 J**
TOTAL AROCLOR	40		2200	C[11]	**1800**	**1400**	**480**	**1300**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-12	SD-13	SD-14	SD-15
SAMPLE ID				SD-12-031805	SD-13-SS	SD-14-SS	SD-15-SS
SAMPLE DATE				20050318	20051020	20051020	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	2.1 B	1.09 UJ	**0.96**	**1.8 J**
ARSENIC	7.24	3.9	C	**9.7**	**9 J**	**4**	**10.5 J**
BARIUM	130 [15]	15000	N	NA	49.5 J	60.6	57.4 J
BERYLLIUM	NA	160	N	2.2 J	2.2 J	0.46	2.2 J
CADMIUM	0.68	70	N	**5.9 K**	**5.9 J**	**3.5**	**4.7 J**
CHROMIUM	43.4	120000	N[12]	**106**	**124 J**	**75**	**120 J**
COBALT	10 [15]	23	N	NA	**18.8 J**	4.4	**17.8 J**
COPPER	18.7	3100	N	**140**	**116 J**	**19.1**	**124 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	1.4 U	**8.2 J**	0.53 J	2 UJ
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**115**	**127 J**	**42.2**	**123 J**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.35**	**0.48 J**	**0.34 L**	**0.44 J**
MOLYBDENUM	NA	390	N	NA	2 J	1.3	2.3 J
NICKEL	15.9	1500	N	**35.6**	**42.5 J**	9.9	**39.6 J**
SELENIUM	1 [15]	390	N	**2.9**	0.95 UJ	0.37 UL	1.12 UJ
SILVER	0.73	390	N	**2**	**2.3 J**	**14.9**	**1.8 J**
THALLIUM	NA	NA		0.77 U	1.63 UJ	0.64 U	1.91 UJ
VANADIUM	57 [15]	390	N	NA	55 J	14.9	**57.8 J**
ZINC	121	23000	N	**423**	**464 J**	**132**	**405 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		30	26	77	25
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-16	SD-17	SD-18	SD-19
SAMPLE ID				SD-16-SS	SD-17-SS	SD-18-SS	SD-19-SS
SAMPLE DATE				20051020	20051021	20051021	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		20 UJ	21 UJ	22 UJ	16 UJ
1,4-DICHLOROBENZENE	460	24000	C	20 UJ	21 UJ	22 UJ	16 UJ
2-BUTANONE	25,710 [4]	28000000	N	100 UR	100 UR	110 UR	23 J
ACETONE	60,030 [4]	61000000	N	100 B	100 B	110 B	81 B
CARBON DISULFIDE	0.851	820000	N	20 UJ	21 UJ	22 UJ	16 UJ
CHLOROBENZENE	8.42	290000	N	20 UJ	21 UJ	22 UJ	16 UJ
CHLOROMETHANE	8,740 [4]	120000	N	40 UJ	41 UJ	44 UJ	32 UJ
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	20 UJ	21 UJ	22 UJ	16 UJ
ISOPROPYLBENZENE	86	2100000	N	20 UJ	21 UJ	22 UJ	16 UJ
METHYL TERT-BUTYL ETHER	NA	430000	C	9 J	8 J	9 J	32 UJ
NAPHTHALENE	34.6	36000	C	20 UJ	21 UJ	22 UJ	16 UJ
SEC-BUTYLBENZENE	880 [4]	NA		20 UJ	21 UJ	22 UJ	16 UJ
TERT-BUTYLBENZENE	1,210 [4]	NA		20 UJ	21 UJ	22 UJ	16 UJ
TOLUENE	1090	5000000	N	20 UJ	21 UJ	22 UJ	16 UJ
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	1400 UJ	1300 UJ	1500 UJ	1100 UJ
1,3-DICHLOROBENZENE	842	NA		1400 UJ	1300 UJ	1500 UJ	1100 UJ
1,4-DICHLOROBENZENE	460	24000	C	240 J	1300 UJ	1500 UJ	140 J
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	1400 UJ	1300 UJ	1500 UJ	1100 UJ
2-METHYLNAPHTHALENE	20.2	310000	N	1400 UJ	1300 UJ	1500 UJ	1100 UJ
ACENAPHTHENE	6.7	3400000	N	1400 UJ	1300 UJ	1500 UJ	1100 UJ
ACENAPHTHYLENE	5.87	3400000	N[7]	1400 UJ	1300 UJ	1500 UJ	1100 UJ
ANTHRACENE	46.9	17000000	N	1400 UJ	1300 UJ	1500 UJ	**210 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1446**	**1532**	**1501**	**1794**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**676**	**817**	**676**	**1244**
BENZO(A)ANTHRACENE	74.8	1500	C	**490 J**	**510 J**	**380 J**	**770 J**
BENZO(A)PYRENE	88.8	150	C	**540 J**	**650 J**	**540 J**	**960 J**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**810 J**	**1100 J**	**930 J**	**1400 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	1400 UJ	1300 UJ	1500 UJ	**460 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**480 J**	**480 J**	**430 J**	**670 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	**520 J**	**330 J**	**550 J**	**960 J**
BUTYL BENZYL PHTHALATE	10900	2600000	C	1400 UJ	1300 UJ	1500 UJ	1100 UJ
CARBAZOLE	NA	NA		1400 UJ	1300 UJ	1500 UJ	1100 UJ
CHRYSENE	108	150000	C	**720 J**	**770 J**	**600 J**	**960 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	1400 UJ	1300 UJ	1500 UJ	1100 UJ
DIBENZOFURAN	415	78000	N	1400 UJ	1300 UJ	1500 UJ	1100 UJ
FLUORANTHENE	113	2300000	N	**940 J**	**1200 J**	**980 J**	**1500 J**
FLUORENE	21.2	2300000	N	1400 UJ	1300 UJ	1500 UJ	1100 UJ
INDENO(1,2,3-CD)PYRENE	17	1500	C	1400 UJ	1300 UJ	1500 UJ	**590 J**
NAPHTHALENE	34.6	36000	C	1400 UJ	1300 UJ	1500 UJ	1100 UJ
PHENANTHRENE	86.7	1700000	N[8]	**440 J**	**580 J**	**370 J**	**770 J**
PYRENE	153	1700000	N	**1500 J**	**1600 J**	**1200 J**	**2200 J**
TOTAL PAHS	1610	NA		**5920**	**6890**	**5430**	**10490**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	71 UJ	69 UJ	78 UJ	57 UJ
AROCLOR-1254	59.8 [9]	1100	N[10]	71 UJ	69 UJ	78 UJ	57 UJ
AROCLOR-1260	40 [9]	2200	C	**1400 J**	**1100 J**	**780 J**	**2800 J**
TOTAL AROCLOR	40	2200	C[11]	**1400**	**1100**	**780**	**2800**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-16	SD-17	SD-18	SD-19
SAMPLE ID					SD-16-SS	SD-17-SS	SD-18-SS	SD-19-SS
SAMPLE DATE					20051020	20051021	20051021	20051021
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	1.33 UJ	**1.5 J**	**1.7 J**	1.07 UJ
ARSENIC	7.24		3.9	C	**9.6 J**	**11.9 J**	**11.3 J**	**8.2 J**
BARIUM	130	[15]	15000	N	45.2 J	52.8 J	51.9 J	45.8 J
BERYLLIUM	NA		160	N	2.2 J	2.5 J	2.4 J	2.2 J
CADMIUM	0.68		70	N	**5.1 J**	**4.6 J**	**4.6 J**	**7.2 J**
CHROMIUM	43.4		120000	N[12]	**127 J**	**125 J**	**132 J**	**135 J**
COBALT	10	[15]	23	N	**17.9 J**	**19.3 J**	**19.6 J**	**19.3 J**
COPPER	18.7		3100	N	**116 J**	**127 J**	**131 J**	**97.3 J**
HEXAVALENT CHROMIUM	43.4		2.9	C[13]	2.1 UJ	2 UJ	2.3 UJ	1.6 UJ
IRON	20000		55000	N	NA	NA	NA	NA
LEAD	30.2		400		**109 J**	**114 J**	**115 J**	**125 J**
MANGANESE	460		1800	N	NA	NA	NA	NA
MERCURY	0.13		23	N[14]	**0.4 J**	**0.39 J**	**0.4 J**	**0.43 J**
MOLYBDENUM	NA		390	N	1.2 J	1.6 J	1.2 J	1.3 J
NICKEL	15.9		1500	N	**39.3 J**	**42.4 J**	**40.9 J**	**42.4 J**
SELENIUM	1	[15]	390	N	1.16 UJ	**2.3 J**	1.24 UJ	0.93 UJ
SILVER	0.73		390	N	**1.9 J**	**1.7 J**	**1.5 J**	**2.3 J**
THALLIUM	NA		NA		2.1 J	2.23 UJ	2.11 UJ	1.59 UJ
VANADIUM	57	[15]	390	N	52.2 J	**61.4 J**	**57.4 J**	56.3 J
ZINC	121		23000	N	**373 J**	**384 J**	**372 J**	**427 J**
METALS (UG/KG)								
DIBUTYLTIN	NA		NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	NA		NA		24	25	22	30
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA		NA		NA	47000 J	NA	42000 J
AVS/SEM (UMOLES/G)								
ACID VOLATILE SULFIDE	NA		NA		NA	NA	NA	NA
CADMIUM	NA		NA		NA	NA	NA	NA
CHROMIUM	NA		NA		NA	NA	NA	NA
COPPER	NA		NA		NA	NA	NA	NA
LEAD	NA		NA		NA	NA	NA	NA
NICKEL	NA		NA		NA	NA	NA	NA
SILVER	NA		NA		NA	NA	NA	NA
ZINC	NA		NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-20	SD-21	SD-22	SD-23
SAMPLE ID					SD-20-SS	SD-21-SS	SD-22-SS	SD-23-SS
SAMPLE DATE					20051021	20051021	20051021	20051021
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		22 UJ	20 UJ	2 J	22 UJ
1,4-DICHLOROBENZENE	460		24000	C	2 J	1 J	3 J	1 J
2-BUTANONE	25,710	[4]	28000000	N	110 UR	99 UR	110 UR	110 UR
ACETONE	60,030	[4]	61000000	N	230 B	200 B	240 B	140 B
CARBON DISULFIDE	0.851		820000	N	22 UJ	20 UJ	22 UJ	22 UJ
CHLOROBENZENE	8.42		290000	N	22 UJ	20 UJ	3 J	22 UJ
CHLOROMETHANE	8,740	[4]	120000	N	45 UJ	40 UJ	44 UJ	43 UJ
CIS-1,2-DICHLOROETHENE	1,050	[5]	780000	N	22 UJ	20 UJ	22 UJ	22 UJ
ISOPROPYLBENZENE	86		2100000	N	22 UJ	20 UJ	22 UJ	22 UJ
METHYL TERT-BUTYL ETHER	NA		430000	C	6 J	8 J	5 J	9 J
NAPHTHALENE	34.6		36000	C	22 UJ	20 UJ	22 UJ	22 UJ
SEC-BUTYLBENZENE	880	[4]	NA		22 UJ	20 UJ	22 UJ	22 UJ
TERT-BUTYLBENZENE	1,210	[4]	NA		22 UJ	20 UJ	22 UJ	22 UJ
TOLUENE	1090		5000000	N	22 UJ	20 UJ	22 UJ	22 UJ
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	1500 UJ	1300 UJ	1400 UJ	1400 UJ
1,3-DICHLOROBENZENE	842		NA		1500 UJ	1300 UJ	1400 UJ	1400 UJ
1,4-DICHLOROBENZENE	460		24000	C	1500 UJ	1300 UJ	450 J	1400 UJ
1-METHYLNAPHTHALENE	20.2	[6]	220000	C	1500 UJ	1300 UJ	1400 UJ	1400 UJ
2-METHYLNAPHTHALENE	20.2		310000	N	1500 UJ	1300 UJ	1400 UJ	1400 UJ
ACENAPHTHENE	6.7		3400000	N	1500 UJ	1300 UJ	1400 UJ	1400 UJ
ACENAPHTHYLENE	5.87		3400000	N[7]	1500 UJ	1300 UJ	1400 UJ	1400 UJ
ANTHRACENE	46.9		17000000	N	1500 UJ	1300 UJ	1400 UJ	1400 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	**1358**	**1354**	**1496**	**1371**
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	**533**	**639**	**726**	**601**
BENZO(A)ANTHRACENE	74.8		1500	C	**360 J**	**350 J**	**400 J**	**350 J**
BENZO(A)PYRENE	88.8		150	C	**420 J**	**520 J**	**580 J**	**480 J**
BENZO(B)FLUORANTHENE	130	[15]	1500	C	**740 J**	**800 J**	**1000 J**	**830 J**
BENZO(G,H,I)PERYLENE	67	[15]	1700000	N[8]	1500 UJ	1300 UJ	1400 UJ	1400 UJ
BENZO(K)FLUORANTHENE	70	[15]	15000	C	**290 J**	**350 J**	**520 J**	**280 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	1500 UJ	**360 J**	**440 J**	**360 J**
BUTYL BENZYL PHTHALATE	10900		2600000	C	1500 UJ	1300 UJ	1400 UJ	1400 UJ
CARBAZOLE	NA		NA		1500 UJ	1300 UJ	1400 UJ	1400 UJ
CHRYSENE	108		150000	C	**490 J**	**570 J**	**690 J**	**530 J**
DIBENZO(A,H)ANTHRACENE	6.22		150	C	1500 UJ	1300 UJ	1400 UJ	1400 UJ
DIBENZOFURAN	415		78000	N	1500 UJ	1300 UJ	1400 UJ	1400 UJ
FLUORANTHENE	113		2300000	N	**920 J**	**990 J**	**1000 J**	**860 J**
FLUORENE	21.2		2300000	N	1500 UJ	1300 UJ	1400 UJ	1400 UJ
INDENO(1,2,3-CD)PYRENE	17		1500	C	1500 UJ	1300 UJ	1400 UJ	1400 UJ
NAPHTHALENE	34.6		36000	C	1500 UJ	1300 UJ	1400 UJ	1400 UJ
PHENANTHRENE	86.7		1700000	N[8]	**350 J**	**350 J**	**460 J**	**300 J**
PYRENE	153		1700000	N	**820 J**	**950 J**	**1300 J**	**1100 J**
TOTAL PAHS	1610		NA		**4390**	**4880**	**5950**	**4730**
PCBS (UG/KG)								
AROCLOR-1248	40	[9]	2200	C	77 UJ	67 UJ	74 UJ	74 UJ
AROCLOR-1254	59.8	[9]	1100	N[10]	77 UJ	67 UJ	74 UJ	74 UJ
AROCLOR-1260	40	[9]	2200	C	**1100 J**	**560 J**	**2000 J**	**750 J**
TOTAL AROCLOR	40		2200	C[11]	**1100**	**560**	**2000**	**750**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-20	SD-21	SD-22	SD-23
SAMPLE ID					SD-20-SS	SD-21-SS	SD-22-SS	SD-23-SS
SAMPLE DATE					20051021	20051021	20051021	20051021
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	**1.4 J**	1.35 UJ	1.35 UJ	1.25 UJ
ARSENIC	7.24		3.9	C	**10.2 J**	**9.4 J**	**11.2 J**	**11.1 J**
BARIUM	130	[15]	15000	N	52 J	38.2 J	61.1 J	52 J
BERYLLIUM	NA		160	N	2.4 J	1.9 J	2.5 J	2.3 J
CADMIUM	0.68		70	N	**5.4 J**	**3.3 J**	**5.2 J**	**5.3 J**
CHROMIUM	43.4		120000	N[12]	**140 J**	**98.4 J**	**156 J**	**154 J**
COBALT	10	[15]	23	N	**19.6 J**	**15.2 J**	**22.2 J**	**19.9 J**
COPPER	18.7		3100	N	**126 J**	**104 J**	**151 J**	**127 J**
HEXAVALENT CHROMIUM	43.4		2.9	C[13]	2.2 UJ	2 UJ	2.2 UJ	2.2 UJ
IRON	20000		55000	N	NA	NA	NA	NA
LEAD	30.2		400		**115 J**	**86 J**	**127 J**	**119 J**
MANGANESE	460		1800	N	NA	NA	NA	NA
MERCURY	0.13		23	N[14]	**0.46 J**	**0.33 J**	**0.4 J**	**0.4 J**
MOLYBDENUM	NA		390	N	1.3 J	1 J	1.3 J	1.4 J
NICKEL	15.9		1500	N	**41 J**	**31.5 J**	**46.1 J**	**41.3 J**
SELENIUM	1	[15]	390	N	1.13 UJ	**1.2 J**	1.18 UJ	1.09 UJ
SILVER	0.73		390	N	**1.7 J**	**0.97 J**	**1.8 J**	**1.9 J**
THALLIUM	NA		NA		1.94 UJ	2.01 UJ	2.01 UJ	1.87 UJ
VANADIUM	57	[15]	390	N	55.6 J	44 J	**61.5 J**	55.9 J
ZINC	121		23000	N	**386 J**	**281 J**	**404 J**	**362 J**
METALS (UG/KG)								
DIBUTYLTIN	NA		NA		NA	NA	5.5 J	NA
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	NA		NA		22	25	23	23
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA		NA		NA	NA	NA	55000 J
AVS/SEM (UMOLES/G)								
ACID VOLATILE SULFIDE	NA		NA		NA	NA	NA	NA
CADMIUM	NA		NA		NA	NA	NA	NA
CHROMIUM	NA		NA		NA	NA	NA	NA
COPPER	NA		NA		NA	NA	NA	NA
LEAD	NA		NA		NA	NA	NA	NA
NICKEL	NA		NA		NA	NA	NA	NA
SILVER	NA		NA		NA	NA	NA	NA
ZINC	NA		NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-24	SD-25	SD-26	SD-27
SAMPLE ID				SD-24-SS	SD-25-SS	SD-26-SS	SD-27-SS
SAMPLE DATE				20051021	20051021	20051021	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		7 U	12 UJ	23 UJ	14 U
1,4-DICHLOROBENZENE	460	24000	C	7 U	12 UJ	23 UJ	14 U
2-BUTANONE	25,710 [4]	28000000	N	36 UR	58 UR	110 UR	71 UR
ACETONE	60,030 [4]	61000000	N	13 B	47 B	65 B	80 B
CARBON DISULFIDE	0.851	820000	N	7 U	12 UR	23 UJ	14 U
CHLOROBENZENE	8.42	290000	N	7 U	12 UJ	23 UJ	14 U
CHLOROMETHANE	8,740 [4]	120000	N	15 U	23 UJ	46 UJ	28 U
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	7 U	12 UJ	23 UJ	14 U
ISOPROPYLBENZENE	86	2100000	N	7 U	12 UJ	23 UJ	14 U
METHYL TERT-BUTYL ETHER	NA	430000	C	15 U	3 J	8 J	28 U
NAPHTHALENE	34.6	36000	C	7 U	12 UJ	23 UJ	14 U
SEC-BUTYLBENZENE	880 [4]	NA		7 U	12 UJ	23 UJ	14 U
TERT-BUTYLBENZENE	1,210 [4]	NA		7 U	12 UJ	23 UJ	14 U
TOLUENE	1090	5000000	N	7 U	12 UJ	23 UJ	10 J
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	480 U	780 U	1500 UJ	940 U
1,3-DICHLOROBENZENE	842	NA		480 U	780 U	1500 UJ	420 J
1,4-DICHLOROBENZENE	460	24000	C	480 U	96 J	160 J	**850 J**
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	480 U	780 U	1500 UJ	940 U
2-METHYLNAPHTHALENE	20.2	310000	N	480 U	780 U	1500 UJ	940 U
ACENAPHTHENE	6.7	3400000	N	480 U	**160 J**	1500 UJ	**250 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	480 U	780 U	1500 UJ	940 U
ANTHRACENE	46.9	17000000	N	480 U	**150 J**	1500 UJ	**300 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**711**	**886**	**1390**	**1776**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**471**	**492**	**565**	**1306**
BENZO(A)ANTHRACENE	74.8	1500	C	**370 J**	**330 J**	**330 J**	**980**
BENZO(A)PYRENE	88.8	150	C	**350 J**	**370 J**	**450 J**	**990 J**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**570 J**	**570 J**	**780 J**	**1400 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**230 J**	780 UJ	1500 UJ	**730 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**210 J**	780 UJ	**310 J**	**240 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	**450 J**	**300 J**	**1500 J**	**630 J**
BUTYL BENZYL PHTHALATE	10900	2600000	C	120 J	780 U	1500 UJ	940 U
CARBAZOLE	NA	NA		480 U	780 U	1500 UJ	180 J
CHRYSENE	108	150000	C	**480 J**	**490 J**	**530 J**	**1400**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	480 UJ	780 UJ	1500 UJ	940 UJ
DIBENZOFURAN	415	78000	N	480 U	780 U	1500 UJ	940 U
FLUORANTHENE	113	2300000	N	**440 J**	**500 J**	**780 J**	**1500**
FLUORENE	21.2	2300000	N	480 U	780 U	1500 UJ	**180 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	**240 J**	**320 J**	1500 UJ	**740 J**
NAPHTHALENE	34.6	36000	C	480 U	780 U	1500 UJ	940 U
PHENANTHRENE	86.7	1700000	N[8]	**240 J**	**240 J**	**360 J**	**850 J**
PYRENE	153	1700000	N	**990 J**	**860**	**1200 J**	**2500**
TOTAL PAHS	1610	NA		**4120**	**3990**	**4740**	**12060**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	25 U	40 U	76 UJ	2400 UJ
AROCLOR-1254	59.8 [9]	1100	N[10]	25 U	40 U	76 UJ	2400 UJ
AROCLOR-1260	40 [9]	2200	C	**190 J**	**1300 J**	**1500 J**	**20000 J**
TOTAL AROCLOR	40	2200	C[11]	**190**	**1300**	**1500**	**20000**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-24	SD-25	SD-26	SD-27
SAMPLE ID				SD-24-SS	SD-25-SS	SD-26-SS	SD-27-SS
SAMPLE DATE				20051021	20051021	20051021	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.43 UL	0.71 UL	**1.5 J**	**1.2 L**
ARSENIC	7.24	3.9	C	3.8	**5.1**	**11 J**	**7.4**
BARIUM	130 [15]	15000	N	17.1	21.5	59.2 J	61.5
BERYLLIUM	NA	160	N	0.84	0.98	2.1 J	2.3
CADMIUM	0.68	70	N	**1.6**	**4.3**	**5.6 J**	**22.7**
CHROMIUM	43.4	120000	N[12]	33.4 K	**63.7 K**	**170 J**	**454 K**
COBALT	10 [15]	23	N	9.8	9.8	**21 J**	**22.6**
COPPER	18.7	3100	N	**27.2 J**	**61.3 J**	**141 J**	**98.8 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	0.74 UL	1.1 UL	2.2 UJ	1.4 UL
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		29.4	**49.6**	**121 J**	**186**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	0.1 K	**0.23 K**	**0.52 J**	**0.68 K**
MOLYBDENUM	NA	390	N	0.56	0.34 U	1 J	1
NICKEL	15.9	1500	N	15.6	**17.1**	**43.2 J**	**52.8**
SELENIUM	1 [15]	390	N	0.38 U	0.62 B	1.4 B	1.2 B
SILVER	0.73	390	N	0.11 UL	**0.74 L**	**1.6 J**	**8.9**
THALLIUM	NA	NA		0.64 U	1.05 U	2.21 UJ	1.8 B
VANADIUM	57 [15]	390	N	20.8	24.2	54.9 J	**64.9**
ZINC	121	23000	N	**134**	**180**	**379 J**	**456**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		68	42	22	35
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	28000 K	NA	47000 K
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-28	SD-29	SD-30	SD-31
SAMPLE ID					SD-28-SS	SD-29-SS	SD-30-SS	SD-31-SS
SAMPLE DATE					20051021	20051021	20051021	20051021
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		17 UL	15 UL	19 UJ	13 U
1,4-DICHLOROBENZENE	460		24000	C	17 UL	15 UL	19 UJ	13 U
2-BUTANONE	25,710	(4)	28000000	N	85 UR	17 J	93 UJ	66 U
ACETONE	60,030	(4)	61000000	N	85 B	88 B	140 B	61 B
CARBON DISULFIDE	0.851		820000	N	17 UL	**12 J**	19 UJ	13 U
CHLOROBENZENE	8.42		290000	N	17 UL	15 U	19 UJ	13 U
CHLOROMETHANE	8,740	(4)	120000	N	34 UL	30 U	37 UJ	26 U
CIS-1,2-DICHLOROETHENE	1,050	(5)	780000	N	17 UL	15 U	19 UJ	13 U
ISOPROPYLBENZENE	86		2100000	N	17 UL	15 UL	19 UJ	13 U
METHYL TERT-BUTYL ETHER	NA		430000	C	3 J	5 J	3 J	3 J
NAPHTHALENE	34.6		36000	C	17 UL	15 UL	19 UJ	13 U
SEC-BUTYLBENZENE	880	(4)	NA		17 UL	15 UL	19 UJ	13 U
TERT-BUTYLBENZENE	1,210	(4)	NA		17 UL	15 U	19 UJ	13 U
TOLUENE	1090		5000000	N	17 UL	15 U	19 UJ	13 U
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	1100 UJ	980 U	1300 UJ	860 U
1,3-DICHLOROBENZENE	842		NA		1100 UJ	980 U	1300 UJ	860 U
1,4-DICHLOROBENZENE	460		24000	C	1100 UJ	76 J	120 B	860 U
1-METHYLNAPHTHALENE	20.2	(6)	220000	C	1100 UJ	980 U	1300 UJ	860 U
2-METHYLNAPHTHALENE	20.2		310000	N	1100 UJ	980 U	1300 UJ	860 U
ACENAPHTHENE	6.7		3400000	N	**790 J**	980 U	260 B	860 U
ACENAPHTHYLENE	5.87		3400000	N[7]	1100 UJ	980 U	1300 UJ	860 U
ANTHRACENE	46.9		17000000	N	**1700 J**	980 U	1300 UJ	860 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	**6472**	**1121**	**1202**	860 U
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	**6472**	**582**	**481**	860 U
BENZO(A)ANTHRACENE	74.8		1500	C	**5200 J**	**420 J**	**300 J**	860 U
BENZO(A)PYRENE	88.8		150	C	**4400 J**	**470 J**	**380 J**	860 U
BENZO(B)FLUORANTHENE	130	(15)	1500	C	**5800 J**	**660 J**	**700 J**	860 U
BENZO(G,H,I)PERYLENE	67	(15)	1700000	N[8]	**3100 J**	980 UJ	1300 UJ	860 U
BENZO(K)FLUORANTHENE	70	(15)	15000	C	**2700 J**	**310 J**	1300 UJ	860 U
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	**510 J**	**390 J**	**340 J**	860 U
BUTYL BENZYL PHTHALATE	10900		2600000	C	1100 UJ	980 UJ	1300 UJ	860 U
CARBAZOLE	NA		NA		990 J	980 U	1300 UJ	860 U
CHRYSENE	108		150000	C	**5400 J**	**560 J**	**540 J**	860 U
DIBENZO(A,H)ANTHRACENE	6.22		150	C	**600 J**	980 UJ	1300 UJ	860 U
DIBENZOFURAN	415		78000	N	340 J	980 U	1300 UJ	860 U
FLUORANTHENE	113		2300000	N	**9800 J**	**840 J**	**540 J**	860 U
FLUORENE	21.2		2300000	N	**680 J**	980 U	1300 UJ	860 U
INDENO(1,2,3-CD)PYRENE	17		1500	C	**3400 J**	980 UJ	1300 UJ	860 U
NAPHTHALENE	34.6		36000	C	**290 J**	980 U	1300 UJ	860 U
PHENANTHRENE	86.7		1700000	N[8]	**6800 J**	**360 J**	1300 UJ	860 U
PYRENE	153		1700000	N	**13000 J**	**1200 J**	**1000 J**	860 U
TOTAL PAHS	1610		NA		**63660**	**4820**	**3460**	0 U
PCBS (UG/KG)								
AROCLOR-1248	40	(9)	2200	C	59 UJ	51 U	68 UJ	44 U
AROCLOR-1254	59.8	(9)	1100	N[10]	59 UJ	51 U	68 UJ	44 U
AROCLOR-1260	40	(9)	2200	C	**790 J**	**2500**	**1400 J**	**170**
TOTAL AROCLOR	40		2200	C[11]	**790**	**2500**	**1400**	**170**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-28	SD-29	SD-30	SD-31
SAMPLE ID					SD-28-SS	SD-29-SS	SD-30-SS	SD-31-SS
SAMPLE DATE					20051021	20051021	20051021	20051021
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	1.23 UJ	1.09 UL	1.24 UJ	0.74 UL
ARSENIC	7.24		3.9	C	**8.4 J**	**8.3**	**10.1 J**	**6.2**
BARIUM	130	[15]	15000	N	66.8 J	63.3	55.8 J	37.3
BERYLLIUM	NA		160	N	2.2 J	2.3	1.9 J	1.9
CADMIUM	0.68		70	N	**39.4 J**	**10.3**	**3.9 J**	0.37
CHROMIUM	43.4		120000	N[12]	**680 J**	**253 K**	**140 J**	**46 K**
COBALT	10	[15]	23	N	**20.9 J**	**22.8**	**18.6 J**	**16.1**
COPPER	18.7		3100	N	**112 J**	**93.5 J**	**136 J**	**24.3 J**
HEXAVALENT CHROMIUM	43.4		2.9	C[13]	1.7 UJ	1.5 UL	2 UJ	1.3 UL
IRON	20000		55000	N	NA	NA	NA	NA
LEAD	30.2		400		**235 J**	**198**	**109 J**	**34.4**
MANGANESE	460		1800	N	NA	NA	NA	NA
MERCURY	0.13		23	N[14]	**0.98 J**	**0.84 K**	**3.5 J**	**0.19 K**
MOLYBDENUM	NA		390	N	1.9 J	1.4	0.97 J	1.2
NICKEL	15.9		1500	N	**62.8 J**	**52.5**	**37.3 J**	**25**
SELENIUM	1	[15]	390	N	1.2 B	1.4 B	1.9 B	0.65 U
SILVER	0.73		390	N	**28.6 J**	**3.1 L**	**1.6 J**	0.19 UL
THALLIUM	NA		NA		1.83 UJ	1.63 U	1.85 UJ	1.1 U
VANADIUM	57	[15]	390	N	**120 J**	**69.7**	53.3 J	38.2
ZINC	121		23000	N	**636 J**	**414**	**338 J**	105
METALS (UG/KG)								
DIBUTYLTIN	NA		NA		4.5 UJ	9.9	NA	3.3 U
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	NA		NA		29	34	25	38
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA		NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)								
ACID VOLATILE SULFIDE	NA		NA		NA	NA	NA	NA
CADMIUM	NA		NA		NA	NA	NA	NA
CHROMIUM	NA		NA		NA	NA	NA	NA
COPPER	NA		NA		NA	NA	NA	NA
LEAD	NA		NA		NA	NA	NA	NA
NICKEL	NA		NA		NA	NA	NA	NA
SILVER	NA		NA		NA	NA	NA	NA
ZINC	NA		NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-32	SD-33	SD-34	SD-35
SAMPLE ID					SD-32-SS	SD-33-SS	SD-34-SS	SD-35-SS
SAMPLE DATE					20051021	20051021	20051021	20051021
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		24 UJ	20 UJ	13 UJ	19 UJ
1,4-DICHLOROBENZENE	460		24000	C	24 UJ	20 UJ	13 UJ	19 UJ
2-BUTANONE	25,710	[4]	28000000	N	120 UJ	100 UR	64 UJ	96 UR
ACETONE	60,030	[4]	61000000	N	110 B	36 B	77 B	40 B
CARBON DISULFIDE	0.851		820000	N	24 UJ	20 UJ	13 UJ	19 UJ
CHLOROBENZENE	8.42		290000	N	24 UJ	20 UJ	13 UJ	19 UJ
CHLOROMETHANE	8,740	[4]	120000	N	49 UJ	41 UJ	25 UJ	13 J
CIS-1,2-DICHLOROETHENE	1,050	[5]	780000	N	24 UJ	20 UJ	13 UJ	19 UJ
ISOPROPYLBENZENE	86		2100000	N	24 UJ	20 UJ	13 UJ	19 UJ
METHYL TERT-BUTYL ETHER	NA		430000	C	9 J	6 J	3 J	6 J
NAPHTHALENE	34.6		36000	C	24 UJ	20 UJ	13 UJ	19 UJ
SEC-BUTYLBENZENE	880	[4]	NA		24 UJ	20 UJ	13 UJ	19 UJ
TERT-BUTYLBENZENE	1,210	[4]	NA		24 UJ	20 UJ	13 UJ	19 UJ
TOLUENE	1090		5000000	N	24 UJ	20 UJ	13 UJ	19 UJ
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	1600 UJ	1300 UJ	840 U	1200 UJ
1,3-DICHLOROBENZENE	842		NA		1600 UJ	1300 UJ	840 U	1200 UJ
1,4-DICHLOROBENZENE	460		24000	C	1600 UJ	1300 UJ	74 B	110 B
1-METHYLNAPHTHALENE	20.2	[6]	220000	C	1600 UJ	1300 UJ	840 U	1200 UJ
2-METHYLNAPHTHALENE	20.2		310000	N	1600 UJ	1300 UJ	840 U	1200 UJ
ACENAPHTHENE	6.7		3400000	N	1600 UJ	1300 UJ	170 B	1200 UJ
ACENAPHTHYLENE	5.87		3400000	N[7]	1600 UJ	1300 UJ	840 U	1200 UJ
ANTHRACENE	46.9		17000000	N	1600 UJ	1300 UJ	**170 J**	1200 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	**1249**	**1466**	**895**	**927**
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	**280**	29	**428**	**200**
BENZO(A)ANTHRACENE	74.8		1500	C	1600 UJ	1300 UJ	**260 J**	1200 UJ
BENZO(A)PYRENE	88.8		150	C	**240 J**	1300 UJ	**350 J**	**170 J**
BENZO(B)FLUORANTHENE	130	[15]	1500	C	**400 J**	**290 J**	**520 J**	**300 J**
BENZO(G,H,I)PERYLENE	67	[15]	1700000	N[8]	1600 UJ	1300 UJ	840 UJ	1200 UJ
BENZO(K)FLUORANTHENE	70	[15]	15000	C	1600 UJ	1300 UJ	840 UJ	1200 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	**2900 J**	**800 J**	**1900**	**1600 J**
BUTYL BENZYL PHTHALATE	10900		2600000	C	1600 UJ	1300 UJ	190 J	1200 UJ
CARBAZOLE	NA		NA		1600 UJ	1300 UJ	840 U	1200 UJ
CHRYSENE	108		150000	C	1600 UJ	1300 UJ	**410 J**	1200 UJ
DIBENZO(A,H)ANTHRACENE	6.22		150	C	1600 UJ	1300 UJ	840 UJ	1200 UJ
DIBENZOFURAN	415		78000	N	1600 UJ	1300 UJ	840 U	1200 UJ
FLUORANTHENE	113		2300000	N	**470 J**	**340 J**	**430 J**	**310 J**
FLUORENE	21.2		2300000	N	1600 UJ	1300 UJ	840 U	1200 UJ
INDENO(1,2,3-CD)PYRENE	17		1500	C	1600 UJ	1300 UJ	840 UJ	1200 UJ
NAPHTHALENE	34.6		36000	C	1600 UJ	1300 UJ	840 U	1200 UJ
PHENANTHRENE	86.7		1700000	N[8]	1600 UJ	1300 UJ	**220 J**	1200 UJ
PYRENE	153		1700000	N	**610 J**	**400 J**	**830 J**	**440 J**
TOTAL PAHS	1610		NA		**1720**	1030	**3190**	1220
PCBS (UG/KG)								
AROCLOR-1248	40	[9]	2200	C	85 UJ	69 UJ	43 U	64 UJ
AROCLOR-1254	59.8	[9]	1100	N[10]	85 UJ	69 UJ	43 U	64 UJ
AROCLOR-1260	40	[9]	2200	C	**620 J**	**720 J**	**290**	**370 J**
TOTAL AROCLOR	40		2200	C[11]	**620**	**720**	**290**	**370**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-32	SD-33	SD-34	SD-35
SAMPLE ID				SD-32-SS	SD-33-SS	SD-34-SS	SD-35-SS
SAMPLE DATE				20051021	20051021	20051021	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	1.73 UJ	1.39 UJ	0.72 UL	1.17 UJ
ARSENIC	7.24	3.9	C	**12.1 J**	**10.3 J**	**6.7**	**12 J**
BARIUM	130 [15]	15000	N	72.1 J	57.7 J	36.2	64.1 J
BERYLLIUM	NA	160	N	1.9 J	1.8 J	1.2	1.9 J
CADMIUM	0.68	70	N	**3 J**	**3.9 J**	**3.7**	**4.2 J**
CHROMIUM	43.4	120000	N[12]	**152 J**	**154 J**	**105 K**	**172 J**
COBALT	10 [15]	23	N	**19.8 J**	**18.3 J**	**13.5**	**20.7 J**
COPPER	18.7	3100	N	**152 J**	**141 J**	**94.5 J**	**154 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	2.5 UJ	2 UJ	1.3 UL	1.9 UJ
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**117 J**	**114 J**	**78.4**	**127 J**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.52 J**	**0.49 J**	**0.34 K**	**0.51 J**
MOLYBDENUM	NA	390	N	1.5 J	1.5 J	0.89	1.2 J
NICKEL	15.9	1500	N	**41.5 J**	**38 J**	**23.9**	**41.6 J**
SELENIUM	1 [15]	390	N	1.51 UJ	1.21 UJ	0.63 UL	1.02 UJ
SILVER	0.73	390	N	**1.1 J**	**1.2 J**	**0.94 L**	**1.6 J**
THALLIUM	NA	NA		4 B	2.07 UJ	1.08 UL	1.75 UJ
VANADIUM	57 [15]	390	N	**62.9 J**	55.9 J	35	**62.1 J**
ZINC	121	23000	N	**350 J**	**339 J**	**225**	**360 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		20	24	39	27
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	51000 J	NA	47000 J
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-36	SD-37	SD-38	SD-39
SAMPLE ID					SD-36-SS	SD-37-SS	SD-38-SS	SD-39-SS
SAMPLE DATE					20051021	20051021	20051021	20051021
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		17 UJ	21 UJ	24 UJ	17 UJ
1,4-DICHLOROBENZENE	460		24000	C	17 UJ	21 UJ	24 UJ	17 UJ
2-BUTANONE	25,710	[4]	28000000	N	87 UR	100 UR	120 UR	84 UR
ACETONE	60,030	[4]	61000000	N	79 J	130 J	120 UR	84 UR
CARBON DISULFIDE	0.851		820000	N	17 UJ	21 UJ	24 UJ	17 UJ
CHLOROBENZENE	8.42		290000	N	17 UJ	21 UJ	24 UJ	17 UJ
CHLOROMETHANE	8,740	[4]	120000	N	35 UJ	42 UJ	48 UJ	34 UJ
CIS-1,2-DICHLOROETHENE	1,050	[5]	780000	N	17 UJ	21 UJ	24 UJ	17 UJ
ISOPROPYLBENZENE	86		2100000	N	17 UJ	21 UJ	24 UJ	17 UJ
METHYL TERT-BUTYL ETHER	NA		430000	C	5 J	5 J	7 J	34 UJ
NAPHTHALENE	34.6		36000	C	17 UJ	21 UJ	24 UJ	17 UJ
SEC-BUTYLBENZENE	880	[4]	NA		17 UJ	21 UJ	24 UJ	17 UJ
TERT-BUTYLBENZENE	1,210	[4]	NA		17 UJ	21 UJ	24 UJ	17 UJ
TOLUENE	1090		5000000	N	17 UJ	21 UJ	24 UJ	17 UJ
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	1200 UJ	1400 UJ	1600 UJ	1100 UJ
1,3-DICHLOROBENZENE	842		NA		1200 UJ	1400 UJ	1600 UJ	1100 UJ
1,4-DICHLOROBENZENE	460		24000	C	100 B	130 B	1600 UJ	1100 UJ
1-METHYLNAPHTHALENE	20.2	[6]	220000	C	1200 UJ	1400 UJ	1600 UJ	1100 UJ
2-METHYLNAPHTHALENE	20.2		310000	N	1200 UJ	1400 UJ	1600 UJ	1100 UJ
ACENAPHTHENE	6.7		3400000	N	240 B	280 B	310 B	1100 UJ
ACENAPHTHYLENE	5.87		3400000	N[7]	1200 UJ	1400 UJ	1600 UJ	1100 UJ
ANTHRACENE	46.9		17000000	N	1200 UJ	1400 UJ	1600 UJ	1100 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	**962**	**1277**	**1262**	**900**
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	**236**	**500**	**294**	**234**
BENZO(A)ANTHRACENE	74.8		1500	C	1200 UJ	**310 J**	1600 UJ	1100 UJ
BENZO(A)PYRENE	88.8		150	C	**200 J**	**410 J**	**250 J**	**200 J**
BENZO(B)FLUORANTHENE	130	[15]	1500	C	**360 J**	**590 J**	**440 J**	**340 J**
BENZO(G,H,I)PERYLENE	67	[15]	1700000	N[8]	1200 UJ	1400 UJ	1600 UJ	1100 UJ
BENZO(K)FLUORANTHENE	70	[15]	15000	C	1200 UJ	1400 UJ	1600 UJ	1100 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	**1200 J**	**1500 J**	**1400 J**	**870 J**
BUTYL BENZYL PHTHALATE	10900		2600000	C	1200 UJ	1400 UJ	1600 UJ	1100 UJ
CARBAZOLE	NA		NA		1200 UJ	1400 UJ	1600 UJ	1100 UJ
CHRYSENE	108		150000	C	**280 J**	**490 J**	**340 J**	**260 J**
DIBENZO(A,H)ANTHRACENE	6.22		150	C	1200 UJ	1400 UJ	1600 UJ	1100 UJ
DIBENZOFURAN	415		78000	N	1200 UJ	1400 UJ	1600 UJ	1100 UJ
FLUORANTHENE	113		2300000	N	**360 J**	**530 J**	**430 J**	**330 J**
FLUORENE	21.2		2300000	N	1200 UJ	1400 UJ	1600 UJ	1100 UJ
INDENO(1,2,3-CD)PYRENE	17		1500	C	1200 UJ	1400 UJ	1600 UJ	1100 UJ
NAPHTHALENE	34.6		36000	C	1200 UJ	1400 UJ	1600 UJ	1100 UJ
PHENANTHRENE	86.7		1700000	N[8]	1200 UJ	1400 UJ	1600 UJ	1100 UJ
PYRENE	153		1700000	N	**550 J**	**980 J**	**640 J**	**430 J**
TOTAL PAHS	1610		NA		**1750**	**3310**	**2100**	1560
PCBS (UG/KG)								
AROCLOR-1248	40	[9]	2200	C	64 UJ	72 UJ	82 UJ	57 UJ
AROCLOR-1254	59.8	[9]	1100	N[10]	64 UJ	72 UJ	82 UJ	57 UJ
AROCLOR-1260	40	[9]	2200	C	**430 J**	**240 J**	**210 J**	**190 J**
TOTAL AROCLOR	40		2200	C[11]	**430**	**240**	**210**	**190**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-36	SD-37	SD-38	SD-39
SAMPLE ID					SD-36-SS	SD-37-SS	SD-38-SS	SD-39-SS
SAMPLE DATE					20051021	20051021	20051021	20051021
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	1.25 UJ	1.41 UJ	1.26 UJ	0.86 UJ
ARSENIC	7.24		3.9	C	**9.6 J**	**8.5 J**	**9.7 J**	**7.4 J**
BARIUM	130	[15]	15000	N	56.3 J	42.8 J	55.4 J	32.6 J
BERYLLIUM	NA		160	N	1.8 J	1.5 J	1.9 J	1.2 J
CADMIUM	0.68		70	N	**4.7 J**	**4.3 J**	**5.5 J**	**5.3 J**
CHROMIUM	43.4		120000	N[12]	**152 J**	**113 J**	**158 J**	**127 J**
COBALT	10	[15]	23	N	**18.9 J**	**15 J**	**18 J**	**13.1 J**
COPPER	18.7		3100	N	**138 J**	**114 J**	**146 J**	**118 J**
HEXAVALENT CHROMIUM	43.4		2.9	C[13]	1.8 UJ	**13 J**	2.4 UJ	1.7 UJ
IRON	20000		55000	N	NA	NA	NA	NA
LEAD	30.2		400		**115 J**	**86.8 J**	**118 J**	**105 J**
MANGANESE	460		1800	N	NA	NA	NA	NA
MERCURY	0.13		23	N[14]	**0.34 J**	**0.26 J**	**0.36 J**	**0.38 J**
MOLYBDENUM	NA		390	N	1 J	1.2 J	1.9 J	1.2 J
NICKEL	15.9		1500	N	**39.7 J**	**31.7 J**	**37.9 J**	**26.6 J**
SELENIUM	1	[15]	390	N	**1.6 J**	1.23 UJ	1.1 UJ	0.75 UJ
SILVER	0.73		390	N	2.1 B	1.7 B	1.9 B	1.8 B
THALLIUM	NA		NA		1.87 UJ	2.11 UJ	1.9 B	1.28 UJ
VANADIUM	57	[15]	390	N	48.2 J	38.1 J	48.1 J	30.2 J
ZINC	121		23000	N	**327 J**	**270 J**	**333 J**	**260 J**
METALS (UG/KG)								
DIBUTYLTIN	NA		NA		NA	5.6 UJ	NA	NA
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	NA		NA		27	24	21	30
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA		NA		NA	NA	NA	47000 J
AVS/SEM (UMOLES/G)								
ACID VOLATILE SULFIDE	NA		NA		NA	NA	NA	NA
CADMIUM	NA		NA		NA	NA	NA	NA
CHROMIUM	NA		NA		NA	NA	NA	NA
COPPER	NA		NA		NA	NA	NA	NA
LEAD	NA		NA		NA	NA	NA	NA
NICKEL	NA		NA		NA	NA	NA	NA
SILVER	NA		NA		NA	NA	NA	NA
ZINC	NA		NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-40	SD-41	SD-42	SD-43
SAMPLE ID				SD-40-SS	SD-41-SS	SD-42-SS	SD-43-SS
SAMPLE DATE				20051021	20051021	20051021	20081117
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		18 UJ	19 UJ	13 UJ	NA
1,4-DICHLOROBENZENE	460	24000	C	18 UJ	19 UJ	13 UJ	NA
2-BUTANONE	25,710 [4]	28000000	N	90 UR	94 UR	63 UR	NA
ACETONE	60,030 [4]	61000000	N	150 J	65 J	59 J	NA
CARBON DISULFIDE	0.851	820000	N	18 UJ	19 UJ	13 U	NA
CHLOROBENZENE	8.42	290000	N	18 UJ	19 UJ	13 U	NA
CHLOROMETHANE	8,740 [4]	120000	N	36 UJ	38 UJ	25 U	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	18 UJ	19 UJ	13 U	NA
ISOPROPYLBENZENE	86	2100000	N	18 UJ	19 UJ	13 UJ	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	36 UJ	5 J	4 J	NA
NAPHTHALENE	34.6	36000	C	18 UJ	19 UJ	13 UJ	NA
SEC-BUTYLBENZENE	880 [4]	NA		18 UJ	19 UJ	13 UJ	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		18 UJ	19 UJ	13 U	NA
TOLUENE	1090	5000000	N	18 UJ	19 UJ	3 J	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	1200 UJ	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		1200 UJ	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	120 B	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	1200 UJ	NA	NA	380 U
2-METHYLNAPHTHALENE	20.2	310000	N	1200 UJ	NA	NA	380 U
ACENAPHTHENE	6.7	3400000	N	240 B	NA	NA	380 U
ACENAPHTHYLENE	5.87	3400000	N[7]	1200 UJ	NA	NA	380 U
ANTHRACENE	46.9	17000000	N	1200 UJ	NA	NA	**180 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1138**	NA	NA	**1337**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**472**	NA	NA	**1147**
BENZO(A)ANTHRACENE	74.8	1500	C	**350 J**	NA	NA	**1100**
BENZO(A)PYRENE	88.8	150	C	**380 J**	NA	NA	**880**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**560 J**	NA	NA	**950**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	1200 UJ	NA	NA	**550**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	1200 UJ	NA	NA	**710**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	**1200 J**	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	1200 UJ	NA	NA	NA
CARBAZOLE	NA	NA		1200 UJ	NA	NA	NA
CHRYSENE	108	150000	C	**530 J**	NA	NA	**1200**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	1200 UJ	NA	NA	380 U
DIBENZOFURAN	415	78000	N	1200 UJ	NA	NA	NA
FLUORANTHENE	113	2300000	N	**540 J**	NA	NA	**1400**
FLUORENE	21.2	2300000	N	1200 UJ	NA	NA	**38 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	1200 UJ	NA	NA	**540**
NAPHTHALENE	34.6	36000	C	1200 UJ	NA	NA	380 U
PHENANTHRENE	86.7	1700000	N[8]	1200 UJ	NA	NA	**670**
PYRENE	153	1700000	N	**950 J**	NA	NA	**1800**
TOTAL PAHS	1610	NA		**3310**	NA	NA	**10018**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	61 UJ	NA	NA	24 U
AROCLOR-1254	59.8 [9]	1100	N[10]	61 UJ	NA	NA	**400 J**
AROCLOR-1260	40 [9]	2200	C	**360 J**	NA	NA	24 U
TOTAL AROCLOR	40	2200	C[11]	**360**	NA	NA	**400**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-40	SD-41	SD-42	SD-43
SAMPLE ID				SD-40-SS	SD-41-SS	SD-42-SS	SD-43-SS
SAMPLE DATE				20051021	20051021	20051021	20081117
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	1.21 UJ	0.89 UJ	0.88 U	**2.7**
ARSENIC	7.24	3.9	C	**8.6 J**	**6 J**	**4.2**	**6.1**
BARIUM	130 [15]	15000	N	71.6 J	41.7 J	44	91.9 J
BERYLLIUM	NA	160	N	2.6 J	1.6 J	1.5	0.74 J
CADMIUM	0.68	70	N	**24 J**	**10.6 J**	**32.9**	**296**
CHROMIUM	43.4	120000	N[12]	**361 J**	**173 J**	**354**	**699 J**
COBALT	10 [15]	23	N	**26.6 J**	**14.5 J**	**17**	8.6
COPPER	18.7	3100	N	**111 J**	**105 J**	**101**	**66.9 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	1.8 UJ	1.9 UJ	1.2 U	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**216 J**	**108 J**	**162**	**178 J**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.52 J**	**0.35 J**	**0.29**	**0.39**
MOLYBDENUM	NA	390	N	2.3 J	1.3 J	1.6	0.59
NICKEL	15.9	1500	N	**53.8 J**	**29.8 J**	**33.8**	**16.1**
SELENIUM	1 [15]	390	N	1.05 UJ	1 J	0.77 U	0.92
SILVER	0.73	390	N	3.4 B	1.6 B	**2.7**	0.22 B
THALLIUM	NA	NA		1.8 UJ	1.33 UJ	1.31 U	0.24 U
VANADIUM	57 [15]	390	N	**61.7 J**	33.6 J	33.2	27.6 J
ZINC	121	23000	N	**548 J**	**313 J**	**475**	**287**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		11 J	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		28	26	40	70
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		46000 J	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-44	SD-45	SD-46	SD-47
SAMPLE ID				SD-44-SS	SD-45-SS	SD-46-SS	SD-47-SS
SAMPLE DATE				20081117	20081117	20081115	20081115
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	**39 J**	590 U	690 U	580 U
2-METHYLNAPHTHALENE	20.2	310000	N	420 U	590 U	690 U	580 U
ACENAPHTHENE	6.7	3400000	N	**73 J**	590 U	690 U	580 U
ACENAPHTHYLENE	5.87	3400000	N[7]	420 U	590 U	690 U	580 U
ANTHRACENE	46.9	17000000	N	**300 J**	**100 J**	690 U	**110 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1258**	**1302**	**787**	**659**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**1048**	**1007**	62.8	50.4
BENZO(A)ANTHRACENE	74.8	1500	C	**950**	**770**	690 U	580 U
BENZO(A)PYRENE	88.8	150	C	**850**	**790**	690 U	580 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**580**	**830**	**380 J**	**310 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**450**	**560 J**	**230 J**	580 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**620**	**890**	**340 J**	**300 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**1000**	**930**	**420 J**	**390 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	420 U	590 U	690 U	580 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**1100**	**1100**	**660 J**	**710**
FLUORENE	21.2	2300000	N	**120 J**	590 U	690 U	580 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**380 J**	**470 J**	**210 J**	**160 J**
NAPHTHALENE	34.6	36000	C	420 U	590 U	690 U	580 U
PHENANTHRENE	86.7	1700000	N[8]	**1200**	**500 J**	**280 J**	**400 J**
PYRENE	153	1700000	N	**2500**	**1900**	**750**	**770**
TOTAL PAHS	1610	NA		**10123**	**8840**	**3270**	**3150**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	21 U	30 U	35 U	29 U
AROCLOR-1254	59.8 [9]	1100	N[10]	21 U	30 U	35 U	29 U
AROCLOR-1260	40 [9]	2200	C	21 U	**270**	**160**	**80**
TOTAL AROCLOR	40	2200	C[11]	0 U	**270**	**160**	**80**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-44	SD-45	SD-46	SD-47
SAMPLE ID				SD-44-SS	SD-45-SS	SD-46-SS	SD-47-SS
SAMPLE DATE				20081117	20081117	20081115	20081115
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	**0.7**	**2.3**	**0.71 L**	0.47 L
ARSENIC	7.24	3.9	C	**4.8**	**4.8**	**6.1**	**4.1**
BARIUM	130 [15]	15000	N	103	29.4	43.5	27.4
BERYLLIUM	NA	160	N	1.3	0.87	1.3	1.4
CADMIUM	0.68	70	N	**12.7**	**22.5**	**51.7**	**13.9**
CHROMIUM	43.4	120000	N[12]	42.4	**224**	**592**	**235**
COBALT	10 [15]	23	N	9.8	**13**	**16**	9.7
COPPER	18.7	3100	N	14.4	**72.2**	**97.2**	**40.4**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**43.5**	**102**	**249**	**203**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	0.022	**0.18**	**0.39**	**0.21**
MOLYBDENUM	NA	390	N	0.05 U	2.1	1.6	1.2
NICKEL	15.9	1500	N	15.5	**20.9**	**34.5**	**17.1**
SELENIUM	1 [15]	390	N	0.51	0.92	0.92	**1.5**
SILVER	0.73	390	N	0.18	**1.2**	**2.3**	**0.81**
THALLIUM	NA	NA		0.22 U	0.51	0.34 U	0.29 U
VANADIUM	57 [15]	390	N	30.7	28.8	41	22
ZINC	121	23000	N	116	**382**	**524**	**296**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		79	56	48	57
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	23000	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-48	SD-48	SD-48	SD-49
SAMPLE ID				SD-48-SS	SD-48-SS-AVG	SD-48-SS-D	SD-49-SS
SAMPLE DATE				20081115	20081115	20081115	20081115
SAMPLE CODE				ORIG	AVG	DUP	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	490 U	495 U	500 U	540 U
2-METHYLNAPHTHALENE	20.2	310000	N	490 U	495 U	500 U	540 U
ACENAPHTHENE	6.7	3400000	N	490 U	495 U	500 U	540 U
ACENAPHTHYLENE	5.87	3400000	N[7]	490 U	495 U	500 U	540 U
ANTHRACENE	46.9	17000000	N	490 U	495 U	500 U	540 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	490 U	495 U	500 U	540 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	490 U	495 U	500 U	540 U
BENZO(A)ANTHRACENE	74.8	1500	C	490 U	495 U	500 U	540 U
BENZO(A)PYRENE	88.8	150	C	490 U	495 U	500 U	540 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	490 U	495 U	500 U	540 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	490 U	495 U	500 U	540 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	490 U	495 U	500 U	540 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	490 U	495 U	500 U	540 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	490 U	495 U	500 U	540 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	490 U	495 U	500 U	540 U
FLUORENE	21.2	2300000	N	490 U	495 U	500 U	540 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	490 U	495 U	500 U	540 U
NAPHTHALENE	34.6	36000	C	490 U	495 U	500 U	540 U
PHENANTHRENE	86.7	1700000	N[8]	490 U	495 U	500 U	540 U
PYRENE	153	1700000	N	490 U	495 U	500 U	540 U
TOTAL PAHS	1610	NA		0 U	0 U	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	25 U	25 U	25 U	33 U
AROCLOR-1254	59.8 [9]	1100	N[10]	25 U	25 U	25 U	33 U
AROCLOR-1260	40 [9]	2200	C	25 U	25 U	25 U	33 U
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	0 U	0 U

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-48	SD-48	SD-48	SD-49
SAMPLE ID				SD-48-SS	SD-48-SS-AVG	SD-48-SS-D	SD-49-SS
SAMPLE DATE				20081115	20081115	20081115	20081115
SAMPLE CODE				ORIG	AVG	DUP	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.15 UL	0.15 UL	0.15 UL	0.21 U
ARSENIC	7.24	3.9	C	2.4	2.3	2.2	2.4
BARIUM	130 [15]	15000	N	10.6	11.25	11.9	90.9 J
BERYLLIUM	NA	160	N	1.6	1.55	1.5	1.4 J
CADMIUM	0.68	70	N	0.24	0.18	0.12	0.42
CHROMIUM	43.4	120000	N[12]	11.3	11.1	10.9	16.1 J
COBALT	10 [15]	23	N	4.8	4.8	4.8	9.3
COPPER	18.7	3100	N	7.1	6.7	6.3	**26.9 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		4	3.95	3.9	**60 J**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	0.013 B	0.0107 B	0.0084 U	0.035 B
MOLYBDENUM	NA	390	N	1.6	1.65	1.7	0.082 U
NICKEL	15.9	1500	N	7.5	7.5	7.5	**17.7**
SELENIUM	1 [15]	390	N	0.49 U	0.495 U	0.5 U	0.67 U
SILVER	0.73	390	N	0.093 U	0.094 U	0.095 U	0.17 B
THALLIUM	NA	NA		0.25 U	0.255 U	0.26 U	0.35 U
VANADIUM	57 [15]	390	N	17.5	15.45	13.4	15 J
ZINC	121	23000	N	30.6	26.5	22.4	116
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		68	67.5	67	50
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		7400	7400	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-50	SD-51	SD-53	SD-53
SAMPLE ID				SD-50-SS	SD-51-SS	SD-53-SS	SD-53-SS-AVG
SAMPLE DATE				20081114	20081115	20081114	20081114
SAMPLE CODE				NORMAL	NORMAL	ORIG	AVG
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	1500 UJ	1300 UJ	780 U	780 U
2-METHYLNAPHTHALENE	20.2	310000	N	1500 UJ	1300 UJ	780 U	780 U
ACENAPHTHENE	6.7	3400000	N	1500 UJ	1300 UJ	780 U	780 U
ACENAPHTHYLENE	5.87	3400000	N[7]	1500 UJ	1300 UJ	780 U	780 U
ANTHRACENE	46.9	17000000	N	1500 UJ	1300 UJ	780 U	780 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1689**	1300 U	780 U	780 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	39.2	1300 U	780 U	780 U
BENZO(A)ANTHRACENE	74.8	1500	C	1500 UJ	1300 UJ	780 U	780 U
BENZO(A)PYRENE	88.8	150	C	1500 UJ	1300 UJ	780 U	780 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**360 J**	1300 UJ	780 U	780 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	1500 UJ	1300 UJ	780 U	780 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**280 J**	1300 UJ	780 U	780 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**380 J**	1300 UJ	780 U	780 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	1500 UJ	1300 UJ	780 U	780 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**500 J**	1300 UJ	780 U	780 U
FLUORENE	21.2	2300000	N	1500 UJ	1300 UJ	780 U	780 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	1500 UJ	1300 UJ	780 U	780 U
NAPHTHALENE	34.6	36000	C	1500 UJ	1300 UJ	780 U	780 U
PHENANTHRENE	86.7	1700000	N[8]	1500 UJ	1300 UJ	780 U	780 U
PYRENE	153	1700000	N	**630 J**	1300 UJ	780 U	780 U
TOTAL PAHS	1610	NA		**2150**	0 U	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	7400 UJ	65 UJ	39 U	39 U
AROCLOR-1254	59.8 [9]	1100	N[10]	7400 UJ	65 UJ	39 U	39 U
AROCLOR-1260	40 [9]	2200	C	**2300 J**	65 UJ	39 U	39 U
TOTAL AROCLOR	40	2200	C[11]	**2300**	0 U	0 U	0 U

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-50	SD-51	SD-53	SD-53
SAMPLE ID				SD-50-SS	SD-51-SS	SD-53-SS	SD-53-SS-AVG
SAMPLE DATE				20081114	20081115	20081114	20081114
SAMPLE CODE				NORMAL	NORMAL	ORIG	AVG
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.44 UJ	0.39 UJ	0.24 UL	0.235 UL
ARSENIC	7.24	3.9	C	**12.2 J**	**11.6 J**	**6.1**	**6.4**
BARIUM	130 [15]	15000	N	57.6 J	55.9 J	31.8	30.9
BERYLLIUM	NA	160	N	2.2 J	2.1 J	1.9	1.95
CADMIUM	0.68	70	N	**5.7 J**	**7.8 J**	0.31	0.17225
CHROMIUM	43.4	120000	N[12]	**161 J**	**192 J**	36.3	35.35
COBALT	10 [15]	23	N	**20.4 J**	**21.5 J**	**12.3**	**12.35**
COPPER	18.7	3100	N	**152 J**	**131 J**	**21.6**	**21.35**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**130 J**	**136 J**	17.6	16.8
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.45 J**	**0.53 J**	0.061	0.1155
MOLYBDENUM	NA	390	N	1.3 J	1.6 J	0.96	0.7175
NICKEL	15.9	1500	N	**41.8 J**	**39.5 J**	**20.4**	**21.05**
SELENIUM	1 [15]	390	N	**1.6 J**	**2.2 J**	**1.7**	**1.04**
SILVER	0.73	390	N	**2.1 J**	**2.6 J**	0.15 U	0.15 U
THALLIUM	NA	NA		0.75 UJ	0.66 UJ	0.41 U	0.405 U
VANADIUM	57 [15]	390	N	**62.1 J**	**60.8 J**	36.4	37.05
ZINC	121	23000	N	**375 J**	**374 J**	70.6	68.45
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	26	42	42
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-53	SD-54	SD-55	SD-56
SAMPLE ID				SD-53-SS-D	SD-54-SS	SD-55-SS	SD-56-SS
SAMPLE DATE				20081114	20081114	20081113	20081113
SAMPLE CODE				DUP	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	780 U	1600 UJ	1400 UJ	940 U
2-METHYLNAPHTHALENE	20.2	310000	N	780 U	1600 UJ	1400 UJ	940 U
ACENAPHTHENE	6.7	3400000	N	780 U	1600 UJ	1400 UJ	940 U
ACENAPHTHYLENE	5.87	3400000	N[7]	780 U	1600 UJ	1400 UJ	940 U
ANTHRACENE	46.9	17000000	N	780 U	1600 UJ	1400 UJ	**82 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	780 U	**1813**	**1561**	**1075**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	780 U	52.8	19.9	87.6
BENZO(A)ANTHRACENE	74.8	1500	C	780 U	1600 UJ	1400 UJ	940 U
BENZO(A)PYRENE	88.8	150	C	780 U	1600 UJ	1400 UJ	940 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	780 U	**480 J**	**180 J**	**530 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	780 U	1600 UJ	1400 UJ	**300 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	780 U	**440 J**	**190 J**	**410 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	780 U	**420 J**	1400 UJ	**460 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	780 U	1600 UJ	1400 UJ	940 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	780 U	**590 J**	**270 J**	**700 J**
FLUORENE	21.2	2300000	N	780 U	1600 UJ	1400 UJ	940 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	780 U	1600 UJ	1400 UJ	**300 J**
NAPHTHALENE	34.6	36000	C	780 U	1600 UJ	1400 UJ	940 U
PHENANTHRENE	86.7	1700000	N[8]	780 U	**300 J**	1400 UJ	**240 J**
PYRENE	153	1700000	N	780 U	**1100 J**	**470 J**	**910 J**
TOTAL PAHS	1610	NA		0 U	**3330**	1110	**3932**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	39 U	79 UJ	71 UJ	47 U
AROCLOR-1254	59.8 [9]	1100	N[10]	39 U	79 UJ	71 UJ	47 U
AROCLOR-1260	40 [9]	2200	C	39 U	79 UJ	**180 J**	36 J
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	**180**	36

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-53	SD-54	SD-55	SD-56
SAMPLE ID					SD-53-SS-D	SD-54-SS	SD-55-SS	SD-56-SS
SAMPLE DATE					20081114	20081114	20081113	20081113
SAMPLE CODE					DUP	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	0.23 UL	0.63 J	0.45 UJ	0.28 UL
ARSENIC	7.24		3.9	C	**6.7**	**12.1 J**	**12.9 J**	**8.7**
BARIUM	130	[15]	15000	N	30	61.8 J	62.4 J	36.9
BERYLLIUM	NA		160	N	2	2.1 J	2.3 J	1.5
CADMIUM	0.68		70	N	0.069 B	**3.7 J**	**5.1 J**	**3.7**
CHROMIUM	43.4		120000	N[12]	34.4	**138 J**	**166 J**	**91.1**
COBALT	10	[15]	23	N	**12.4**	**20.2 J**	**21.2 J**	**14.1**
COPPER	18.7		3100	N	**21.1**	**164 J**	**169 J**	**100**
HEXAVALENT CHROMIUM	43.4		2.9	C[13]	NA	NA	NA	NA
IRON	20000		55000	N	NA	NA	NA	NA
LEAD	30.2		400		16	**119 J**	**133 J**	**79.6**
MANGANESE	460		1800	N	NA	NA	NA	NA
MERCURY	0.13		23	N[14]	**0.17**	**0.43 J**	**0.45 J**	**0.24**
MOLYBDENUM	NA		390	N	0.95 B	1.1 J	1.4 J	0.94
NICKEL	15.9		1500	N	**21.7**	**39.5 J**	**42.4 J**	**27.2**
SELENIUM	1	[15]	390	N	0.76 U	**2.5 J**	**2.6 J**	**1.3**
SILVER	0.73		390	N	0.15 U	**1.9 J**	**2.2 J**	**1.2**
THALLIUM	NA		NA		0.4 U	0.8 UJ	0.77 UJ	0.48 U
VANADIUM	57	[15]	390	N	37.7	**61.1 J**	**67.6 J**	44.5
ZINC	121		23000	N	66.3	**347 J**	**378 J**	**250**
METALS (UG/KG)								
DIBUTYLTIN	NA		NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	NA		NA		NA	21	24	36
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA		NA		NA	NA	25000	NA
AVS/SEM (UMOLES/G)								
ACID VOLATILE SULFIDE	NA		NA		NA	NA	NA	NA
CADMIUM	NA		NA		NA	NA	NA	NA
CHROMIUM	NA		NA		NA	NA	NA	NA
COPPER	NA		NA		NA	NA	NA	NA
LEAD	NA		NA		NA	NA	NA	NA
NICKEL	NA		NA		NA	NA	NA	NA
SILVER	NA		NA		NA	NA	NA	NA
ZINC	NA		NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-57	SD-58	SD-59	SD-60
SAMPLE ID				SD-57-SS	SD-58-SS	SD-59-SS	SD-60-SS
SAMPLE DATE				20081114	20081114	20081115	20081112
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	830 U	1300 UJ	750 U	850 U
2-METHYLNAPHTHALENE	20.2	310000	N	830 U	1300 UJ	750 U	850 U
ACENAPHTHENE	6.7	3400000	N	830 U	1300 UJ	750 U	850 U
ACENAPHTHYLENE	5.87	3400000	N[7]	830 U	1300 UJ	750 U	850 U
ANTHRACENE	46.9	17000000	N	830 U	1300 UJ	750 U	850 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	830 U	**1453**	**840**	**982**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	830 U	22.9	53.0	0.17
BENZO(A)ANTHRACENE	74.8	1500	C	830 U	1300 UJ	750 U	850 U
BENZO(A)PYRENE	88.8	150	C	830 U	1300 UJ	750 U	850 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	830 U	**210 J**	**330 J**	850 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	830 U	1300 UJ	750 U	850 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	830 U	**160 J**	**260 J**	850 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	830 U	**280 J**	**380 J**	**170 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	830 U	1300 UJ	750 U	850 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	830 U	**300 J**	**480 J**	**200 J**
FLUORENE	21.2	2300000	N	830 U	1300 UJ	750 U	850 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	830 U	1300 UJ	**170 J**	850 U
NAPHTHALENE	34.6	36000	C	830 U	1300 UJ	750 U	850 U
PHENANTHRENE	86.7	1700000	N[8]	830 U	1300 UJ	**240 J**	850 U
PYRENE	153	1700000	N	830 U	**340 J**	**680 J**	**330 J**
TOTAL PAHS	1610	NA		0 U	1290	**2540**	700
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	410 UJ	1300 UJ	230 U	53 U
AROCLOR-1254	59.8 [9]	1100	N[10]	410 UJ	1300 UJ	230 U	53 U
AROCLOR-1260	40 [9]	2200	C	41 U	**6300 J**	**4200**	53 U
TOTAL AROCLOR	40	2200	C[11]	0 U	**6300**	**4200**	0 U

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-57	SD-58	SD-59	SD-60
SAMPLE ID				SD-57-SS	SD-58-SS	SD-59-SS	SD-60-SS
SAMPLE DATE				20081114	20081114	20081115	20081112
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.25 UJ	0.37 UJ	0.27 U	**1.7 J**
ARSENIC	7.24	3.9	C	**7.4**	**12.8 J**	**9**	**9.5**
BARIUM	130 [15]	15000	N	34.2	61.9 J	54.8 J	52.8 J
BERYLLIUM	NA	160	N	2.1	2.3 J	2.1 J	1.9 J
CADMIUM	0.68	70	N	0.015 U	**7.1 J**	**20.1**	**14.7**
CHROMIUM	43.4	120000	N[12]	37.7	**180 J**	**397 J**	**272 J**
COBALT	10 [15]	23	N	**14.8**	**23.5 J**	**19.8**	**19.2 J**
COPPER	18.7	3100	N	**20.4**	**144 J**	**94.4 J**	**96.5 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		15.4	**181 J**	**167 J**	**132**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	0.036	**0.47 J**	**0.9**	**0.7**
MOLYBDENUM	NA	390	N	0.87 B	1.3 B	0.86	1.2
NICKEL	15.9	1500	N	**24.3**	**46.3 J**	**42.8**	**41.7 J**
SELENIUM	1 [15]	390	N	0.83 U	**1.5 J**	**2.4**	**2.1**
SILVER	0.73	390	N	0.16 U	**2.3 J**	**7.5**	**5.8**
THALLIUM	NA	NA		0.43 U	0.64 UJ	0.46 U	0.56 U
VANADIUM	57 [15]	390	N	42.2	**64.3 J**	**64.3 J**	56.1 J
ZINC	121	23000	N	72.2	**441 J**	**433**	**404 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	36	31
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	22000
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-61	SD-62	SD-63	SD-64
SAMPLE ID				SD-61-SS	SD-62-SS	SD-63-SS	SD-64-SS
SAMPLE DATE				20081113	20081112	20081112	20081112
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	1400 UJ	890 UJ	940 UJ	850 U
2-METHYLNAPHTHALENE	20.2	310000	N	1400 UJ	890 UJ	940 UJ	850 U
ACENAPHTHENE	6.7	3400000	N	1400 UJ	890 UJ	940 UJ	850 U
ACENAPHTHYLENE	5.87	3400000	N[7]	1400 UJ	890 UJ	940 UJ	850 U
ANTHRACENE	46.9	17000000	N	**400 J**	890 UJ	940 UJ	**140 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**2244**	890 U	**1032**	**1648**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**1544**	890 U	45.5	**1181**
BENZO(A)ANTHRACENE	74.8	1500	C	**1300 J**	890 UJ	940 UJ	850 U
BENZO(A)PYRENE	88.8	150	C	**1200 J**	890 UJ	940 UJ	**1000**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**1300 J**	890 UJ	**320 J**	**1100**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**700 J**	890 UJ	940 UJ	**700 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**1300 J**	890 UJ	**220 J**	**860**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**1500 J**	890 UJ	**260 J**	**960**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	1400 UJ	890 UJ	940 UJ	850 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**2600 J**	890 UJ	**340 J**	**1200**
FLUORENE	21.2	2300000	N	**130 J**	890 UJ	940 UJ	850 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**690 J**	890 UJ	**110 J**	**610 J**
NAPHTHALENE	34.6	36000	C	1400 UJ	890 UJ	940 UJ	850 U
PHENANTHRENE	86.7	1700000	N[8]	**1700 J**	890 UJ	940 UJ	**500 J**
PYRENE	153	1700000	N	**3700 J**	890 UJ	**620 J**	**2600 J**
TOTAL PAHS	1610	NA		**16520**	0 U	**1870**	**9670**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	68 UJ	56 UJ	59 UJ	53 U
AROCLOR-1254	59.8 [9]	1100	N[10]	68 UJ	56 UJ	59 UJ	53 U
AROCLOR-1260	40 [9]	2200	C	**370 J**	56 UJ	**560 J**	**1600**
TOTAL AROCLOR	40	2200	C[11]	**370**	0 U	**560**	**1600**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-61	SD-62	SD-63	SD-64
SAMPLE ID				SD-61-SS	SD-62-SS	SD-63-SS	SD-64-SS
SAMPLE DATE				20081113	20081112	20081112	20081112
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	**0.9 J**	**0.92 J**	**1.3 J**	**1.4 J**
ARSENIC	7.24	3.9	C	**11.7 J**	**9.5 J**	**10.5 J**	**10.4**
BARIUM	130 [15]	15000	N	52.8 J	46.5 J	52.3 J	54.6 J
BERYLLIUM	NA	160	N	2.1 J	1.9 J	2.1 J	2.1 J
CADMIUM	0.68	70	N	**5.8 J**	**5.4 J**	**6.3 J**	**9.5 J**
CHROMIUM	43.4	120000	N[12]	**154 J**	**118 J**	**134 J**	**194 J**
COBALT	10 [15]	23	N	**19.4 J**	**17.1 J**	**19.4 J**	**19.4 J**
COPPER	18.7	3100	N	**142 J**	**104 J**	**134 J**	**95.6 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**121 J**	**98.9 J**	**117 J**	**175 J**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.37 J**	**0.35 J**	**0.41 J**	**0.51**
MOLYBDENUM	NA	390	N	1.5 J	1.2 J	1.5 J	1.5 J
NICKEL	15.9	1500	N	**38.2 J**	**36.1 J**	**40.3 J**	**45.7 J**
SELENIUM	1 [15]	390	N	**2.3 J**	**1.9 J**	**2.4 J**	**2.6 J**
SILVER	0.73	390	N	**2.4 J**	**2.3 J**	**2.6 J**	**4.1 J**
THALLIUM	NA	NA		0.74 UJ	0.58 UJ	0.61 UJ	0.57 U
VANADIUM	57 [15]	390	N	**60.3 J**	52.9 J	**60.3 J**	**68.8 J**
ZINC	121	23000	N	**361 J**	**325 J**	**393 J**	**367 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		24	30	28	32
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-65	SD-66	SD-67	SD-68
SAMPLE ID					SD-65-SS	SD-66-SS	SD-67-SS	SD-68-SS
SAMPLE DATE					20081111	20081112	20081111	20081112
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
2-BUTANONE	25,710	(4)	28000000	N	NA	NA	NA	NA
ACETONE	60,030	(4)	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851		820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42		290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740	(4)	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050	(5)	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86		2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA		430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6		36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880	(4)	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210	(4)	NA		NA	NA	NA	NA
TOLUENE	1090		5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2	(6)	220000	C	1300 UJ	1100 UJ	1400 UJ	1100 UJ
2-METHYLNAPHTHALENE	20.2		310000	N	1300 UJ	1100 UJ	1400 UJ	1100 UJ
ACENAPHTHENE	6.7		3400000	N	1300 UJ	1100 UJ	1400 UJ	1100 UJ
ACENAPHTHYLENE	5.87		3400000	N[7]	1300 UJ	1100 UJ	1400 UJ	1100 UJ
ANTHRACENE	46.9		17000000	N	1300 UJ	1100 UJ	1400 UJ	1100 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	1300 U	1100 U	1400 U	**1271**
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	1300 U	1100 U	1400 U	0.18
BENZO(A)ANTHRACENE	74.8		1500	C	1300 UJ	1100 UJ	1400 UJ	1100 UJ
BENZO(A)PYRENE	88.8		150	C	1300 UJ	1100 UJ	1400 UJ	1100 UJ
BENZO(B)FLUORANTHENE	130	(15)	1500	C	1300 UJ	1100 UJ	1400 UJ	1100 UJ
BENZO(G,H,I)PERYLENE	67	(15)	1700000	N[8]	1300 UJ	1100 UJ	1400 UJ	1100 UJ
BENZO(K)FLUORANTHENE	70	(15)	15000	C	1300 UJ	1100 UJ	1400 UJ	1100 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900		2600000	C	NA	NA	NA	NA
CARBAZOLE	NA		NA		NA	NA	NA	NA
CHRYSENE	108		150000	C	1300 UJ	1100 UJ	1400 UJ	**180 J**
DIBENZO(A,H)ANTHRACENE	6.22		150	C	1300 UJ	1100 UJ	1400 UJ	1100 UJ
DIBENZOFURAN	415		78000	N	NA	NA	NA	NA
FLUORANTHENE	113		2300000	N	1300 UJ	1100 UJ	1400 UJ	**190 J**
FLUORENE	21.2		2300000	N	1300 UJ	1100 UJ	1400 UJ	1100 UJ
INDENO(1,2,3-CD)PYRENE	17		1500	C	1300 UJ	1100 UJ	1400 UJ	1100 UJ
NAPHTHALENE	34.6		36000	C	1300 UJ	1100 UJ	1400 UJ	1100 UJ
PHENANTHRENE	86.7		1700000	N[8]	1300 UJ	1100 UJ	1400 UJ	1100 UJ
PYRENE	153		1700000	N	1300 UJ	1100 UJ	1400 UJ	**430 J**
TOTAL PAHS	1610		NA		0 U	0 U	0 U	800
PCBS (UG/KG)								
AROCLOR-1248	40	(9)	2200	C	63 UJ	71 UJ	69 UJ	67 UJ
AROCLOR-1254	59.8	(9)	1100	N[10]	63 UJ	71 UJ	69 UJ	67 UJ
AROCLOR-1260	40	(9)	2200	C	**130 J**	71 UJ	**120 J**	67 UJ
TOTAL AROCLOR	40		2200	C[11]	**130**	0 U	**120**	0 U

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-65	SD-66	SD-67	SD-68
SAMPLE ID					SD-65-SS	SD-66-SS	SD-67-SS	SD-68-SS
SAMPLE DATE					20081111	20081112	20081111	20081112
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	0.36 UJ	**1.2 J**	0.4 UJ	**1.2 J**
ARSENIC	7.24		3.9	C	**12 J**	**12.3 J**	**11 J**	**11.4 J**
BARIUM	130	[15]	15000	N	52.3 J	58.6 J	58 J	59.6 J
BERYLLIUM	NA		160	N	2.2 J	2.3 J	2.2 J	2.3 J
CADMIUM	0.68		70	N	**4.6 J**	**7.4 J**	**6.7 J**	**6.2 J**
CHROMIUM	43.4		120000	N[12]	**120 J**	**137 J**	**149 J**	**135 J**
COBALT	10	[15]	23	N	**18.1 J**	**20.8 J**	**19.7 J**	**20.5 J**
COPPER	18.7		3100	N	**130 J**	**140 J**	**118 J**	**129 J**
HEXAVALENT CHROMIUM	43.4		2.9	C[13]	NA	NA	NA	NA
IRON	20000		55000	N	NA	NA	NA	NA
LEAD	30.2		400		**110 J**	**125 J**	**123 J**	**122 J**
MANGANESE	460		1800	N	NA	NA	NA	NA
MERCURY	0.13		23	N[14]	**0.36 J**	**0.44 J**	**0.42 J**	**0.41 J**
MOLYBDENUM	NA		390	N	1.5 B	2.2 J	1.6 B	1.8 J
NICKEL	15.9		1500	N	**37.3 J**	**44.2 J**	**41.5 J**	**43.1 J**
SELENIUM	1	[15]	390	N	**1.8 J**	**3.1 J**	**1.8 J**	**2.8 J**
SILVER	0.73		390	N	**2.1 J**	**2.5 J**	**3.5 J**	**2.5 J**
THALLIUM	NA		NA		0.62 U	0.72 UJ	0.68 UJ	0.69 UJ
VANADIUM	57	[15]	390	N	**60.4 J**	**65.1 J**	**61.3 J**	**64.9 J**
ZINC	121		23000	N	**348 J**	**456 J**	**395 J**	**433 J**
METALS (UG/KG)								
DIBUTYLTIN	NA		NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	NA		NA		NA	23	NA	25
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA		NA		NA	NA	24000 J	NA
AVS/SEM (UMOLES/G)								
ACID VOLATILE SULFIDE	NA		NA		NA	NA	NA	NA
CADMIUM	NA		NA		NA	NA	NA	NA
CHROMIUM	NA		NA		NA	NA	NA	NA
COPPER	NA		NA		NA	NA	NA	NA
LEAD	NA		NA		NA	NA	NA	NA
NICKEL	NA		NA		NA	NA	NA	NA
SILVER	NA		NA		NA	NA	NA	NA
ZINC	NA		NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-69	SD-69	SD-69	SD-70
SAMPLE ID				SD-69-SS	SD-69-SS-AVG	SD-69-SS-D	SD-70-SS
SAMPLE DATE				20081111	20081111	20081111	20081111
SAMPLE CODE				ORIG	AVG	DUP	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	450 U	450 UJ	450 UJ	6400 UJ
2-METHYLNAPHTHALENE	20.2	310000	N	450 U	450 UJ	450 UJ	6400 UJ
ACENAPHTHENE	6.7	3400000	N	450 U	450 UJ	450 UJ	6400 UJ
ACENAPHTHYLENE	5.87	3400000	N[7]	450 U	450 UJ	450 UJ	6400 UJ
ANTHRACENE	46.9	17000000	N	450 U	450 UJ	450 UJ	6400 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	450 U	450 U	450 U	6400 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	450 U	450 U	450 U	6400 U
BENZO(A)ANTHRACENE	74.8	1500	C	450 U	450 UJ	450 UJ	6400 UJ
BENZO(A)PYRENE	88.8	150	C	450 U	450 UJ	450 UJ	6400 UJ
BENZO(B)FLUORANTHENE	130 [15]	1500	C	450 U	450 UJ	450 UJ	6400 UJ
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	450 U	450 UJ	450 UJ	6400 UJ
BENZO(K)FLUORANTHENE	70 [15]	15000	C	450 U	450 UJ	450 UJ	6400 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	450 U	450 UJ	450 UJ	6400 UJ
DIBENZO(A,H)ANTHRACENE	6.22	150	C	450 U	450 UJ	450 UJ	6400 UJ
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	450 U	450 UJ	450 UJ	**820 J**
FLUORENE	21.2	2300000	N	450 U	450 UJ	450 UJ	6400 UJ
INDENO(1,2,3-CD)PYRENE	17	1500	C	450 U	450 UJ	450 UJ	6400 UJ
NAPHTHALENE	34.6	36000	C	450 U	450 UJ	450 UJ	6400 UJ
PHENANTHRENE	86.7	1700000	N[8]	450 U	450 UJ	450 UJ	6400 UJ
PYRENE	153	1700000	N	450 U	450 UJ	450 UJ	6400 UJ
TOTAL PAHS	1610	NA		0 U	0 U	0 U	820
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	23 U	23 U	23 U	64 UJ
AROCLOR-1254	59.8 [9]	1100	N[10]	23 U	23 U	23 U	64 UJ
AROCLOR-1260	40 [9]	2200	C	23 U	23 U	23 U	**290 J**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	0 U	**290**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-69	SD-69	SD-69	SD-70
SAMPLE ID				SD-69-SS	SD-69-SS-AVG	SD-69-SS-D	SD-70-SS
SAMPLE DATE				20081111	20081111	20081111	20081111
SAMPLE CODE				ORIG	AVG	DUP	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	**2.3 L**	**1.1825 JL**	0.13 UJ	**1.1 J**
ARSENIC	7.24	3.9	C	**6.6**	**6.55**	**6.5**	**12.2 J**
BARIUM	130 [15]	15000	N	16.5	17.55	18.6	56 J
BERYLLIUM	NA	160	N	5.3	6.1	6.9	2.2 J
CADMIUM	0.68	70	N	0.07	0.03695	0.0078 U	**5.7 J**
CHROMIUM	43.4	120000	N[12]	18.1	17.4	16.7	**129 J**
COBALT	10 [15]	23	N	**28.1**	**28.3**	**28.5**	**19.8 J**
COPPER	18.7	3100	N	**19.8**	16.95 J	14.1 J	**138 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**57.2**	**32.5 J**	7.8 J	**122 J**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	0.013 B	0.00925	0.012	**0.4 J**
MOLYBDENUM	NA	390	N	0.81	0.55	0.58 B	2 J
NICKEL	15.9	1500	N	**49.3**	**50.1 J**	**50.9 J**	**42.5 J**
SELENIUM	1 [15]	390	N	0.42 UL	0.345 JL	0.48 J	1.2 UJ
SILVER	0.73	390	N	0.081 U	0.082 U	0.083 U	**2.3 J**
THALLIUM	NA	NA		0.22 U	0.225 U	0.23 U	0.63 UJ
VANADIUM	57 [15]	390	N	27.1 K	28.85 K	30.6	**65.4 J**
ZINC	121	23000	N	**148**	**158 J**	**168 J**	**401 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		74	74	NA	26
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-71	SD-72	SD-73	SD-74
SAMPLE ID				SD-71-SS	SD-72-SS	SD-73-SS	SD-74-SS
SAMPLE DATE				20081111	20081112	20081111	20081111
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	1300 UJ	350 U	750 U	490 U
2-METHYLNAPHTHALENE	20.2	310000	N	1300 UJ	350 U	750 U	490 U
ACENAPHTHENE	6.7	3400000	N	1300 UJ	350 U	750 U	490 U
ACENAPHTHYLENE	5.87	3400000	N[7]	1300 UJ	350 U	750 U	490 U
ANTHRACENE	46.9	17000000	N	1300 UJ	350 U	750 U	**64 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	1300 U	350 U	**830**	**563**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	1300 U	350 U	42.1	48.4
BENZO(A)ANTHRACENE	74.8	1500	C	1300 UJ	350 U	750 U	490 U
BENZO(A)PYRENE	88.8	150	C	1300 UJ	350 U	750 U	490 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	1300 UJ	350 U	**330 J**	**300 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	1300 UJ	350 U	750 U	**140 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	1300 UJ	350 U	**99 J**	**300 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	1300 UJ	350 U	**220 J**	**360 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	1300 UJ	350 U	750 U	490 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	1300 UJ	350 U	**400 J**	**620**
FLUORENE	21.2	2300000	N	1300 UJ	350 U	750 U	490 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	1300 UJ	350 U	**79 J**	**150 J**
NAPHTHALENE	34.6	36000	C	1300 UJ	350 U	750 U	490 U
PHENANTHRENE	86.7	1700000	N[8]	1300 UJ	350 U	750 U	**250 J**
PYRENE	153	1700000	N	1300 UJ	350 UJ	**390 J**	**660**
TOTAL PAHS	1610	NA		0 U	0 U	1518	**2844**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	65 UJ	22 U	37 U	24 U
AROCLOR-1254	59.8 [9]	1100	N[10]	65 UJ	22 U	37 U	24 U
AROCLOR-1260	40 [9]	2200	C	65 UJ	22 U	37 U	21 J
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	0 U	21

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-71	SD-72	SD-73	SD-74
SAMPLE ID				SD-71-SS	SD-72-SS	SD-73-SS	SD-74-SS
SAMPLE DATE				20081111	20081112	20081111	20081111
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	1.4 B	0.13 UL	0.22 UL	0.61 L
ARSENIC	7.24	3.9	C	**10.3 J**	**4.7**	**6.4**	**5.4**
BARIUM	130 [15]	15000	N	53.1 J	17.2 J	22.4	64.8
BERYLLIUM	NA	160	N	2 J	1 J	1.8	1.8
CADMIUM	0.68	70	N	**3.6 J**	0.0079 UL	0.3	**2.7**
CHROMIUM	43.4	120000	N[12]	**102 J**	25.4 J	**57.2**	**67.6**
COBALT	10 [15]	23	N	**17.1 J**	3 J	**11.9**	**12.8**
COPPER	18.7	3100	N	**129 J**	**21.2 J**	**22.6**	**67.1**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**99.1 J**	7.2 J	13.5	**58.4**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.33 J**	0.024 B	0.038 B	**0.3**
MOLYBDENUM	NA	390	N	1.2 B	0.64 J	2.2	0.74
NICKEL	15.9	1500	N	**35.2 J**	9.4 J	**35.3**	**23.1**
SELENIUM	1 [15]	390	N	**1.4 J**	0.64 J	0.72 UL	0.46 UL
SILVER	0.73	390	N	**1.5 J**	0.084 UL	0.14 U	**4.3**
THALLIUM	NA	NA		0.65 UJ	0.23 U	0.38 U	0.24 U
VANADIUM	57 [15]	390	N	55.3 J	46.1 J	42 K	34.2 K
ZINC	121	23000	N	**342 J**	26 J	71.8	90.3
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	77	44	68
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	1600	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-75	SD-76	SD-77	SD-79
SAMPLE ID				SD-75-SS	SD-76-SS	SD-77-SS	SD-79-SS
SAMPLE DATE				20081112	20081111	20081110	20081114
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	490 U	5200 U	3200 U	790 U
2-METHYLNAPHTHALENE	20.2	310000	N	490 U	5200 U	3200 U	790 U
ACENAPHTHENE	6.7	3400000	N	**130 J**	5200 U	3200 U	790 U
ACENAPHTHYLENE	5.87	3400000	N[7]	490 U	5200 U	3200 U	790 U
ANTHRACENE	46.9	17000000	N	**280 J**	5200 U	**500 J**	790 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**2165**	**5664**	**4021**	790 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**1920**	**204**	**661**	790 U
BENZO(A)ANTHRACENE	74.8	1500	C	**1400**	5200 U	3200 U	790 U
BENZO(A)PYRENE	88.8	150	C	**1500**	5200 U	3200 U	790 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**1800 J**	**1300 J**	**4800 J**	790 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**850**	**580 J**	**1600 J**	790 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**1600**	**1500 J**	**1700 J**	790 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**1800**	**1700 J**	**4200**	790 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	490 U	5200 U	3200 U	790 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**2400**	**2700 J**	**6800**	790 U
FLUORENE	21.2	2300000	N	**110 J**	5200 U	3200 U	790 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**820**	**570 J**	**1600 J**	790 U
NAPHTHALENE	34.6	36000	C	490 U	5200 U	3200 U	790 U
PHENANTHRENE	86.7	1700000	N[8]	**1500**	5200 U	**2800 J**	790 U
PYRENE	153	1700000	N	**3400 J**	**3100 J**	**7100**	790 U
TOTAL PAHS	1610	NA		**17590**	**11450**	**31100**	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	30 U	52 U	32 U	39 U
AROCLOR-1254	59.8 [9]	1100	N[10]	30 U	52 U	32 U	39 U
AROCLOR-1260	40 [9]	2200	C	**530 J**	**83**	**170 J**	39 U
TOTAL AROCLOR	40	2200	C[11]	**530**	**83**	**170**	0 U

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-75	SD-76	SD-77	SD-79
SAMPLE ID				SD-75-SS	SD-76-SS	SD-77-SS	SD-79-SS
SAMPLE DATE				20081112	20081111	20081110	20081114
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	**1.3 J**	**1.2 L**	**0.94 L**	0.32 B
ARSENIC	7.24	3.9	C	**5.5**	**10.8**	**5**	**6.5**
BARIUM	130 [15]	15000	N	38.9 J	48.4	112	37.8
BERYLLIUM	NA	160	N	0.83 J	1.6	1	1.2
CADMIUM	0.68	70	N	**2.6**	**3.5**	**14.7**	**1.8**
CHROMIUM	43.4	120000	N[12]	**65.2 J**	**65.6**	**145**	**43.6**
COBALT	10 [15]	23	N	10 J	**16.2**	7.6	**12.7**
COPPER	18.7	3100	N	**84.2 J**	**105**	**101**	**30.6**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**79.9**	**97.5**	**191**	28.2
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.25**	**0.24**	**0.64**	0.096
MOLYBDENUM	NA	390	N	1.9	1.4	1.6	0.73 B
NICKEL	15.9	1500	N	**23.4 J**	**32.8**	**32.5**	**21.6**
SELENIUM	1 [15]	390	N	**2**	1 UL	**1.5 K**	0.79 U
SILVER	0.73	390	N	**1.9**	**1**	**15.7**	0.15 U
THALLIUM	NA	NA		0.31 U	0.53 U	0.63 U	0.41 U
VANADIUM	57 [15]	390	N	29.7 J	50.4 K	53.5 K	35.9
ZINC	121	23000	N	**224 J**	**360**	**275**	94.2
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		55	32	52	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-80	SD-81	SD-82	SD-83
SAMPLE ID				SD-80-SS	SD-81-SS	SD-82-SS	SD-83-SS
SAMPLE DATE				20081114	20081114	20081114	20100820
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	920 U	460 U	930 U	NA
2-METHYLNAPHTHALENE	20.2	310000	N	920 U	460 U	930 U	NA
ACENAPHTHENE	6.7	3400000	N	920 U	460 U	930 U	11 U
ACENAPHTHYLENE	5.87	3400000	N[7]	920 U	460 U	930 U	13 U
ANTHRACENE	46.9	17000000	N	920 U	460 U	930 U	46 J
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	920 U	**530**	930 U	**466.3**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	920 U	0.73	930 U	**466**
BENZO(A)ANTHRACENE	74.8	1500	C	920 U	460 U	930 U	**160**
BENZO(A)PYRENE	88.8	150	C	920 U	460 U	930 U	**160**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	920 U	460 U	930 U	**290**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	920 U	460 U	930 U	**310**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	920 U	65 J	930 U	23 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	920 U	84 J	930 U	**180**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	920 U	460 U	930 U	**230**
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	920 U	100 J	**160 J**	**290**
FLUORENE	21.2	2300000	N	920 U	460 U	930 U	15 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	920 U	460 U	930 U	**310**
NAPHTHALENE	34.6	36000	C	920 U	460 U	930 U	9.8 U
PHENANTHRENE	86.7	1700000	N[8]	920 U	460 U	930 U	**140**
PYRENE	153	1700000	N	920 U	150 J	930 U	**290**
TOTAL PAHS	1610	NA		0 U	399	160	**2406**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	46 U	230 UJ	840 UJ	1.1 U
AROCLOR-1254	59.8 [9]	1100	N[10]	46 U	230 UJ	840 UJ	1.6 U
AROCLOR-1260	40 [9]	2200	C	46 U	**52**	**200**	35
TOTAL AROCLOR	40	2200	C[11]	0 U	**52**	**200**	35

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-80	SD-81	SD-82	SD-83
SAMPLE ID					SD-80-SS	SD-81-SS	SD-82-SS	SD-83-SS
SAMPLE DATE					20081114	20081114	20081114	20100820
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	0.27 UJ	0.15 B	0.29 UJ	0.2 B
ARSENIC	7.24		3.9	C	**8.7**	1.5	**9.1**	1.8 L
BARIUM	130	[15]	15000	N	43.2	6.2	32.1	NA
BERYLLIUM	NA		160	N	1.7	0.19	1	0.59
CADMIUM	0.68		70	N	0.016 U	**1.1**	**6.4**	0.39 L
CHROMIUM	43.4		120000	N[12]	36.2	19.9	**129**	12.1
COBALT	10	[15]	23	N	**14.9**	3.2	**13.6**	NA
COPPER	18.7		3100	N	**20**	**19.9**	**135**	**23.2 L**
HEXAVALENT CHROMIUM	43.4		2.9	C[13]	NA	NA	NA	NA
IRON	20000		55000	N	NA	NA	NA	NA
LEAD	30.2		400		16.9	23.7	**98.1**	**67.6**
MANGANESE	460		1800	N	NA	NA	NA	NA
MERCURY	0.13		23	N[14]	0.038	0.067	**0.35**	0.035
MOLYBDENUM	NA		390	N	0.63 B	0.23 B	0.9 B	NA
NICKEL	15.9		1500	N	**24.1**	4.8	**26.1**	11.6 L
SELENIUM	1	[15]	390	N	**1.4**	0.46 U	0.94 U	0.39 L
SILVER	0.73		390	N	0.17 U	0.2 B	1.3 B	0.069
THALLIUM	NA		NA		0.47 U	0.24 U	0.49 U	0.049 J
VANADIUM	57	[15]	390	N	47.5	6.5	32.9	NA
ZINC	121		23000	N	72.6	52.2	**246**	81.5 L
METALS (UG/KG)								
DIBUTYLTIN	NA		NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	NA		NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA		NA		NA	NA	NA	6710
AVS/SEM (UMOLES/G)								
ACID VOLATILE SULFIDE	NA		NA		NA	NA	NA	NA
CADMIUM	NA		NA		NA	NA	NA	NA
CHROMIUM	NA		NA		NA	NA	NA	NA
COPPER	NA		NA		NA	NA	NA	NA
LEAD	NA		NA		NA	NA	NA	NA
NICKEL	NA		NA		NA	NA	NA	NA
SILVER	NA		NA		NA	NA	NA	NA
ZINC	NA		NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-84	SD-85	SD-86	SD-87
SAMPLE ID				SD-84-SS	SD-85-SS	SD-86-SS	SD-87-SS
SAMPLE DATE				20100820	20100819	20100818	20100818
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	**540**	**22 J**	**84 J**	**85 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	**790**	**140**	**120 J**	**120 J**
ANTHRACENE	46.9	17000000	N	**2300**	**170**	**350**	**300**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**6326**	**875**	**2702**	**2392**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**6325**	**875**	**2702**	**2391**
BENZO(A)ANTHRACENE	74.8	1500	C	**5000**	**390**	**1600**	**1200**
BENZO(A)PYRENE	88.8	150	C	**4400**	**450**	**1500**	**1300**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**4700**	**540**	**2600**	**2100**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**2900**	**550**	**1700**	**1400**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	22 U	**190**	41 U	45 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**5400**	**520**	**1700**	**1400**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	**720**	**280**	**630**	**630**
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**10000**	**570**	**2700**	**1700**
FLUORENE	21.2	2300000	N	**1400**	**43 J**	**100 J**	**67 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	**2300**	**500**	**1500**	**1300**
NAPHTHALENE	34.6	36000	C	**200**	29 J	**52 J**	**62 J**
PHENANTHRENE	86.7	1700000	N[8]	**12000**	**290**	**1500**	**830**
PYRENE	153	1700000	N	**11000**	**770**	**3300**	**2000**
TOTAL PAHS	1610	NA		**63650**	**5454**	**19436**	**14494**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	1 U	1.1 U	1.9 U	2.1 U
AROCLOR-1254	59.8 [9]	1100	N[10]	1.5 U	1.6 U	2.9 U	3.1 U
AROCLOR-1260	40 [9]	2200	C	**83**	35	**290 J**	**380**
TOTAL AROCLOR	40	2200	C[11]	**83**	35	**290**	**380**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-84	SD-85	SD-86	SD-87
SAMPLE ID					SD-84-SS	SD-85-SS	SD-86-SS	SD-87-SS
SAMPLE DATE					20100820	20100819	20100818	20100818
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SS	SS	SS	SS
TOP DEPTH					0	0	0	0
BOTTOM DEPTH					6	6	6	6
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	**2320 L**	**1.1 L**	**1.9 J**	**1 L**
ARSENIC	7.24		3.9	C	**11 L**	3.4 L	**6**	**6.2**
BARIUM	130	[15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA		160	N	1.2 L	0.77	1.4 J	1.3
CADMIUM	0.68		70	N	**29.5 L**	**8.5 L**	**41.2**	**32.9**
CHROMIUM	43.4		120000	N[12]	**76.6**	**55.3**	**296 K**	**277**
COBALT	10	[15]	23	N	NA	NA	NA	NA
COPPER	18.7		3100	N	**37 L**	16.9 L	**97.1**	**108**
HEXAVALENT CHROMIUM	43.4		2.9	C[13]	NA	NA	NA	NA
IRON	20000		55000	N	NA	NA	NA	NA
LEAD	30.2		400		**31500**	**53.1**	**202**	**142 K**
MANGANESE	460		1800	N	NA	NA	NA	NA
MERCURY	0.13		23	N[14]	**0.19**	0.081	**0.27**	**0.3**
MOLYBDENUM	NA		390	N	NA	NA	NA	NA
NICKEL	15.9		1500	N	13.4 L	**16.6 L**	**35.5**	**32.8**
SELENIUM	1	[15]	390	N	0.83 L	0.47 L	**1.3**	**1.2**
SILVER	0.73		390	N	**2.2 L**	0.16	**2.7 J**	**1.4**
THALLIUM	NA		NA		0.12	0.059 J	0.17	0.2
VANADIUM	57	[15]	390	N	NA	NA	NA	NA
ZINC	121		23000	N	**163 L**	**127 L**	**595**	**524**
METALS (UG/KG)								
DIBUTYLTIN	NA		NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	NA		NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA		NA		7230 L	9890	NA	58100
AVS/SEM (UMOLES/G)								
ACID VOLATILE SULFIDE	NA		NA		NA	1.5	NA	18.4
CADMIUM	NA		NA		NA	0.085 J	NA	0.25
CHROMIUM	NA		NA		NA	0.61 J	NA	1.6
COPPER	NA		NA		NA	0.12	NA	0.011 B
LEAD	NA		NA		NA	0.16 J	NA	0.52
NICKEL	NA		NA		NA	0.096 J	NA	0.14
SILVER	NA		NA		NA	0.00072	NA	0.00036 U
ZINC	NA		NA		NA	1.2 J	NA	6.8

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-88	SD-89	SD-90	SD-91
SAMPLE ID				SD-88-SS	SD-89-SS	SD-90-SS	SD-91-SS
SAMPLE DATE				20100819	20100819	20100817	20100817
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	**120**	**38 J**	**62 J**	2.3 U
ACENAPHTHYLENE	5.87	3400000	N[7]	**210**	**110 J**	**120 J**	2.7 U
ANTHRACENE	46.9	17000000	N	**320**	**160 J**	**190 J**	2.3 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1630**	**572**	**1737**	3.4
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**1630**	**565**	**1737**	0.56
BENZO(A)ANTHRACENE	74.8	1500	C	**890**	**390 J**	**810 J**	5.6 J
BENZO(A)PYRENE	88.8	150	C	**920**	**400 J**	**1100 J**	2.4 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**1700**	**760 J**	**2000 J**	3.7 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**880**	**550 J**	**1100 J**	2.4 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	22 U	23 UJ	12 UJ	4.8 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**1100**	**460 J**	**1200 J**	2.8 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	**370**	13 UJ	**270 J**	2.6 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**1800**	**750 J**	**2500 J**	8 J
FLUORENE	21.2	2300000	N	**100 J**	**62 J**	**82 J**	3.1 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**800**	**500 J**	**850 J**	2.4 U
NAPHTHALENE	34.6	36000	C	**140**	**95 J**	**88 J**	2 U
PHENANTHRENE	86.7	1700000	N[8]	**630**	**270 J**	**650 J**	3.8 U
PYRENE	153	1700000	N	**1500**	**670 J**	**1600 J**	6.2 J
TOTAL PAHS	1610	NA		**11480**	**5215**	**12622**	19.8
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	2.5 U	2.7 UJ	2.9 UJ	1.1 U
AROCLOR-1254	59.8 [9]	1100	N[10]	3.7 U	4.1 UJ	4.4 UJ	1.7 U
AROCLOR-1260	40 [9]	2200	C	**6600**	**1800 J**	**690 J**	1.7 U
TOTAL AROCLOR	40	2200	C[11]	**6600**	**1800**	**690**	0 U

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-88	SD-89	SD-90	SD-91
SAMPLE ID				SD-88-SS	SD-89-SS	SD-90-SS	SD-91-SS
SAMPLE DATE				20100819	20100819	20100817	20100817
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	**0.75 J**	**0.9 J**	**1.4 J**	0.2 J
ARSENIC	7.24	3.9	C	**7.8 L**	**9.8 J**	**8.9 J**	3.6
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	1.8 L	2.1 J	1.8 J	2.4
CADMIUM	0.68	70	N	**19.3 J**	**11.9 J**	**5.2 J**	0.18
CHROMIUM	43.4	120000	N[12]	**336 L**	**251 J**	**110 J**	21
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	**94.2 L**	**118 J**	**116 J**	**21.7**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**170**	**147 J**	**111 J**	6.6 J
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**1.1**	**0.76 J**	**0.43 J**	0.0078 U
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	**40.3 L**	**42.9 J**	**36.4 J**	15
SELENIUM	1 [15]	390	N	**1.9 L**	**2 J**	**1.8 J**	0.76
SILVER	0.73	390	N	**7.2 L**	**5.6 J**	**2.8 J**	0.029 J
THALLIUM	NA	NA		0.29 K	0.32 J	0.24 J	0.084 J
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**404 L**	**415 J**	**382 J**	40.2
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		31600	28600	28000 J	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		3.3	11.9	22.6 J	NA
CADMIUM	NA	NA		0.15	0.087	0.034 J	NA
CHROMIUM	NA	NA		2.5	1.7	0.71 J	NA
COPPER	NA	NA		0.53	0.68	0.086 J	NA
LEAD	NA	NA		0.63	0.5	0.36 J	NA
NICKEL	NA	NA		0.19	0.16	0.17 J	NA
SILVER	NA	NA		0.011	0.0093	0.0005 UJ	NA
ZINC	NA	NA		4.1	4	3.9 J	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-92	SD-93	SD-94	SD-95
SAMPLE ID				SD-92-SS	SD-93-SS	SD-94-SS	SD-95-SS
SAMPLE DATE				20100817	20100817	20100817	20100817
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	1.2 U	3.9 J	4.5 U	**26 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	1.4 U	**8.7 J**	5.3 U	**33 J**
ANTHRACENE	46.9	17000000	N	2.6 J	15 J	4.6 U	**73 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	15.7	136	37.2	**552**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	15.0	136	34.6	**552**
BENZO(A)ANTHRACENE	74.8	1500	C	8.7 J	55	16 J	**250 J**
BENZO(A)PYRENE	88.8	150	C	9.4 J	60	22 J	**290 J**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	14	130	27 J	**560 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	29	**78**	67	**340 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	2.5 U	3.8 U	9.7 J	10 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	9.1 J	75	21 J	**310 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	1.4 U	**49**	5.2 U	**150 J**
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	16	110	41 J	**470 J**
FLUORENE	21.2	2300000	N	2.2 J	5.3 J	6.1 U	**29 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	**33**	**80**	**82**	**310 J**
NAPHTHALENE	34.6	36000	C	2.8 J	5.1 J	4 U	**48 J**
PHENANTHRENE	86.7	1700000	N[8]	7.2 J	36	7.4 U	**180 J**
PYRENE	153	1700000	N	18	100	28 J	**520 J**
TOTAL PAHS	1610	NA		152	811	313.7	**3589**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	1.5 U	1.1 U	2.2 U	3 UJ
AROCLOR-1254	59.8 [9]	1100	N[10]	2.2 U	1.7 U	3.3 U	4.5 UJ
AROCLOR-1260	40 [9]	2200	C	2.2 U	**73**	**44**	**720 J**
TOTAL AROCLOR	40	2200	C[11]	0 U	**73**	**44**	**720**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-92	SD-93	SD-94	SD-95
SAMPLE ID				SD-92-SS	SD-93-SS	SD-94-SS	SD-95-SS
SAMPLE DATE				20100817	20100817	20100817	20100817
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.13 B	0.27 L	0.11 J	0.57 J
ARSENIC	7.24	3.9	C	3.9	**4.2**	**4.6**	**8.4 J**
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	1.5	0.81	1.7	1.9 J
CADMIUM	0.68	70	N	0.21	**1.1**	**0.88**	**7.7 J**
CHROMIUM	43.4	120000	N[12]	15	17.9	30.9	**165 J**
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	12.8	**21.8**	**25.1**	**96.9 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		5.1 K	21.5 K	15.9 J	**118 J**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	0.024 J	0.048	0.056	**0.54 J**
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	12.5	10.4	**20.2**	**37.6 J**
SELENIUM	1 [15]	390	N	0.68	0.42	**1.2**	**1.7 J**
SILVER	0.73	390	N	0.033 J	0.19	0.15	**3.7 J**
THALLIUM	NA	NA		0.066 J	0.053 J	0.16 J	0.25 J
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	40.4	100	77.3	**360 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-96	SD-97	SD-98	SD-99
SAMPLE ID				SD-96-SS	SD-97-SS	SD-98-SS	SD-99-SS
SAMPLE DATE				20100819	20100817	20100819	20100819
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	**38 J**	6.9 UJ	**38 J**	8.3 U
ACENAPHTHYLENE	5.87	3400000	N[7]	**110 J**	**38 J**	**100 J**	9.9 U
ANTHRACENE	46.9	17000000	N	**170 J**	**49 J**	**170**	8.5 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**722**	**369**	**811**	8.7 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**715**	**369**	**810**	8.7 U
BENZO(A)ANTHRACENE	74.8	1500	C	**380 J**	**130 J**	**300**	11 U
BENZO(A)PYRENE	88.8	150	C	**500 J**	**170 J**	**400**	8.7 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**1100 J**	**320 J**	**820**	14 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**730 J**	**250 J**	**530**	8.6 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	28 UJ	14 UJ	22 U	18 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**530 J**	**190 J**	**430**	10 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	15 UJ	**130 J**	**250**	9.6 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**870 J**	**370 J**	**660**	9.3 U
FLUORENE	21.2	2300000	N	**63 J**	**23 J**	**60 J**	11 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**660 J**	**240 J**	**480**	8.9 U
NAPHTHALENE	34.6	36000	C	**100 J**	**53 J**	**92 J**	7.5 U
PHENANTHRENE	86.7	1700000	N[8]	**330 J**	**120 J**	**260**	14 U
PYRENE	153	1700000	N	**770 J**	**250 J**	**690**	8.8 U
TOTAL PAHS	1610	NA		**6351**	**2333**	**5280**	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	3.3 UJ	3.4 UJ	2.6 U	2 U
AROCLOR-1254	59.8 [9]	1100	N[10]	4.9 UJ	5.1 UJ	3.9 U	3 U
AROCLOR-1260	40 [9]	2200	C	**1800 J**	**620 J**	**2700 J**	14 J
TOTAL AROCLOR	40	2200	C[11]	**1800**	**620**	**2700**	14

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-96	SD-97	SD-98	SD-99
SAMPLE ID				SD-96-SS	SD-97-SS	SD-98-SS	SD-99-SS
SAMPLE DATE				20100819	20100817	20100819	20100819
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.55 J	**0.71 J**	**0.8 J**	0.099 B
ARSENIC	7.24	3.9	C	**9.7 J**	**10.9 J**	**10.1 L**	**4.7**
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	1.7 J	2.1 J	1.9 L	1.7
CADMIUM	0.68	70	N	**5.2 J**	**6.7 J**	**7.7 J**	0.61 L
CHROMIUM	43.4	120000	N[12]	**120 J**	**171 J**	**167 L**	29.6
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	**130 J**	**145 J**	**129 L**	**21 L**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**112 J**	**141 J**	**131**	14.3
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.51 J**	**0.52 J**	**0.54**	0.039 J
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	**35.1 J**	**43 J**	**39.7 L**	**21.2 L**
SELENIUM	1 [15]	390	N	**1.9 J**	**2.1 J**	**1.8 L**	0.99 L
SILVER	0.73	390	N	**2 J**	**2.3 J**	**3.2 L**	0.091 J
THALLIUM	NA	NA		0.24 J	0.27 J	0.28 K	0.19 K
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**350 J**	**415 J**	**375 L**	69.7
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	31300
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	0.41 U
CADMIUM	NA	NA		NA	NA	NA	0.0035
CHROMIUM	NA	NA		NA	NA	NA	0.064
COPPER	NA	NA		NA	NA	NA	0.12
LEAD	NA	NA		NA	NA	NA	0.037
NICKEL	NA	NA		NA	NA	NA	0.077
SILVER	NA	NA		NA	NA	NA	0.00035 U
ZINC	NA	NA		NA	NA	NA	0.43

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-100	SD-101	SD-102	SD-103
SAMPLE ID				SD-100-SS	SD-101-SS	SD-102-SS	SD-103-SS
SAMPLE DATE				20100819	20100818	20100818	20100818
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	**10 J**	**18 J**	11 UJ	2.9 U
ACENAPHTHYLENE	5.87	3400000	N[7]	**50**	**53 J**	14 UJ	3.5 U
ANTHRACENE	46.9	17000000	N	**47**	**87 J**	29 J	5.6 J
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**291**	**313**	**163**	39.9
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**291**	**305**	**157**	38.2
BENZO(A)ANTHRACENE	74.8	1500	C	**170**	**220 J**	**85 J**	25 J
BENZO(A)PYRENE	88.8	150	C	**160**	**200 J**	**99 J**	24 J
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**300**	**420 J**	**200 J**	41
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**150**	**400 J**	**240 J**	66
BENZO(K)FLUORANTHENE	70 [15]	15000	C	5.1 U	28 UJ	24 UJ	16 J
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**160**	**220 J**	**120 J**	26 J
DIBENZO(A,H)ANTHRACENE	6.22	150	C	**70**	15 UJ	13 UJ	3.4 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**250**	**340 J**	**170 J**	37
FLUORENE	21.2	2300000	N	19 J	**37 J**	16 UJ	4 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**140**	**410 J**	**290 J**	**74**
NAPHTHALENE	34.6	36000	C	20 J	**58 J**	10 UJ	2.6 U
PHENANTHRENE	86.7	1700000	N[8]	**97**	**150 J**	66 J	9.7 J
PYRENE	153	1700000	N	**210**	**350 J**	**170 J**	32
TOTAL PAHS	1610	NA		**1853**	**2963**	1469	356.3
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	1.2 U	3.2 UJ	2.8 UJ	1.4 U
AROCLOR-1254	59.8 [9]	1100	N[10]	1.8 U	4.9 UJ	4.2 UJ	2.2 U
AROCLOR-1260	40 [9]	2200	C	**99**	**190 J**	**200 J**	2.2 U
TOTAL AROCLOR	40	2200	C[11]	**99**	**190**	**200**	0 U

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-100	SD-101	SD-102	SD-103
SAMPLE ID				SD-100-SS	SD-101-SS	SD-102-SS	SD-103-SS
SAMPLE DATE				20100819	20100818	20100818	20100818
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.15 J	0.61 J	**0.83 J**	0.22 J
ARSENIC	7.24	3.9	C	2.1 L	**10 J**	**10.2 J**	**4.2**
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	0.38 L	1.7 J	1.8 J	0.78 J
CADMIUM	0.68	70	N	**3.6 J**	**4.6 J**	**4.6 J**	0.47
CHROMIUM	43.4	120000	N[12]	42.7 L	**133 J**	**136 J**	22
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	17.5 L	**156 J**	**151 J**	16.5
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**32.2**	**120 J**	**123 J**	13.1
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.15**	**0.45 J**	**0.5 J**	0.039
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	8.7 L	**37.7 J**	**37.3 J**	12.8
SELENIUM	1 [15]	390	N	0.48 L	**1.8 J**	**1.8 J**	0.64
SILVER	0.73	390	N	0.46 L	**1.6 J**	**1.7 J**	0.064 J
THALLIUM	NA	NA		0.08 K	0.24 J	0.26 J	0.12
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	80.9 L	**350 J**	**337 J**	52.4
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	50300 J	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	44.6 J	NA	NA
CADMIUM	NA	NA		NA	0.033 J	NA	NA
CHROMIUM	NA	NA		NA	1 J	NA	NA
COPPER	NA	NA		NA	0.48 J	NA	NA
LEAD	NA	NA		NA	0.44 J	NA	NA
NICKEL	NA	NA		NA	0.2 J	NA	NA
SILVER	NA	NA		NA	0.0011 J	NA	NA
ZINC	NA	NA		NA	3.7 J	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION			SD-104	SD-104	SD-104	SD-105
SAMPLE ID			SD-104-SS	SD-104-SS-AVG	SD-104-SS-D	SD-105-SS
SAMPLE DATE			20100818	20100818	20100818	20100818
SAMPLE CODE			ORIG	AVG	DUP	NORMAL
MATRIX			SD	SD	SD	SD
SAMPLE TYPE			NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX			SS	SS	SS	SS
TOP DEPTH			0	0	0	0
BOTTOM DEPTH			6	6	6	6
VOLATILES (UG/KG)						
1,3-DICHLOROBENZENE	842	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA	NA	NA	NA
2-BUTANONE	25,710 (4)	28000000 N	NA	NA	NA	NA
ACETONE	60,030 (4)	61000000 N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000 N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000 N	NA	NA	NA	NA
CHLOROMETHANE	8,740 (4)	120000 N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 (5)	780000 N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000 N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000 C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000 C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 (4)	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 (4)	NA	NA	NA	NA	NA
TOLUENE	1090	5000000 N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)						
1,2-DICHLOROBENZENE	16.5	1900000 N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 (6)	220000 C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000 N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000 N	1.8 U	**6.95 J**	**13 J**	**16 J**
ACENAPHTHYLENE	5.87	3400000 N(7)	**15 J**	**15.5 J**	**16 J**	**21 J**
ANTHRACENE	46.9	17000000 N	26	31.5 J	37 J	**51 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150 C	123	**170**	**217**	**342**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150 C	123	**170**	**217**	**342**
BENZO(A)ANTHRACENE	74.8	1500 C	60	69	**78**	**150 J**
BENZO(A)PYRENE	88.8	150 C	56	69	82	**170 J**
BENZO(B)FLUORANTHENE	130 (15)	1500 C	130	120	110	**350 J**
BENZO(G,H,I)PERYLENE	67 (15)	1700000 N(8)	**71 J**	**110.5 J**	**150 J**	**220 J**
BENZO(K)FLUORANTHENE	70 (15)	15000 C	3.8 U	6.9 U	10 U	9.2 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000 C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000 C	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA	NA
CHRYSENE	108	150000 C	71	85.5	100	**200 J**
DIBENZO(A,H)ANTHRACENE	6.22	150 C	**41 J**	**70.5 J**	**100 J**	**100 J**
DIBENZOFURAN	415	78000 N	NA	NA	NA	NA
FLUORANTHENE	113	2300000 N	**130**	**140**	**150**	**230 J**
FLUORENE	21.2	2300000 N	21	**28.5 J**	**36 J**	**27 J**
INDENO(1,2,3-CD)PYRENE	17	1500 C	**72 J**	**116 J**	**160 J**	**220 J**
NAPHTHALENE	34.6	36000 C	**42**	**56.5**	**71**	**42 J**
PHENANTHRENE	86.7	1700000 N(8)	79	**104.5**	**130**	**120 J**
PYRENE	153	1700000 N	110	140	**170**	**350 J**
TOTAL PAHS	1610	NA	924	1163.95	1403	**2267**
PCBS (UG/KG)						
AROCLOR-1248	40 (9)	2200 C	2.2 U	2.25 U	2.3 U	2.7 UJ
AROCLOR-1254	59.8 (9)	1100 N(10)	3.4 U	3.45 U	3.5 U	4 UJ
AROCLOR-1260	40 (9)	2200 C	30	25 J	20 J	**170 J**
TOTAL AROCLOR	40	2200 C(11)	30	25	20	**170**

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-104	SD-104	SD-104	SD-105
SAMPLE ID				SD-104-SS	SD-104-SS-AVG	SD-104-SS-D	SD-105-SS
SAMPLE DATE				20100818	20100818	20100818	20100818
SAMPLE CODE				ORIG	AVG	DUP	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SS	SS	SS	SS
TOP DEPTH				0	0	0	0
BOTTOM DEPTH				6	6	6	6
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.5 J	0.545 J	0.59 J	**0.64 J**
ARSENIC	7.24	3.9	C	**9**	**9.35**	**9.7**	**37.2 J**
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	1.8 J	1.9 J	2 J	1.7 J
CADMIUM	0.68	70	N	**8.8**	**7.95**	**7.1**	**3 J**
CHROMIUM	43.4	120000	N[12]	**236 K**	**233 K**	**230 K**	**150 J**
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	**60.4**	**62.4**	**64.4**	**183 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
IRON	20000	55000	N	NA	NA	NA	NA
LEAD	30.2	400		**117**	**123.5**	**130**	**114 J**
MANGANESE	460	1800	N	NA	NA	NA	NA
MERCURY	0.13	23	N[14]	**0.5**	**0.48**	**0.46**	**0.41 J**
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	**34.4**	**35.9**	**37.4**	**37.4 J**
SELENIUM	1 [15]	390	N	**1.9**	**2.05**	**2.2**	**1.8 J**
SILVER	0.73	390	N	**2 J**	**1.85 J**	**1.7 J**	**1.3 J**
THALLIUM	NA	NA		0.24	0.25	0.26	0.23 J
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**238**	**243**	**248**	**334 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	**Ecological Screening Value (ESV)[1][3]**	**Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]**	**SD-106 SD-106-SS 20100818 NORMAL SD NORMAL SS 0 6**
VOLATILES (UG/KG)			
1,3-DICHLOROBENZENE	842	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA
2-BUTANONE	25,710 [4]	28000000 N	NA
ACETONE	60,030 [4]	61000000 N	NA
CARBON DISULFIDE	0.851	820000 N	NA
CHLOROBENZENE	8.42	290000 N	NA
CHLOROMETHANE	8,740 [4]	120000 N	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000 N	NA
ISOPROPYLBENZENE	86	2100000 N	NA
METHYL TERT-BUTYL ETHER	NA	430000 C	NA
NAPHTHALENE	34.6	36000 C	NA
SEC-BUTYLBENZENE	880 [4]	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA	NA
TOLUENE	1090	5000000 N	NA
SEMIVOLATILES (UG/KG)			
1,2-DICHLOROBENZENE	16.5	1900000 N	NA
1,3-DICHLOROBENZENE	842	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000 C	NA
2-METHYLNAPHTHALENE	20.2	310000 N	NA
ACENAPHTHENE	6.7	3400000 N	9.5 U
ACENAPHTHYLENE	5.87	3400000 N[7]	**17 J**
ANTHRACENE	46.9	17000000 N	29 J
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150 C	46.2
BAP EQUIVALENT-POSITIVE RESULTS	NA	150 C	35.7
BENZO(A)ANTHRACENE	74.8	1500 C	57 J
BENZO(A)PYRENE	88.8	150 C	9.9 U
BENZO(B)FLUORANTHENE	130 [15]	1500 C	69 J
BENZO(G,H,I)PERYLENE	67 [15]	1700000 N[8]	9.8 U
BENZO(K)FLUORANTHENE	70 [15]	15000 C	20 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000 C	NA
BUTYL BENZYL PHTHALATE	10900	2600000 C	NA
CARBAZOLE	NA	NA	NA
CHRYSENE	108	150000 C	52 J
DIBENZO(A,H)ANTHRACENE	6.22	150 C	11 U
DIBENZOFURAN	415	78000 N	NA
FLUORANTHENE	113	2300000 N	110
FLUORENE	21.2	2300000 N	13 U
INDENO(1,2,3-CD)PYRENE	17	1500 C	**230**
NAPHTHALENE	34.6	36000 C	**59 J**
PHENANTHRENE	86.7	1700000 N[8]	**110**
PYRENE	153	1700000 N	90 J
TOTAL PAHS	1610	NA	823
PCBS (UG/KG)			
AROCLOR-1248	40 [9]	2200 C	2.3 U
AROCLOR-1254	59.8 [9]	1100 N[10]	3.5 U
AROCLOR-1260	40 [9]	2200 C	3.5 U
TOTAL AROCLOR	40	2200 C[11]	0 U

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	**Ecological Screening Value (ESV)[1][3]**	**Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]**	**SD-106 SD-106-SS 20100818 NORMAL SD NORMAL SS 0 6**
METALS (MG/KG)			
ANTIMONY	0.63 [15]	31 N	0.28 J
ARSENIC	7.24	3.9 C	**9.3 L**
BARIUM	130 [15]	15000 N	NA
BERYLLIUM	NA	160 N	1.9 L
CADMIUM	0.68	70 N	**0.83 J**
CHROMIUM	43.4	120000 N[12]	**44.6 L**
COBALT	10 [15]	23 N	NA
COPPER	18.7	3100 N	**41.1 L**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA
IRON	20000	55000 N	NA
LEAD	30.2	400	**52.8**
MANGANESE	460	1800 N	NA
MERCURY	0.13	23 N[14]	**0.17**
MOLYBDENUM	NA	390 N	NA
NICKEL	15.9	1500 N	**31.1 L**
SELENIUM	1 [15]	390 N	**1.7 L**
SILVER	0.73	390 N	0.22 L
THALLIUM	NA	NA	0.29 K
VANADIUM	57 [15]	390 N	NA
ZINC	121	23000 N	**122 L**
METALS (UG/KG)			
DIBUTYLTIN	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)			
PERCENT SOLIDS	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)			
TOTAL ORGANIC CARBON	NA	NA	NA
AVS/SEM (UMOLES/G)			
ACID VOLATILE SULFIDE	NA	NA	NA
CADMIUM	NA	NA	NA
CHROMIUM	NA	NA	NA
COPPER	NA	NA	NA
LEAD	NA	NA	NA
NICKEL	NA	NA	NA
SILVER	NA	NA	NA
ZINC	NA	NA	NA

Table 4-2

Detected Concentrations Table for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Notes:
1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for freshwater sediment (USEPA, August 2006) and marine sediment (USEPA, July 2006). Lower of the freshwater and marine screening levels is presented.
2 - Screening criteria for sediment are based on USEPA Regional Screening Levels (RSLs) for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment, the screening criteria presented in the table for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.
3 - Concentrations exceeding the ESV are shaded black with white font. Concentrations exceeding the adjusted RSL for residential soil are shaded blue with black font. Concentrations exceeding both the ESV and the RSL are shaded red with white font.
4 - TCEQ Ecological Benchmarks for Sediment, January 2006.
5 - Value for trans-1,2-dichloroethene used as a surrogate for cis-1,2-dichloroethene.
6 - Value for 2-methylnaphthalene used as a surrogate for 1-methylnaphthalene.
7 - The value for acenapthene is used as a surrogate for acenaphthylene.
8 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
9 - Value for Total PCBs used as a surrogate for Aroclor-1248, Aroclor-1254 and Aroclor-1260.
10 - One tenth the noncarcinogenic value is less than the carcinogenic value; the noncarcinogenic value is presented.
11 - The value is for high risk PCBs.
12 - The value is for trivalent chromium.
13 - The value is for hexavalent chromium.
14 - The value is for mercuric chloride.
15 - NOAA Quick Reference Tables (Buchman, 2008).

Definitions:
B = Blank contamination
C = Carcinogenic
J = Estimated
K = Biased high
L = Biased low
N = Non-carcinogenic
NA = Not applicable or not available
R = Rejected
SD = Sediment
SS = Surface sediment
U = Non-detected

Table 4-3

Occurrence and Distribution of Chemicals - Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]	Adjusted Regional Screening Level (RSL) For Residential Soil[5]	# Detects Greater Than Adjusted RSL For Residential Soil[1]
Volatile Organics (ug/kg)												
1,3-DICHLOROBENZENE	1/41	2 J	2 J	SD-22	5.9	24	2.0	7.8	842	0	NA	0
1,4-DICHLOROBENZENE	4/41	1 J	3 J	SD-22	5.9	24	1.8	7.1	460	0	24000 C	0
2-BUTANONE	3/18	17 J	23 J	SD-13, SD-19	12	120	21	20	25,710 [6]	0	28000000 N	0
ACETONE	6/38	7.1 J	150 J	SD-40	13	240	82	50	60,030 [6]	0	61000000 N	0
CARBON DISULFIDE	2/40	9.1 J	12 J	SD-29	5.9	24	11	8.2	0.851	2	820000 N	0
CHLOROBENZENE	1/41	3 J	3 J	SD-22	5.9	24	3.0	7.8	8.42	0	290000 N	0
CHLOROMETHANE	1/41	13 J	13 J	SD-35	12	49	13	16	8,740 [6]	0	120000 N	0
METHYL TERT-BUTYL ETHER	24/41	3 J	9 J	SD-23, SD-18, SD-16, SD-32	5.9	36	6.0	6.9	NA	0	430000 C	0
NAPHTHALENE	1/30	7 J	7 J	SD-13	6	24	7.0	8.8	34.6	0	36000 C	0
TOLUENE	3/41	3 J	10 J	SD-27	5.9	24	5.7	7.9	1090	0	5000000 N	0
Semivolatile Organics (ug/kg)												
1,3-DICHLOROBENZENE	1/39	420 J	420 J	SD-27	390	1600	420	531	842	0	NA	0
1,4-DICHLOROBENZENE	8/39	76 J	850 J	SD-27	74	1600	280	386	460	1	24000 C	0
1-METHYLNAPHTHALENE	1/66	39 J	39 J	SD-44	350	6400	39	596	20.2 [7]	1	220000 C	0
2-METHYLNAPHTHALENE	1/77	34 J	34 J	SD-4	350	6400	34	564	20.2	1	310000 N	0
ACENAPHTHENE	21/101	3.9 J	790 J	SD-28	1.2	6400	129	406	6.7	20	3400000 N	0
ACENAPHTHYLENE	19/101	8.7 J	790	SD-84	1.4	6400	114	448	5.87	19	3400000 N[8]	0
ANTHRACENE	44/101	2.6 J	2300	SD-84	2.3	6400	254	443	46.9	37	17000000 N	0
BAP EQUIVALENT-HALFND	82/101	3.4	6472	SD-28	8.7	6400	1340	1200	NA	0	150 C	76
BAP EQUIVALENT-POS	82/101	0.17	6472	SD-28	8.7	6400	772	732	NA	0	150 C	61
BENZO(A)ANTHRACENE	59/101	5.6 J	5200 J	SD-28	11	6400	700	665	74.8	52	1500 C	4
BENZO(A)PYRENE	63/101	9.4 J	4400 J	SD-28, SD-84	2.4	6400	694	652	88.8	58	150 C	55
BENZO(B)FLUORANTHENE	78/101	14	5800 J	SD-28	3.7	6400	940	843	130 [16]	72	1500 C	12
BENZO(G,H,I)PERYLENE	48/101	29	3100 J	SD-28	2.4	6400	650	601	67 [16]	45	1700000 N[9]	0
BENZO(K)FLUORANTHENE	47/101	9.7 J	2700 J	SD-28	2.5	6400	549	446	70 [16]	44	15000 C	0
BIS(2-ETHYLHEXYL)PHTHALATE	37/39	78 J	2900 J	SD-32	860	1500	781	771	180	35	350000 C	0
BUTYL BENZYL PHTHALATE	3/39	120 J	190 J	SD-34	390	1600	157	514	10900	0	2600000 C	0
CARBAZOLE	5/39	130 J	990 J	SD-28	390	1600	348	524	NA	0	NA	0
CHRYSENE	77/101	9.1 J	5400	SD-84, SD-28	2.8	6400	805	746	108	70	150000 C	0
DIBENZO(A,H)ANTHRACENE	16/101	41 J	720	SD-84	1.4	6400	294	468	6.22	16	150 C	10
DIBENZOFURAN	1/39	340 J	340 J	SD-28	390	1600	340	527	415	0	78000 N	0
FLUORANTHENE	84/101	8 J	10000	SD-84	9.3	1400	1190	1060	113	77	2300000 N	0
FLUORENE	26/101	2.2 J	1400	SD-84	3.1	6400	149	438	21.2	23	2300000 N	0
INDENO(1,2,3-CD)PYRENE	54/101	33	3400 J	SD-28	2.4	6400	566	576	17	54	1500 C	4
NAPHTHALENE	20/101	2.8 J	290 J	SD-28	2	6400	87	437	34.6	16	36000 C	0
PHENANTHRENE	62/101	7.2 J	12000	SD-84	3.8	6400	842	748	86.7	58	1700000 N[9]	0
PYRENE	82/101	6.2 J	13000 J	SD-28	8.8	6400	1500	1330	153	74	1700000 N	0
TOTAL PAHS	84/101	19.8	63660	SD-28	0	0	7260	6040	1610	63	NA	0
PCBs (ug/kg)												
AROCLOR-1254	1/101	400 J	400 J	SD-43	1.5	11000	400	144	59.8 [10]	1	1100 N[11]	0
AROCLOR-1260	78/101	14 J	54000	SD-9	1.7	79	1790	1380	40 [10]	72	2200 C	9
TOTAL AROCLOR	79/101	14	54000	SD-9	0	0	1770	1380	40	73	2200 C[12]	9
Metals (mg/kg)												
ANTIMONY	48/103	0.11 J	2320 L	SD-84	0.099	2.1	49.4	23.2	0.63 [16]	35	31 N	1
ARSENIC	103/103	1.5	37.2 J	SD-105	--	--	8.2	8.2	7.24	61	3.9 C	92
BARIUM	68/68	6.2	112	SD-77	--	--	50.2	50.2	130 [16]	0	15000 N	0
BERYLLIUM	103/103	0.19	6.9	SD-69	--	--	1.7	1.7	NA	0	160 N	0
CADMIUM	100/103	0.03695	296	SD-43	0.0078	0.069	11.2	10.9	0.68	88	70 N	1
CHROMIUM	103/103	10.9	699 J	SD-43	--	--	147	147	43.4	85	120000 N[13]	0
COBALT	68/68	3 J	28.5	SD-69	--	--	16.4	16.4	10 [16]	56	23 N	3
COPPER	103/103	6.3	183 J	SD-105	--	--	90.8	90.8	18.7	95	3100 N	0
HEXAVALENT CHROMIUM	5/41	0.53 J	13 J	SD-37	0.44	2.5	4.7	1.3	43.4	0	2.9 C[14]	2
LEAD	103/103	3.9	31500	SD-84	--	--	407	407	30.2	88	400	1
MERCURY	97/103	0.00925	3.5 J	SD-30	0.0078	0.038	0.38	0.36	0.13	79	23 N[15]	0
MOLYBDENUM	56/68	0.55	2.3 J	SD-15, SD-40	0.05	1.6	1.4	1.2	NA	0	390 N	0
NICKEL	103/103	4.8	62.8 J	SD-28	--	--	31.8	31.8	15.9	89	1500 N	0
SELENIUM	66/103	0.345 JL	3.1 J	SD-66	0.37	1.9	1.5	1.2	1 [16]	46	390 N	0
SILVER	81/103	0.029 J	28.6 J	SD-28	0.081	3.4	2.7	2.2	0.73	69	390 N	0
THALLIUM	26/103	0.049 J	2.1 J	SD-16	0.22	4	0.27	0.43	NA	0	NA	0
VANADIUM	68/68	6.5	120 J	SD-28	--	--	48.4	48.4	57 [16]	24	390 N	0
ZINC	103/103	22.4	636 J	SD-28	--	--	290	290	121	82	23000 N	0
Metals (ug/kg)												
DIBUTYLTIN	3/6	5.5 J	11 J	SD-40	3.3	5.6	8.8	5.5	NA	0	NA	0
Miscellaneous Parameters (%)												
PERCENT SOLIDS	69/69	20	85	SD-3	--	--	39.1	39.1	NA	0	NA	0

Table 4-3

Occurrence and Distribution of Chemicals - Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]	Adjusted Regional Screening Level (RSL) For Residential Soil[5]	# Detects Greater Than Adjusted RSL For Residential Soil[1]
Miscellaneous Parameters (mg/kg)												
TOTAL ORGANIC CARBON	24/24	1600	58100	SD-87	--	--	31900	31900	NA	0	NA	0
AVS/SEM (umoles/g)												
ACID VOLATILE SULFIDE	6/7	1.5	44.6 J	SD-101	0.41	0.41	17.1	14.6	NA	0	NA	0
CADMIUM	7/7	0.0035	0.25	SD-87	--	--	0.092	0.092	NA	0	NA	0
CHROMIUM	7/7	0.064	2.5	SD-88	--	--	1.2	1.2	NA	0	NA	0
COPPER	6/7	0.086 J	0.68	SD-89	0.011	0.011	0.34	0.29	NA	0	NA	0
LEAD	7/7	0.037	0.63	SD-88	--	--	0.38	0.38	NA	0	NA	0
NICKEL	7/7	0.077	0.2 J	SD-101	--	--	0.15	0.15	NA	0	NA	0
SILVER	4/7	0.00072	0.011	SD-88	0.00035	0.0005	0.0055	0.0032	NA	0	NA	0
ZINC	7/7	0.43	6.8	SD-87	--	--	3.4	3.4	NA	0	NA	0

Notes:

1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection and exceedances.

2 - Average of positive analytical results only.

3 - Average of all analytical results are calculated using half of the detection limit for nondetects.

4 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for freshwater sediment (USEPA, August 2006) and marine sediment (USEPA, July 2006). Lower of the freshwater and marine screening levels is presented.

5 - Screening criteria for sediment are based on USEPA Regional Screening Levels (RSLs) for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment, the screening criteria presented in the table for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.

6 - TCEQ Ecological Benchmarks for Sediment, January 2006.

7 - Value for 2-methylnaphthalene used as a surrogate for 1-methylnaphthalene.

8 - The value for acenapthene is used as a surrogate for acenaphthylene.

9 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.

10 - Value for Total PCBs used as a surrogate for Aroclor-1254 and Aroclor-1260.

11 - One tenth the noncarcinogenic value is less than the carcinogenic value; the noncarcinogenic value is presented.

12 - The value is for high risk PCBs.

13 - The value is for trivalent chromium.

14 - The value is for hexavalent chromium.

15 - The value is for mercuric chloride.

16 - NOAA Quick Reference Tables (Buchman, 2008).

Definitions:

C = Carcinogenic
J = Estimated
L = Biased low
N = Non-carcinogenic
NA = Not applicable or not available

Associated Samples:

SD-10-031805	SD-24-SS	SD-45-SS	SD-65-SS	SD-86-SS
SD-100-SS	SD-25-SS	SD-46-SS	SD-66-SS	SD-87-SS
SD-101-SS	SD-26-SS	SD-47-SS	SD-67-SS	SD-88-SS
SD-102-SS	SD-27-SS	SD-48-SS	SD-68-SS	SD-89-SS
SD-103-SS	SD-28-SS	SD-48-SS-D	SD-69-SS	SD-9-031805
SD-104-SS	SD-29-SS	SD-49-SS	SD-69-SS-D	SD-90-SS
SD-104-SS-D	SD-3-031705	SD-5-031805	SD-7-031805	SD-91-SS
SD-105-SS	SD-30-SS	SD-50-SS	SD-70-SS	SD-92-SS
SD-106-SS	SD-31-SS	SD-51-SS	SD-71-SS	SD-93-SS
SD-11-031805	SD-32-SS	SD-53-SS	SD-72-SS	SD-94-SS
SD-12-031805	SD-33-SS	SD-53-SS-D	SD-73-SS	SD-95-SS
SD-13-SS	SD-34-SS	SD-54-SS	SD-74-SS	SD-96-SS
SD-14-SS	SD-35-SS	SD-55-SS	SD-75-SS	SD-97-SS
SD-15-SS	SD-36-SS	SD-56-SS	SD-76-SS	SD-98-SS
SD-16-SS	SD-37-SS	SD-57-SS	SD-77-SS	SD-99-SS
SD-17-SS	SD-38-SS	SD-58-SS	SD-79-SS	
SD-18-SS	SD-39-SS	SD-59-SS	SD-8-031805	
SD-19-SS	SD-4-031705	SD-6-031805	SD-80-SS	
SD-2-031805	SD-40-SS	SD-60-SS	SD-81-SS	
SD-20-SS	SD-41-SS	SD-61-SS	SD-82-SS	
SD-21-SS	SD-42-SS	SD-62-SS	SD-83-SS	
SD-22-SS	SD-43-SS	SD-63-SS	SD-84-SS	
SD-23-SS	SD-44-SS	SD-64-SS	SD-85-SS	

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	BOWLEY BOWLEYS_QUARTERS-01 20100821 NORMAL SD BACKGROUND SB 12 12	DOWNSTREAM MIDDLE_RIVER_DOWNSTREAM-01 20100820 NORMAL SD OFFSITE SB 12 12	MARSHY_POINT MARSHY_POINT-01 20100821 NORMAL SD BACKGROUND SB 12 12	SD-78 SD-78-01 20081117 NORMAL SD BACKGROUND SB 10 14
VOLATILES (UG/KG)						
1,3-DICHLOROBENZENE	842	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000 N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000 N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000 N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000 N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000 N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000 N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000 N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000 C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000 C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA	NA	NA	NA	NA
TOLUENE	1090	5000000 N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)						
1,2-DICHLOROBENZENE	16.5	1900000 N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000 C	NA	NA	NA	1800 U
2-METHYLNAPHTHALENE	20.2	310000 N	NA	NA	NA	1800 U
ACENAPHTHENE	6.7	3400000 N	5.1 U	**11 J**	4.6 U	1800 U
ACENAPHTHYLENE	5.87	3400000 N[7]	**29 J**	**17 J**	5.5 U	1800 U
ANTHRACENE	46.9	17000000 N	**47 J**	26 J	15 J	1800 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150 C	106	73.1	7.8	**1978**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150 C	103	71.3	2.0	87.7
BENZO(A)ANTHRACENE	74.8	1500 C	70	54	20 J	1800 U
BENZO(A)PYRENE	88.8	150 C	74	47	4.8 U	1800 U
BENZO(B)FLUORANTHENE	130 [15]	1500 C	110	89	7.6 U	**580 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000 N[8]	**110**	**92**	4.8 U	1800 U
BENZO(K)FLUORANTHENE	70 [15]	15000 C	11 U	6.8 U	9.7 U	**500 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000 C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000 C	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA	NA
CHRYSENE	108	150000 C	63	56	21 J	**710 J**
DIBENZO(A,H)ANTHRACENE	6.22	150 C	5.9 U	3.7 U	5.4 U	1800 U
DIBENZOFURAN	415	78000 N	NA	NA	NA	NA
FLUORANTHENE	113	2300000 N	**200**	92	61	**1200 J**
FLUORENE	21.2	2300000 N	**51 J**	21 J	13 J	1800 U
INDENO(1,2,3-CD)PYRENE	17	1500 C	**110**	**99**	5 U	**240 J**
NAPHTHALENE	34.6	36000 C	**110**	**48**	**42 J**	1800 U
PHENANTHRENE	86.7	1700000 N[8]	**140**	71	57	**630 J**
PYRENE	153	1700000 N	130	96	37 J	**1200 J**
TOTAL PAHS	1610	NA	1244	819	266	**5060**
PCBS (UG/KG)						
AROCLOR-1248	40 [9]	2200 C	2.5 U	2.6 U	2.3 U	22 U
AROCLOR-1254	59.8 [9]	1100 N[10]	3.8 U	4 U	3.4 U	22 U
AROCLOR-1260	40 [9]	2200 C	3.8 U	**65**	3.4 U	22 U
TOTAL AROCLOR	40	2200 C[11]	0 U	**65**	0 U	0 U
METALS (MG/KG)						
ANTIMONY	0.63	31 N	0.32	**1.7 L**	0.3	0.13 U
ARSENIC	7.24	3.9 C	**9.2**	**11 L**	**10.5**	2.1

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	BOWLEY BOWLEYS_QUARTERS-01 20100821 NORMAL SD BACKGROUND SB 12 12	DOWNSTREAM MIDDLE_RIVER_DOWNSTREAM-01 20100820 NORMAL SD OFFSITE SB 12 12	MARSHY_POINT MARSHY_POINT-01 20100821 NORMAL SD BACKGROUND SB 12 12	SD-78 SD-78-01 20081117 NORMAL SD BACKGROUND SB 10 14
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	NA	NA	NA	58.9 J
BERYLLIUM	NA	160 N	1.7	1.9	2	1 J
CADMIUM	0.68	70 N	**0.91**	**7.7 L**	0.67	0.44
CHROMIUM	43.4	120000 N[12]	33.2	**246**	37.6	**66.8 J**
COBALT	10 [15]	23 N	NA	NA	NA	7.4
COPPER	18.7	3100 N	**54**	**122 L**	**39.9**	15.7 J
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**75.1**	**201**	**45.2**	**95.5 J**
MERCURY	0.13	23 N[14]	**0.29**	**1.1**	**0.26**	0.035 B
MOLYBDENUM	NA	390 N	NA	NA	NA	0.51
NICKEL	15.9	1500 N	**42.3**	**50.3 L**	**40.4**	**42.5**
SELENIUM	1 [15]	390 N	**2.5**	**2.3 L**	**2.4**	0.63
SILVER	0.73	390 N	0.24	**2.7**	0.17	**2.5**
THALLIUM	NA	NA	0.33	0.29	0.39	0.23 U
VANADIUM	57 [15]	390 N	NA	NA	NA	14.5 J
ZINC	121	23000 N	**209**	**417 L**	**167**	86
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	NA	NA	75
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	41900	NA	8700
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-13	SD-14	SD-16	SD-19
SAMPLE ID				SD-13-01	SD-14-01	SD-16-01	SD-19-01
SAMPLE DATE				20051020	20051020	20051020	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				12	12	12	12
BOTTOM DEPTH				12	12	12	12
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		15 UL	54 U	16 U	15 U
1,4-DICHLOROBENZENE	460	24000	C	15 UL	54 U	16 U	15 U
2-BUTANONE	25,710 [4]	28000000	N	76 UR	270 UR	18 J	37 J
ACETONE	60,030 [4]	61000000	N	76 B	270 B	100 B	220
CARBON DISULFIDE	0.851	820000	N	15 UL	**19 J**	**7 J**	**6 J**
CHLOROBENZENE	8.42	290000	N	15 UL	54 U	16 U	15 U
CHLOROMETHANE	8,740 [4]	120000	N	30 UL	110 U	32 U	30 U
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	15 UL	54 U	16 U	15 U
ISOPROPYLBENZENE	86	2100000	N	3 J	54 U	16 U	10 J
METHYL TERT-BUTYL ETHER	NA	430000	C	30 UL	110 U	4 J	30 U
NAPHTHALENE	34.6	36000	C	15 UL	54 U	16 U	15 U
SEC-BUTYLBENZENE	880 [4]	NA		20 L	54 U	16 U	33
TERT-BUTYLBENZENE	1,210 [4]	NA		15 UL	54 U	16 U	2 J
TOLUENE	1090	5000000	N	15 UL	54 U	16 U	15 U
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	**260 J**	710 U	1000 U	1000 U
1,3-DICHLOROBENZENE	842	NA		1000 U	710 U	1000 U	1000 U
1,4-DICHLOROBENZENE	460	24000	C	180 J	710 U	1000 U	1000 U
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	1000 U	710 U	1000 U	1000 U
2-METHYLNAPHTHALENE	20.2	310000	N	**340 J**	710 U	**220 J**	1000 U
ACENAPHTHENE	6.7	3400000	N	**750 J**	710 U	**480 J**	**190 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	1000 U	710 U	1000 U	1000 U
ANTHRACENE	46.9	17000000	N	**1600 J**	710 U	**820 J**	**640 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**10464**	710 U	**4399**	**3536**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**10464**	710 U	**3899**	**3536**
BENZO(A)ANTHRACENE	74.8	1500	C	**7600 J**	710 U	**2600 J**	**2300**
BENZO(A)PYRENE	88.8	150	C	**7300 J**	710 U	**3000 J**	**2300 J**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**10000 J**	710 U	**4600 J**	**3100 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**4800 J**	710 U	**1800 J**	**1800 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**4500 J**	710 U	**1600 J**	**1300 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	**3400 J**	710 U	**1100 J**	**360 J**
BUTYL BENZYL PHTHALATE	10900	2600000	C	830 J	710 U	1000 UJ	1000 U
CARBAZOLE	NA	NA		1000 J	710 U	310 J	310 J
CHRYSENE	108	150000	C	**9300 J**	710 U	**2900 J**	**2800**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	**790 J**	710 U	1000 UJ	**480 J**
DIBENZOFURAN	415	78000	N	400 J	710 U	1000 U	1000 U
FLUORANTHENE	113	2300000	N	**11000 J**	710 U	**3500 J**	**4400**
FLUORENE	21.2	2300000	N	**570 J**	710 U	**330 J**	**290 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	**5600 J**	710 U	**1600 J**	**2000 J**
NAPHTHALENE	34.6	36000	C	**550 J**	710 U	**360 J**	**300 J**
PHENANTHRENE	86.7	1700000	N[8]	**7900 J**	710 U	**3200 J**	**2800**
PYRENE	153	1700000	N	**24000 J**	710 U	**11000 J**	**6000**
TOTAL PAHS	1610	NA		**96600**	0 U	**38010**	**30700**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	53 U	37 U	54 U	54 U
AROCLOR-1254	59.8 [9]	1100	N[10]	53 U	37 U	54 U	54 U
AROCLOR-1260	40 [9]	2200	C	**2500**	37 U	**1400**	**330 J**
TOTAL AROCLOR	40	2200	C[11]	**2500**	0 U	**1400**	**330**
METALS (MG/KG)							
ANTIMONY	0.63	31	N	**2**	0.72 U	**1.5**	**2**
ARSENIC	7.24	3.9	C	**6.9**	3.9	**6.6**	3

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-13	SD-14	SD-16	SD-19
SAMPLE ID				SD-13-01	SD-14-01	SD-16-01	SD-19-01
SAMPLE DATE				20051020	20051020	20051020	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				12	12	12	12
BOTTOM DEPTH				12	12	12	12
METALS (CONTINUED) (MG/KG)							
BARIUM	130 [15]	15000	N	68.9	27.9	71.9	85.1
BERYLLIUM	NA	160	N	1.8	1.9	2.2	1.8
CADMIUM	0.68	70	N	**13.6**	0.07	**26.8**	**34.4**
CHROMIUM	43.4	120000	N[12]	**227**	28	**443**	**756**
COBALT	10 [15]	23	N	**14.5**	**11.3**	**17.8**	**13.2**
COPPER	18.7	3100	N	**107**	16	**109**	**57.6**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	1.5 UL	1 UL	1.6 UL	1.6 UL
LEAD	30.2	400		**242**	8.9	**251**	**130**
MERCURY	0.13	23	N[14]	**0.73 L**	0.06 L	**3.5 L**	**1 L**
MOLYBDENUM	NA	390	N	1.9	0.88	1.8	1
NICKEL	15.9	1500	N	**49.6**	**19.1**	**69.1**	**35.1**
SELENIUM	1 [15]	390	N	0.79 UL	0.63 UL	0.94 UL	0.9 UL
SILVER	0.73	390	N	**16.2**	0.49 L	**27.3**	**11.5**
THALLIUM	NA	NA		1.36 U	1.08 U	2.1	1.53 U
VANADIUM	57 [15]	390	N	**82.2**	27.8	**110**	49.2
ZINC	121	23000	N	**423**	54	**484**	**458**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		32	46	32	32
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	33000
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-27	SD-28	SD-29	SD-31
SAMPLE ID				SD-27-01	SD-28-01	SD-29-01	SD-31-01
SAMPLE DATE				20051021	20051021	20051021	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				12	12	12	12
BOTTOM DEPTH				12	12	12	12
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		14 UL	13 U	13 UJ	10 UJ
1,4-DICHLOROBENZENE	460	24000	C	14 UL	13 U	13 UJ	10 UJ
2-BUTANONE	25,710 [4]	28000000	N	70 UR	27 J	64 UJ	52 UJ
ACETONE	60,030 [4]	61000000	N	50 B	130 B	150 B	65 B
CARBON DISULFIDE	0.851	820000	N	14 UL	**6 J**	13 UJ	**5 J**
CHLOROBENZENE	8.42	290000	N	14 UL	13 U	13 UJ	10 UJ
CHLOROMETHANE	8,740 [4]	120000	N	28 UL	26 U	25 UJ	21 UJ
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	14 UL	13 U	13 UJ	10 UJ
ISOPROPYLBENZENE	86	2100000	N	14 UL	13 U	13 UJ	10 UJ
METHYL TERT-BUTYL ETHER	NA	430000	C	28 UL	26 U	25 UJ	21 UJ
NAPHTHALENE	34.6	36000	C	14 UL	13 U	13 UJ	10 UJ
SEC-BUTYLBENZENE	880 [4]	NA		14 UL	13 U	13 UJ	10 UJ
TERT-BUTYLBENZENE	1,210 [4]	NA		14 UL	13 U	13 UJ	10 UJ
TOLUENE	1090	5000000	N	14 UL	13 U	13 UJ	2 J
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	940 U	850 U	900 U	740 U
1,3-DICHLOROBENZENE	842	NA		940 U	850 U	900 U	740 U
1,4-DICHLOROBENZENE	460	24000	C	940 U	100 J	900 U	740 U
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	940 U	850 U	900 U	740 U
2-METHYLNAPHTHALENE	20.2	310000	N	940 U	850 U	900 U	740 U
ACENAPHTHENE	6.7	3400000	N	940 U	**710 J**	900 U	740 U
ACENAPHTHYLENE	5.87	3400000	N[7]	940 U	850 U	900 U	740 U
ANTHRACENE	46.9	17000000	N	940 U	**1400**	900 U	740 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1351**	**6280**	**1308**	740 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**881**	**6280**	**858**	740 U
BENZO(A)ANTHRACENE	74.8	1500	C	**580 J**	**5100**	**610 J**	740 U
BENZO(A)PYRENE	88.8	150	C	**670 J**	**4200**	**650 J**	740 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**890 J**	**5400**	**920 J**	740 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**590 J**	**2300**	**410 J**	740 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**360 J**	**2500**	**490 J**	740 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	**520 J**	850 U	**340 J**	740 U
BUTYL BENZYL PHTHALATE	10900	2600000	C	940 U	850 U	900 U	740 U
CARBAZOLE	NA	NA		940 U	760 J	900 U	740 U
CHRYSENE	108	150000	C	**750 J**	**5200**	**660 J**	740 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	940 U	**700 J**	900 UJ	740 U
DIBENZOFURAN	415	78000	N	940 U	270 J	900 U	740 U
FLUORANTHENE	113	2300000	N	**1100**	**9300**	**1200**	740 U
FLUORENE	21.2	2300000	N	940 U	**550 J**	900 U	740 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**600 J**	**3000**	**490 J**	740 U
NAPHTHALENE	34.6	36000	C	940 U	**240 J**	**180 J**	740 U
PHENANTHRENE	86.7	1700000	N[8]	**580 J**	**4900**	**550 J**	740 U
PYRENE	153	1700000	N	**1600**	**10000**	**1400**	740 U
TOTAL PAHS	1610	NA		**7720**	**55500**	**7560**	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	48 U	44 U	47 U	38 U
AROCLOR-1254	59.8 [9]	1100	N[10]	48 U	44 U	47 U	38 U
AROCLOR-1260	40 [9]	2200	C	**670 J**	**610 J**	**210**	38 U
TOTAL AROCLOR	40	2200	C[11]	**670**	**610**	**210**	0 U
METALS (MG/KG)							
ANTIMONY	0.63	31	N	**1.1 L**	0.57 UL	**1.2 L**	1.64 UL
ARSENIC	7.24	3.9	C	**7.8**	**5**	3.9	**12.6**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-27	SD-28	SD-29	SD-31
SAMPLE ID				SD-27-01	SD-28-01	SD-29-01	SD-31-01
SAMPLE DATE				20051021	20051021	20051021	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				12	12	12	12
BOTTOM DEPTH				12	12	12	12
METALS (CONTINUED) (MG/KG)							
BARIUM	130 [15]	15000	N	61.6	38.1	63.5	76.6
BERYLLIUM	NA	160	N	2.2	1.4	2.1	3.6
CADMIUM	0.68	70	N	**27.9**	**8.4**	**40.5**	0.28
CHROMIUM	43.4	120000	N[12]	**503 K**	**140 K**	**817 K**	**75 K**
COBALT	10 [15]	23	N	**22.1**	**11.7**	**17.3**	**29**
COPPER	18.7	3100	N	**128 J**	**86.2 J**	**67.5 J**	**38.7 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	1.4 UL	1.2 UL	1.4 UL	1.1 UL
LEAD	30.2	400		**215**	**86.9**	**136**	**52.3**
MERCURY	0.13	23	N[14]	**1.5 K**	**0.43 K**	0.1 B	0.09 B
MOLYBDENUM	NA	390	N	2.4	0.65	1.7	2.2
NICKEL	15.9	1500	N	**59.8**	**24.2**	**43.1**	**46.1**
SELENIUM	1 [15]	390	N	1.4 B	0.73 B	1.3 B	1.44 U
SILVER	0.73	390	N	**15.6**	**0.74 L**	**12.6**	0.42 UL
THALLIUM	NA	NA		1.5 U	0.85 U	1.3 U	2.45 U
VANADIUM	57 [15]	390	N	**98.8**	32.5	57	**72.9**
ZINC	121	23000	N	**531**	**258**	**456**	**179**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	3.5 U	NA	3 U
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		35	39	36	45
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-40	SD-42	SD-43	SD-44
SAMPLE ID				SD-40-01	SD-42-01	SD-43-01	SD-44-01
SAMPLE DATE				20051021	20051021	20081117	20081117
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				12	12	10	10
BOTTOM DEPTH				12	12	14	14
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		13 U	9 UJ	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	13 U	9 UJ	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	66 UR	47 UR	NA	NA
ACETONE	60,030 [4]	61000000	N	200 J	36 J	NA	NA
CARBON DISULFIDE	0.851	820000	N	13 U	**5 J**	NA	NA
CHLOROBENZENE	8.42	290000	N	13 U	9 U	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	26 U	19 U	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	13 U	9 U	NA	NA
ISOPROPYLBENZENE	86	2100000	N	13 U	9 UJ	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	26 U	3 J	NA	NA
NAPHTHALENE	34.6	36000	C	13 U	9 UJ	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		13 U	9 UJ	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		13 U	9 U	NA	NA
TOLUENE	1090	5000000	N	13 U	9 U	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	860 U	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		860 U	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	100 B	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	860 U	NA	410 U	390 U
2-METHYLNAPHTHALENE	20.2	310000	N	860 U	NA	410 U	390 U
ACENAPHTHENE	6.7	3400000	N	180 B	NA	410 U	390 U
ACENAPHTHYLENE	5.87	3400000	N[7]	860 U	NA	410 U	390 U
ANTHRACENE	46.9	17000000	N	**170 J**	NA	410 U	390 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1076**	NA	**450**	390 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**642**	NA	19.5	390 U
BENZO(A)ANTHRACENE	74.8	1500	C	**410 J**	NA	410 U	390 U
BENZO(A)PYRENE	88.8	150	C	**480 J**	NA	410 U	390 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**750 J**	NA	120 J	390 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**440 J**	NA	410 U	390 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	860 U	NA	**100 J**	390 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	**760 J**	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	860 U	NA	NA	NA
CARBAZOLE	NA	NA		860 U	NA	NA	NA
CHRYSENE	108	150000	C	**670 J**	NA	**150 J**	390 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	860 U	NA	410 U	390 U
DIBENZOFURAN	415	78000	N	860 U	NA	NA	NA
FLUORANTHENE	113	2300000	N	**670 J**	NA	**160 J**	390 U
FLUORENE	21.2	2300000	N	860 U	NA	410 U	390 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**450 J**	NA	**63 J**	390 U
NAPHTHALENE	34.6	36000	C	860 U	NA	410 U	390 U
PHENANTHRENE	86.7	1700000	N[8]	**300 J**	NA	**91 J**	390 U
PYRENE	153	1700000	N	**1200**	NA	**240 J**	390 U
TOTAL PAHS	1610	NA		**5540**	NA	924	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	44 U	NA	25 U	20 U
AROCLOR-1254	59.8 [9]	1100	N[10]	44 U	NA	25 U	20 U
AROCLOR-1260	40 [9]	2200	C	**400**	NA	25 U	20 U
TOTAL AROCLOR	40	2200	C[11]	**400**	NA	0 U	0 U
METALS (MG/KG)							
ANTIMONY	0.63	31	N	0.66 U	0.58 U	0.15 U	0.12 U
ARSENIC	7.24	3.9	C	**5.4**	1.46 U	**6.6**	2.6

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-40 SD-40-01 20051021 NORMAL SD NORMAL SB 12 12	SD-42 SD-42-01 20051021 NORMAL SD NORMAL SB 12 12	SD-43 SD-43-01 20081117 NORMAL SD NORMAL SB 10 14	SD-44 SD-44-01 20081117 NORMAL SD NORMAL SB 10 14
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	52.4	54.2	75.8 J	16
BERYLLIUM	NA	160 N	2.2	1.2	1.8 J	0.95
CADMIUM	0.68	70 N	**31.2**	**157**	**6.2**	0.089
CHROMIUM	43.4	120000 N[12]	**475**	**1100**	**250 J**	14.5
COBALT	10 [15]	23 N	**20.9**	**12**	**16.1**	**12.7**
COPPER	18.7	3100 N	**93.7**	**95.6**	**33.9 J**	8.1
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	1.3 U	1.6	NA	NA
LEAD	30.2	400	**182**	**256**	**73.6 J**	5.8
MERCURY	0.13	23 N[14]	**0.67**	**0.52**	**0.21**	0.015
MOLYBDENUM	NA	390 N	1.4	1.7	0.49	0.25 B
NICKEL	15.9	1500 N	**45.8**	**39.3**	**18.7**	9.8
SELENIUM	1 [15]	390 N	0.61	0.51 U	**1.4**	0.51
SILVER	0.73	390 N	**5.4**	**7.5**	0.15 B	0.086
THALLIUM	NA	NA	1 B	0.87 U	0.25 U	0.21 U
VANADIUM	57 [15]	390 N	50.7	42.3	36.2 J	23.5
ZINC	121	23000 N	**430**	**598**	**127**	29.1
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	5	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	38	53	65	85
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	46000	NA	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-45	SD-46	SD-46	SD-46
SAMPLE ID				SD-45-01	SD-46-01	SD-46-01-AVG	SD-46-01-D
SAMPLE DATE				20081117	20081115	20081115	20081115
SAMPLE CODE				NORMAL	ORIG	AVG	DUP
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	8	8	8
BOTTOM DEPTH				14	16	16	16
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	650 U	710 U	705 U	700 U
2-METHYLNAPHTHALENE	20.2	310000	N	650 U	710 U	705 U	700 U
ACENAPHTHENE	6.7	3400000	N	650 U	710 U	705 U	700 U
ACENAPHTHYLENE	5.87	3400000	N[7]	650 U	710 U	705 U	700 U
ANTHRACENE	46.9	17000000	N	650 U	**89 J**	**94.5 J**	**100 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**725**	**828**	**1050**	**1239**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	42.0	82.5	**697**	**889**
BENZO(A)ANTHRACENE	74.8	1500	C	650 U	710 U	**680 J**	**680 J**
BENZO(A)PYRENE	88.8	150	C	650 U	710 U	**532.5**	**710**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**240 J**	**470 J**	**550 J**	**630 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**160 J**	**310 J**	**375 J**	**440 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**270 J**	**480 J**	**580 J**	**680 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**340 J**	**650 J**	**735 J**	**820**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	650 U	710 U	705 U	700 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**440 J**	**960**	**1080**	**1200**
FLUORENE	21.2	2300000	N	650 U	710 U	705 U	700 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**150 J**	**300 J**	**350 J**	**400 J**
NAPHTHALENE	34.6	36000	C	650 U	710 U	705 U	700 U
PHENANTHRENE	86.7	1700000	N[8]	**220 J**	**360 J**	**385 J**	**410 J**
PYRENE	153	1700000	N	**680**	**1300**	**1500**	**1700**
TOTAL PAHS	1610	NA		**2500**	**4919**	**6862**	**7770**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	32 U	36 U	35.5 U	35 U
AROCLOR-1254	59.8 [9]	1100	N[10]	32 U	36 U	35.5 U	35 U
AROCLOR-1260	40 [9]	2200	C	**85**	**180**	**215**	**250**
TOTAL AROCLOR	40	2200	C[11]	**85**	**180**	**215**	**250**
METALS (MG/KG)							
ANTIMONY	0.63	31	N	**3.5**	**6.2 L**	**6.3 L**	**6.4 L**
ARSENIC	7.24	3.9	C	**7.8**	**10.1**	**10.05**	**10**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-45 SD-45-01 20081117 NORMAL SD NORMAL SB 10 14	SD-46 SD-46-01 20081115 ORIG SD NORMAL SB 8 16	SD-46 SD-46-01-AVG 20081115 AVG SD NORMAL SB 8 16	SD-46 SD-46-01-D 20081115 DUP SD NORMAL SB 8 16
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	61.8	80.2	80.75	81.3
BERYLLIUM	NA	160 N	1.7	1.6	1.65	1.7
CADMIUM	0.68	70 N	**120**	**306**	**303**	**300**
CHROMIUM	43.4	120000 N[12]	**1290**	**2460**	**2410**	**2360**
COBALT	10 [15]	23 N	**15.6**	**15.4**	**15.4**	**15.4**
COPPER	18.7	3100 N	**82.1**	**167**	**168**	**169**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**151**	**407**	**410.5**	**414**
MERCURY	0.13	23 N[14]	**0.44**	**0.73**	**0.745**	**0.76**
MOLYBDENUM	NA	390 N	1.5	1.3	1.4	1.5
NICKEL	15.9	1500 N	**30.7**	**70.4**	**69.8**	**69.2**
SELENIUM	1 [15]	390 N	**1.3**	0.92	**1.16**	**1.4**
SILVER	0.73	390 N	**8.2**	**8.9**	**10.1**	**11.3**
THALLIUM	NA	NA	0.32 U	0.44	0.425	0.41
VANADIUM	57 [15]	390 N	46.3	**71.5**	**74.2**	**76.9**
ZINC	121	23000 N	**447**	**1150**	**1125**	**1100**
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	51	47	47.5	48
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-47	SD-48	SD-49	SD-50
SAMPLE ID				SD-47-01	SD-48-01	SD-49-01	SD-50-01
SAMPLE DATE				20081115	20081115	20081115	20081114
SAMPLE CODE				NORMAL	NORMAL	NORMAL	ORIG
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	10	8
BOTTOM DEPTH				14	14	14	16
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	710 U	430 U	560 U	1200 UJ
2-METHYLNAPHTHALENE	20.2	310000	N	710 U	430 U	560 U	1200 UJ
ACENAPHTHENE	6.7	3400000	N	710 U	430 U	560 U	1200 UJ
ACENAPHTHYLENE	5.87	3400000	N[7]	710 U	430 U	560 U	1200 UJ
ANTHRACENE	46.9	17000000	N	710 U	430 U	560 U	1200 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	710 U	430 U	560 U	**1311**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	710 U	430 U	560 U	50.5
BENZO(A)ANTHRACENE	74.8	1500	C	710 U	430 U	560 U	1200 UJ
BENZO(A)PYRENE	88.8	150	C	710 U	430 U	560 U	1200 UJ
BENZO(B)FLUORANTHENE	130 [15]	1500	C	710 U	430 U	560 U	**320 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	710 U	430 U	560 U	1200 UJ
BENZO(K)FLUORANTHENE	70 [15]	15000	C	710 U	430 U	560 U	**310 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	710 U	430 U	560 U	**410 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	710 U	430 U	560 U	1200 UJ
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	710 U	430 U	560 U	**470 J**
FLUORENE	21.2	2300000	N	710 U	430 U	560 U	1200 UJ
INDENO(1,2,3-CD)PYRENE	17	1500	C	710 U	430 U	560 U	**150 J**
NAPHTHALENE	34.6	36000	C	710 U	430 U	560 U	1200 UJ
PHENANTHRENE	86.7	1700000	N[8]	710 U	430 U	560 U	1200 UJ
PYRENE	153	1700000	N	710 U	430 U	560 U	**680 J**
TOTAL PAHS	1610	NA		0 U	0 U	0 U	**2340**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	36 U	22 U	35 U	3000 UJ
AROCLOR-1254	59.8 [9]	1100	N[10]	36 U	22 U	35 U	3000 UJ
AROCLOR-1260	40 [9]	2200	C	36 U	22 U	35 U	**2400 J**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	0 U	**2400**
METALS (MG/KG)							
ANTIMONY	0.63	31	N	0.21 UL	0.13 UL	0.21 U	0.36 UJ
ARSENIC	7.24	3.9	C	3.6	1.4	**5.3**	**10.6 J**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-47	SD-48	SD-49	SD-50
SAMPLE ID				SD-47-01	SD-48-01	SD-49-01	SD-50-01
SAMPLE DATE				20081115	20081115	20081115	20081114
SAMPLE CODE				NORMAL	NORMAL	NORMAL	ORIG
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	10	8
BOTTOM DEPTH				14	14	14	16
METALS (CONTINUED) (MG/KG)							
BARIUM	130 [15]	15000	N	26.9	8.1	30.4 J	72.9 J
BERYLLIUM	NA	160	N	1.5	1.1	1.6 J	2.1 J
CADMIUM	0.68	70	N	0.33	0.045	0.037 B	**9.5 J**
CHROMIUM	43.4	120000	N[12]	24.2	8.9	23.5 J	**220 J**
COBALT	10 [15]	23	N	9.2	2.2	**13.6**	**21.1 J**
COPPER	18.7	3100	N	14.7	5.1	13.7 J	**115 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		12.5	2.9	8 J	**128 J**
MERCURY	0.13	23	N[14]	0.041 B	0.011 B	0.031 B	**0.51 J**
MOLYBDENUM	NA	390	N	1.5	0.94	1.2	0.87 B
NICKEL	15.9	1500	N	14.3	5.5	15.9	**41.2 J**
SELENIUM	1 [15]	390	N	**1.1**	0.42 U	**1.1**	**1.7 J**
SILVER	0.73	390	N	0.19	0.08 U	0.14 B	**3.6 J**
THALLIUM	NA	NA		0.37 U	0.22 U	0.35 U	0.62 UJ
VANADIUM	57 [15]	390	N	33.8	13	25.2 J	**57.1 J**
ZINC	121	23000	N	36.2	10.8	59	**357 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		47	77	47	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-50	SD-50	SD-51	SD-53
SAMPLE ID				SD-50-01-AVG	SD-50-01-D	SD-51-01	SD-53-01
SAMPLE DATE				20081114	20081114	20081115	20081114
SAMPLE CODE				AVG	DUP	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				8	8	10	10
BOTTOM DEPTH				16	16	14	14
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	1200 UJ	1200 UJ	1100 U	910 U
2-METHYLNAPHTHALENE	20.2	310000	N	1200 UJ	1200 UJ	1100 U	910 U
ACENAPHTHENE	6.7	3400000	N	1200 UJ	1200 UJ	1100 U	910 U
ACENAPHTHYLENE	5.87	3400000	N[7]	1200 UJ	1200 UJ	1100 U	910 U
ANTHRACENE	46.9	17000000	N	1200 UJ	1200 UJ	1100 U	910 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1328**	**1345**	1100 U	910 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	67.9	85.3	1100 U	910 U
BENZO(A)ANTHRACENE	74.8	1500	C	1200 UJ	1200 UJ	1100 U	910 U
BENZO(A)PYRENE	88.8	150	C	1200 UJ	1200 UJ	1100 U	910 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**425 J**	**530 J**	1100 U	910 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	1200 UJ	1200 UJ	1100 U	910 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**395 J**	**480 J**	1100 U	910 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**460 J**	**510 J**	1100 U	910 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	1200 UJ	1200 UJ	1100 U	910 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**590 J**	**710 J**	1100 U	910 U
FLUORENE	21.2	2300000	N	1200 UJ	1200 UJ	1100 U	910 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**210 J**	**270 J**	1100 U	910 U
NAPHTHALENE	34.6	36000	C	1200 UJ	1200 UJ	1100 U	910 U
PHENANTHRENE	86.7	1700000	N[8]	**270 J**	**270 J**	1100 U	910 U
PYRENE	153	1700000	N	**840 J**	**1000 J**	1100 U	910 U
TOTAL PAHS	1610	NA		**3190**	**3770**	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	1645 UJ	290 UJ	53 U	45 U
AROCLOR-1254	59.8 [9]	1100	N[10]	1645 UJ	290 UJ	53 U	45 U
AROCLOR-1260	40 [9]	2200	C	**1900 J**	**1400 J**	53 U	45 U
TOTAL AROCLOR	40	2200	C[11]	**1900**	**1400**	0 U	0 U
METALS (MG/KG)							
ANTIMONY	0.63	31	N	0.385 BJ	0.41 B	0.33 UL	0.28 UL
ARSENIC	7.24	3.9	C	**11.3 J**	**12 J**	**8.9**	**7.1**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-50 SD-50-01-AVG 20081114 AVG SD NORMAL SB 8 16	SD-50 SD-50-01-D 20081114 DUP SD NORMAL SB 8 16	SD-51 SD-51-01 20081115 NORMAL SD NORMAL SB 10 14	SD-53 SD-53-01 20081114 NORMAL SD NORMAL SB 10 14
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	64.35 J	55.8 J	47.3	39.5
BERYLLIUM	NA	160 N	2.15 J	2.2 J	1.9	2.1
CADMIUM	0.68	70 N	**9.45 J**	**9.4 J**	**15.7**	0.12
CHROMIUM	43.4	120000 N[12]	**217.5 J**	**215 J**	**314**	37.6
COBALT	10 [15]	23 N	**21.65 J**	**22.2 J**	**18.4**	**15.8**
COPPER	18.7	3100 N	**119.5 J**	**124 J**	**86.1**	**19.8**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**129 J**	**130 J**	**137**	14.6
MERCURY	0.13	23 N[14]	**0.515 J**	**0.52 J**	**0.68**	0.056
MOLYBDENUM	NA	390 N	0.985 B	1.1 B	1.5	0.92
NICKEL	15.9	1500 N	**42.5 J**	**43.8 J**	**38.4**	**25.4**
SELENIUM	1 [15]	390 N	**1.5 J**	**1.3 J**	**2.5**	**1.3**
SILVER	0.73	390 N	**3.5 J**	**3.4 J**	**5.4**	0.18 U
THALLIUM	NA	NA	0.62 UJ	0.62 UJ	0.56 U	0.48 U
VANADIUM	57 [15]	390 N	**58.2 J**	**59.3 J**	54.1	42.7
ZINC	121	23000 N	**369 J**	**381 J**	**338**	81
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	NA	32	37
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-54	SD-55	SD-56	SD-57
SAMPLE ID				SD-54-01	SD-55-01	SD-56-01	SD-57-01
SAMPLE DATE				20081114	20081113	20081113	20081114
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	10	10
BOTTOM DEPTH				14	14	14	14
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	1400 UJ	1100 U	910 U	840 U
2-METHYLNAPHTHALENE	20.2	310000	N	1400 UJ	1100 U	910 U	840 U
ACENAPHTHENE	6.7	3400000	N	1400 UJ	1100 U	910 U	840 U
ACENAPHTHYLENE	5.87	3400000	N[7]	1400 UJ	1100 U	910 U	840 U
ANTHRACENE	46.9	17000000	N	1400 UJ	1100 U	**97 J**	840 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1564**	**1228**	**1049**	840 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	93.8	72.5	93.1	840 U
BENZO(A)ANTHRACENE	74.8	1500	C	1400 UJ	1100 U	910 U	840 U
BENZO(A)PYRENE	88.8	150	C	1400 UJ	1100 U	910 U	840 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**580 J**	**430 J**	**580 J**	840 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	1400 UJ	1100 U	**340 J**	840 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**520 J**	**410 J**	**560 J**	840 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**560 J**	**440 J**	**530 J**	840 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	1400 UJ	1100 U	910 U	840 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**680 J**	**580 J**	**830 J**	840 U
FLUORENE	21.2	2300000	N	1400 UJ	1100 U	910 U	840 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**300 J**	**250 J**	**290 J**	840 U
NAPHTHALENE	34.6	36000	C	1400 UJ	1100 U	910 U	840 U
PHENANTHRENE	86.7	1700000	N[8]	**330 J**	**270 J**	**300 J**	840 U
PYRENE	153	1700000	N	**1300 J**	**1100 J**	**1100**	840 U
TOTAL PAHS	1610	NA		**4270**	**3480**	**4627**	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	69 UJ	55 U	46 U	42 U
AROCLOR-1254	59.8 [9]	1100	N[10]	69 UJ	55 U	46 U	42 U
AROCLOR-1260	40 [9]	2200	C	**110 J**	**440**	**310**	42 U
TOTAL AROCLOR	40	2200	C[11]	**110**	**440**	**310**	0 U
METALS (MG/KG)							
ANTIMONY	0.63	31	N	0.41 UJ	0.33 UL	0.38 L	0.26 UJ
ARSENIC	7.24	3.9	C	**11.3 J**	**9.5**	**8**	**8**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-54	SD-55	SD-56	SD-57
SAMPLE ID			SD-54-01	SD-55-01	SD-56-01	SD-57-01
SAMPLE DATE			20081114	20081113	20081113	20081114
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL
MATRIX			SD	SD	SD	SD
SAMPLE TYPE			NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX			SB	SB	SB	SB
TOP DEPTH			10	10	10	10
BOTTOM DEPTH			14	14	14	14
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	63 J	52.2	41.2	30.8
BERYLLIUM	NA	160 N	2.4 J	2.1	1.8	2.1
CADMIUM	0.68	70 N	**7.7 J**	**7.8**	**9.7**	0.015 U
CHROMIUM	43.4	120000 N[12]	**181 J**	**180**	**193**	33.1
COBALT	10 [15]	23 N	**24 J**	**19.2**	**17**	**13.7**
COPPER	18.7	3100 N	**134 J**	**92.6**	**79.3**	18.4
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**137 J**	**111**	**107**	11.7
MERCURY	0.13	23 N[14]	**0.49 J**	**0.42**	**0.51**	0.016
MOLYBDENUM	NA	390 N	1.5 J	1.3	1.1	0.39 B
NICKEL	15.9	1500 N	**46 J**	**38**	**34.3**	**23.3**
SELENIUM	1 [15]	390 N	**2.5 J**	**2**	**1.7**	1
SILVER	0.73	390 N	**2.7 J**	**3.5**	**4.3**	0.16 U
THALLIUM	NA	NA	0.71 UJ	0.57 U	0.47 U	0.44 U
VANADIUM	57 [15]	390 N	**65.4 J**	55.7	54.7	38.5
ZINC	121	23000 N	**420 J**	**322**	**308**	68
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	24	30	37	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-58	SD-59	SD-60	SD-61
SAMPLE ID				SD-58-01	SD-59-01	SD-60-01	SD-61-01
SAMPLE DATE				20081114	20081115	20081112	20081113
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	10	10
BOTTOM DEPTH				14	14	14	14
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	**150 J**	820 U	790 U	1000 U
2-METHYLNAPHTHALENE	20.2	310000	N	980 U	820 U	790 U	1000 U
ACENAPHTHENE	6.7	3400000	N	**2400 J**	820 U	790 U	1000 U
ACENAPHTHYLENE	5.87	3400000	N[7]	980 U	820 U	790 U	1000 U
ANTHRACENE	46.9	17000000	N	**4400 J**	820 U	790 U	**160 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**12075**	**928**	**905**	**1194**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**12075**	66.8	35.6	144
BENZO(A)ANTHRACENE	74.8	1500	C	**12000**	820 U	790 U	1000 U
BENZO(A)PYRENE	88.8	150	C	**9000**	820 U	790 U	1000 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**9400**	**420 J**	**330 J**	**800 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**4600**	820 U	790 U	**630 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**7300**	**330 J**	**230 J**	**800 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**12000**	**450 J**	**320 J**	**880 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	**380 J**	820 U	790 U	1000 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**20000 J**	**540 J**	**390 J**	**1200**
FLUORENE	21.2	2300000	N	**2000 J**	820 U	790 U	1000 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**4700**	**210 J**	790 U	**550 J**
NAPHTHALENE	34.6	36000	C	**290 J**	820 U	790 U	1000 U
PHENANTHRENE	86.7	1700000	N[8]	**15000 J**	**250 J**	**240 J**	**540 J**
PYRENE	153	1700000	N	**15000**	**900**	**660 J**	**2000**
TOTAL PAHS	1610	NA		**118470**	**3100**	**2170**	**7560**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	980 U	51 U	50 U	52 U
AROCLOR-1254	59.8 [9]	1100	N[10]	980 U	51 U	50 U	52 U
AROCLOR-1260	40 [9]	2200	C	**14000**	**1300**	50 U	**1000**
TOTAL AROCLOR	40	2200	C[11]	**14000**	**1300**	0 U	**1000**
METALS (MG/KG)							
ANTIMONY	0.63	31	N	0.29 UJ	0.3 U	**1.5 J**	0.63 L
ARSENIC	7.24	3.9	C	**10**	**10.6**	**12.1**	**8.8**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-58	SD-59	SD-60	SD-61
SAMPLE ID			SD-58-01	SD-59-01	SD-60-01	SD-61-01
SAMPLE DATE			20081114	20081115	20081112	20081113
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL
MATRIX			SD	SD	SD	SD
SAMPLE TYPE			NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX			SB	SB	SB	SB
TOP DEPTH			10	10	10	10
BOTTOM DEPTH			14	14	14	14
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	**236**	57.6 J	59.8 J	53.7
BERYLLIUM	NA	160 N	1.8	2.3 J	2.1 J	2.2
CADMIUM	0.68	70 N	**17.2**	**11.8**	**17.7**	**16.5**
CHROMIUM	43.4	120000 N[12]	**1290**	**261 J**	**327 J**	**335**
COBALT	10 [15]	23 N	**16.8**	**21.5**	**21.3 J**	**19.8**
COPPER	18.7	3100 N	**132**	**101 J**	**126 J**	**96.2**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**159**	**200 J**	**207**	**148**
MERCURY	0.13	23 N[14]	**1.5**	**0.57**	**0.91**	**0.82**
MOLYBDENUM	NA	390 N	0.87 B	1.4	1.7	1
NICKEL	15.9	1500 N	**40**	**46.2**	**52.3 J**	**42.6**
SELENIUM	1 [15]	390 N	0.96	**2.2**	**2.3**	**1.8**
SILVER	0.73	390 N	**5.6**	**3.9**	**7.7**	**7.6**
THALLIUM	NA	NA	0.49 U	0.51 U	0.51 U	0.55 U
VANADIUM	57 [15]	390 N	50.6	**69.8 J**	**86 J**	**61.3**
ZINC	121	23000 N	**1300**	**399**	**463 J**	**406**
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	32	34	32
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	19000	23000	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-62	SD-63	SD-64	SD-65
SAMPLE ID				SD-62-01	SD-63-01	SD-64-01	SD-65-01
SAMPLE DATE				20081112	20081112	20081112	20081111
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	10	10
BOTTOM DEPTH				14	14	14	14
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	790 U	800 U	630 U	1000 UJ
2-METHYLNAPHTHALENE	20.2	310000	N	790 U	800 U	630 U	1000 UJ
ACENAPHTHENE	6.7	3400000	N	790 U	800 U	630 U	1000 UJ
ACENAPHTHYLENE	5.87	3400000	N[7]	790 U	800 U	630 U	1000 UJ
ANTHRACENE	46.9	17000000	N	790 U	**210 J**	**110 J**	1000 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**899**	**2010**	**1048**	1000 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	30.2	**1610**	**702**	1000 U
BENZO(A)ANTHRACENE	74.8	1500	C	790 U	**1100**	630 U	1000 UJ
BENZO(A)PYRENE	88.8	150	C	790 U	**1300**	**600 J**	1000 UJ
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**270 J**	**1100**	**630**	1000 UJ
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	790 U	**820**	**380 J**	1000 UJ
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**290 J**	**1300**	**620 J**	1000 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**260 J**	**1400**	**640**	1000 UJ
DIBENZO(A,H)ANTHRACENE	6.22	150	C	790 U	800 U	630 U	1000 UJ
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**290 J**	**1700**	**950**	**270 J**
FLUORENE	21.2	2300000	N	790 U	**100 J**	630 U	1000 UJ
INDENO(1,2,3-CD)PYRENE	17	1500	C	790 U	**760 J**	**320 J**	1000 UJ
NAPHTHALENE	34.6	36000	C	790 U	800 U	630 U	1000 UJ
PHENANTHRENE	86.7	1700000	N[8]	790 U	**1000**	**440 J**	1000 UJ
PYRENE	153	1700000	N	**580 J**	**3900 J**	**1700 J**	**400 J**
TOTAL PAHS	1610	NA		**1690**	**14690**	**6390**	670
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	49 U	50 U	39 U	51 U
AROCLOR-1254	59.8 [9]	1100	N[10]	49 U	50 U	39 U	51 U
AROCLOR-1260	40 [9]	2200	C	49 U	**1100**	**190 J**	51 U
TOTAL AROCLOR	40	2200	C[11]	0 U	**1100**	**190**	0 U
METALS (MG/KG)							
ANTIMONY	0.63	31	N	**0.98 J**	**2.2 J**	**2.1 J**	0.31 UJ
ARSENIC	7.24	3.9	C	**9.8**	**10.3**	**7.7**	**10.4**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-62	SD-63	SD-64	SD-65
SAMPLE ID			SD-62-01	SD-63-01	SD-64-01	SD-65-01
SAMPLE DATE			20081112	20081112	20081112	20081111
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL
MATRIX			SD	SD	SD	SD
SAMPLE TYPE			NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX			SB	SB	SB	SB
TOP DEPTH			10	10	10	10
BOTTOM DEPTH			14	14	14	14
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	47.5 J	61.3 J	41.8 J	56.4
BERYLLIUM	NA	160 N	1.9 J	1.8 J	1.9 J	2
CADMIUM	0.68	70 N	**9.9**	**31 J**	**14.4 J**	**19.2**
CHROMIUM	43.4	120000 N[12]	**196 J**	**444 J**	**298 J**	**332**
COBALT	10 [15]	23 N	**17.2 J**	**16.4 J**	**14.2 J**	**17.1**
COPPER	18.7	3100 N	**90.6 J**	**108 J**	**49.2 J**	**178 J**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**159**	**183 J**	**84.1 J**	**201**
MERCURY	0.13	23 N[14]	**0.51**	**2**	**0.25**	**1**
MOLYBDENUM	NA	390 N	1.3	1.6 J	1.4 J	1.9
NICKEL	15.9	1500 N	**41.1 J**	**50.7 J**	**35.7 J**	**51.7 J**
SELENIUM	1 [15]	390 N	**2.1**	**2.4 J**	**1.3 J**	**2.4 J**
SILVER	0.73	390 N	**3.7**	**20.8 J**	**15.3 J**	**12.9**
THALLIUM	NA	NA	0.53 U	0.51 U	0.41 U	0.54 U
VANADIUM	57 [15]	390 N	**65.8 J**	**88.8 J**	**57.2 J**	**89**
ZINC	121	23000 N	**323 J**	**464 J**	**248 J**	**386 J**
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	34	33	42	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	21000	NA	16000	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-66 SD-66-01 20081112 NORMAL SD NORMAL SB 10 14	SD-67 SD-67-01 20081111 NORMAL SD NORMAL SB 10 14	SD-68 SD-68-01 20081112 ORIG SD NORMAL SB 8 16	SD-68 SD-68-01-AVG 20081112 AVG SD NORMAL SB 8 16
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	880 U	1100 UJ	920 UJ	910 UJ
2-METHYLNAPHTHALENE	20.2	310000	N	880 U	1100 UJ	920 UJ	910 UJ
ACENAPHTHENE	6.7	3400000	N	880 U	1100 UJ	920 UJ	910 UJ
ACENAPHTHYLENE	5.87	3400000	N[7]	880 U	1100 UJ	920 UJ	910 UJ
ANTHRACENE	46.9	17000000	N	880 U	1100 UJ	920 UJ	910 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**988**	1100 U	**1030**	**1019**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	63.5	1100 U	17.9	17.9
BENZO(A)ANTHRACENE	74.8	1500	C	880 U	1100 UJ	920 UJ	910 UJ
BENZO(A)PYRENE	88.8	150	C	880 U	1100 UJ	920 UJ	910 UJ
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**420 J**	1100 UJ	**160 J**	**160 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	880 U	1100 UJ	920 UJ	910 UJ
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**310 J**	1100 UJ	**170 J**	**170 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**400 K**	1100 UJ	**170 J**	**150 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	880 U	1100 UJ	920 UJ	910 UJ
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**450 J**	1100 UJ	**210 J**	**185 J**
FLUORENE	21.2	2300000	N	880 U	1100 UJ	920 UJ	910 UJ
INDENO(1,2,3-CD)PYRENE	17	1500	C	**180 J**	1100 UJ	920 UJ	910 UJ
NAPHTHALENE	34.6	36000	C	880 U	1100 UJ	920 UJ	910 UJ
PHENANTHRENE	86.7	1700000	N[8]	**230 J**	1100 UJ	920 UJ	910 UJ
PYRENE	153	1700000	N	**1000 J**	1100 UJ	**400 J**	**345 J**
TOTAL PAHS	1610	NA		**2990**	0 U	1110	1010
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	55 U	57 UJ	57 UJ	56.5 UJ
AROCLOR-1254	59.8 [9]	1100	N[10]	55 U	57 UJ	57 UJ	56.5 UJ
AROCLOR-1260	40 [9]	2200	C	**370 J**	**140 J**	57 UJ	56.5 UJ
TOTAL AROCLOR	40	2200	C[11]	**370**	**140**	0 U	0 U
METALS (MG/KG)							
ANTIMONY	0.63	31	N	**1.6 J**	0.44 B	**1.1 J**	**1.45 J**
ARSENIC	7.24	3.9	C	**11.2**	**10.5 J**	**12.3 J**	**11.95 J**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-66	SD-67	SD-68	SD-68
SAMPLE ID				SD-66-01	SD-67-01	SD-68-01	SD-68-01-AVG
SAMPLE DATE				20081112	20081111	20081112	20081112
SAMPLE CODE				NORMAL	NORMAL	ORIG	AVG
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	8	8
BOTTOM DEPTH				14	14	16	16
METALS (CONTINUED) (MG/KG)							
BARIUM	130 [15]	15000	N	60.3 J	55.2 J	66.5 J	64.25 J
BERYLLIUM	NA	160	N	2.1 J	2.1 J	2.2 J	2.15 J
CADMIUM	0.68	70	N	**9.8**	**7.7 J**	**12.3 J**	**12.05 J**
CHROMIUM	43.4	120000	N[12]	**172 J**	**162 J**	**265 J**	**252 J**
COBALT	10 [15]	23	N	**19.3 J**	**18.5 J**	**19.3 J**	**18.9 J**
COPPER	18.7	3100	N	**92.7 J**	**88.6 J**	**126 J**	**124 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**196**	**174 J**	**285 J**	**244 J**
MERCURY	0.13	23	N[14]	**0.52**	**0.41 J**	**0.76 J**	**0.785 J**
MOLYBDENUM	NA	390	N	1.5	1.7 B	1.9 J	1.8 J
NICKEL	15.9	1500	N	**47 J**	**43.9 J**	**51.9 J**	**50.6 J**
SELENIUM	1 [15]	390	N	**2.6**	**1.9 J**	**2.4 J**	**1.95 J**
SILVER	0.73	390	N	**3.8**	**4 J**	**5.6 J**	**5.6 J**
THALLIUM	NA	NA		0.55 U	0.58 UJ	0.56 UJ	0.575 UJ
VANADIUM	57 [15]	390	N	**70.5 J**	**66.3 J**	**88.9 J**	**84.9 J**
ZINC	121	23000	N	**405 J**	**365 J**	**431 J**	**418 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		30	NA	29	29.5
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-68	SD-69	SD-70	SD-71
SAMPLE ID				SD-68-01-D	SD-69-01	SD-70-01	SD-71-01
SAMPLE DATE				20081112	20081111	20081111	20081111
SAMPLE CODE				DUP	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				8	10	10	10
BOTTOM DEPTH				16	14	14	14
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	900 UJ	440 U	1000 UJ	1100 UJ
2-METHYLNAPHTHALENE	20.2	310000	N	900 UJ	440 U	1000 UJ	1100 UJ
ACENAPHTHENE	6.7	3400000	N	900 UJ	440 U	1000 UJ	1100 UJ
ACENAPHTHYLENE	5.87	3400000	N[7]	900 UJ	440 U	1000 UJ	1100 UJ
ANTHRACENE	46.9	17000000	N	900 UJ	440 U	1000 UJ	1100 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1040**	440 U	1000 U	1100 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	0.13	440 U	1000 U	1100 U
BENZO(A)ANTHRACENE	74.8	1500	C	900 UJ	440 U	1000 UJ	1100 UJ
BENZO(A)PYRENE	88.8	150	C	900 UJ	440 U	1000 UJ	1100 UJ
BENZO(B)FLUORANTHENE	130 [15]	1500	C	900 UJ	440 U	1000 UJ	1100 UJ
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	900 UJ	440 U	1000 UJ	1100 UJ
BENZO(K)FLUORANTHENE	70 [15]	15000	C	900 UJ	440 U	1000 UJ	1100 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**130 J**	440 U	1000 UJ	1100 UJ
DIBENZO(A,H)ANTHRACENE	6.22	150	C	900 UJ	440 U	1000 UJ	1100 UJ
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**160 J**	440 U	**490 J**	**210 J**
FLUORENE	21.2	2300000	N	900 UJ	440 U	1000 UJ	1100 UJ
INDENO(1,2,3-CD)PYRENE	17	1500	C	900 UJ	440 U	1000 UJ	1100 UJ
NAPHTHALENE	34.6	36000	C	900 UJ	440 U	1000 UJ	1100 UJ
PHENANTHRENE	86.7	1700000	N[8]	900 UJ	440 U	**220 J**	1100 UJ
PYRENE	153	1700000	N	**290 J**	440 U	**800 J**	**460 J**
TOTAL PAHS	1610	NA		580	0 U	1510	670
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	56 UJ	22 U	52 U	53 U
AROCLOR-1254	59.8 [9]	1100	N[10]	56 UJ	22 U	52 U	53 U
AROCLOR-1260	40 [9]	2200	C	56 UJ	22 U	**420**	**380**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	**420**	**380**
METALS (MG/KG)							
ANTIMONY	0.63	31	N	**1.8 J**	0.32 L	0.31 UJ	0.32 UJ
ARSENIC	7.24	3.9	C	**11.6 J**	3.8	**12.3**	**10.2**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-68	SD-69	SD-70	SD-71
SAMPLE ID				SD-68-01-D	SD-69-01	SD-70-01	SD-71-01
SAMPLE DATE				20081112	20081111	20081111	20081111
SAMPLE CODE				DUP	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				8	10	10	10
BOTTOM DEPTH				16	14	14	14
METALS (CONTINUED) (MG/KG)							
BARIUM	130 [15]	15000	N	62 J	65.8	60.3	52.9
BERYLLIUM	NA	160	N	2.1 J	6.9	2.2	2.1
CADMIUM	0.68	70	N	**11.8 J**	0.0074 U	**9.7**	**7.8**
CHROMIUM	43.4	120000	N[12]	**239 J**	21.9	**223**	**169**
COBALT	10 [15]	23	N	**18.5 J**	**33**	**18.1**	**16.5**
COPPER	18.7	3100	N	**122 J**	17	**108 J**	**87.7 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**203 J**	8.9	**214**	**158**
MERCURY	0.13	23	N[14]	**0.81 J**	0.015 B	**0.67**	**0.44**
MOLYBDENUM	NA	390	N	1.7 J	0.18	1.6 B	1.8
NICKEL	15.9	1500	N	**49.3 J**	**67.1**	**46.6 J**	**39.9 J**
SELENIUM	1 [15]	390	N	**1.5 J**	0.41 UL	**2.3 J**	**1.3 J**
SILVER	0.73	390	N	**5.6 J**	0.079 U	**5.7**	**6.4**
THALLIUM	NA	NA		0.59 UJ	0.21 U	0.53 U	0.55 U
VANADIUM	57 [15]	390	N	**80.9 J**	35.6 K	**79.2**	**63.5**
ZINC	121	23000	N	**405 J**	**147**	**390 J**	**352 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		30	76	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	2200	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-72	SD-73	SD-74	SD-75
SAMPLE ID				SD-72-01	SD-73-01	SD-74-01	SD-75-01
SAMPLE DATE				20081112	20081111	20081111	20081112
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	10	10
BOTTOM DEPTH				14	14	14	14
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	320 U	740 U	400 U	520 U
2-METHYLNAPHTHALENE	20.2	310000	N	320 U	740 U	400 U	520 U
ACENAPHTHENE	6.7	3400000	N	320 U	740 U	400 U	**94 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	320 U	740 U	400 U	520 U
ANTHRACENE	46.9	17000000	N	320 U	740 U	400 U	**120 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	320 U	740 U	**462**	**923**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	320 U	740 U	0.093	**637**
BENZO(A)ANTHRACENE	74.8	1500	C	320 U	740 U	400 U	520 U
BENZO(A)PYRENE	88.8	150	C	320 U	740 U	400 U	**510 J**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	320 U	740 U	400 U	**800 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	320 U	740 U	400 U	**420 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	320 U	740 U	400 U	**830**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	320 U	740 U	93 J	**850**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	320 U	740 U	400 U	520 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	320 U	740 U	**150 J**	**830**
FLUORENE	21.2	2300000	N	320 U	740 U	400 U	**50 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	320 U	740 U	400 U	**380 J**
NAPHTHALENE	34.6	36000	C	320 U	740 U	400 U	520 U
PHENANTHRENE	86.7	1700000	N[8]	320 U	740 U	**92 J**	**520 J**
PYRENE	153	1700000	N	320 UJ	740 U	**160 J**	**1300 J**
TOTAL PAHS	1610	NA		0 U	0 U	495	**6704**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	20 UJ	37 U	20 U	33 U
AROCLOR-1254	59.8 [9]	1100	N[10]	20 UJ	37 U	20 U	33 U
AROCLOR-1260	40 [9]	2200	C	20 UJ	37 U	22	**160 J**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	22	**160**
METALS (MG/KG)							
ANTIMONY	0.63	31	N	0.12 UL	0.21 UL	0.36 L	**55.1 J**
ARSENIC	7.24	3.9	C	3	**4.5**	**4.3**	**7.3**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-72	SD-73	SD-74	SD-75
SAMPLE ID				SD-72-01	SD-73-01	SD-74-01	SD-75-01
SAMPLE DATE				20081112	20081111	20081111	20081112
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	10	10
BOTTOM DEPTH				14	14	14	14
METALS (CONTINUED) (MG/KG)							
BARIUM	130 [15]	15000	N	17.5 J	24.2	20.4	54.6 J
BERYLLIUM	NA	160	N	0.51 J	1.8	2	1.1 J
CADMIUM	0.68	70	N	0.0069 UL	0.026	**0.78**	**17.4**
CHROMIUM	43.4	120000	N[12]	13.4 J	24.9	31	**209 J**
COBALT	10 [15]	23	N	1.6 J	**11.9**	**12.6**	**10.3 J**
COPPER	18.7	3100	N	10.6 J	17.6	**20.9**	**113 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		4.5 J	8.9	21	**1370**
MERCURY	0.13	23	N[14]	0.0089 B	0.029 B	**0.19**	**1.6**
MOLYBDENUM	NA	390	N	0.25 J	1.5	0.79	3.3
NICKEL	15.9	1500	N	4.1 J	**20.1**	**22.5**	**47.9 J**
SELENIUM	1 [15]	390	N	0.38 UL	0.7 UL	0.38 UL	**1.4**
SILVER	0.73	390	N	0.074 UL	0.13 U	**2.2**	**37.2**
THALLIUM	NA	NA		0.2 U	0.36 U	0.2 U	0.34 U
VANADIUM	57 [15]	390	N	19.6 J	35.5 K	31.3 K	**91.8 J**
ZINC	121	23000	N	12.6 J	50.2	61.7	**371 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		82	45	83	51
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-76	SD-77	SD-79	SD-80
SAMPLE ID				SD-76-01	SD-77-01	SD-79-01	SD-80-01
SAMPLE DATE				20081111	20081110	20081114	20081114
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	10	10
BOTTOM DEPTH				14	14	14	14
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	3900 U	460 U	820 U	980 U
2-METHYLNAPHTHALENE	20.2	310000	N	3900 U	460 U	820 U	980 U
ACENAPHTHENE	6.7	3400000	N	3900 U	**120 J**	820 U	980 U
ACENAPHTHYLENE	5.87	3400000	N[7]	3900 U	460 U	820 U	980 U
ANTHRACENE	46.9	17000000	N	**440 J**	**270 J**	820 U	980 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**4480**	**906**	820 U	980 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**385**	**906**	820 U	980 U
BENZO(A)ANTHRACENE	74.8	1500	C	3900 U	**680**	820 U	980 U
BENZO(A)PYRENE	88.8	150	C	3900 U	**570**	820 U	980 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**2400 J**	**670 J**	820 U	980 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**1200 J**	**330 J**	820 U	980 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**2200 J**	**600**	820 U	980 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**3000 J**	**900**	820 U	980 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	3900 U	**160 J**	820 U	980 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**4800**	**1700**	820 U	980 U
FLUORENE	21.2	2300000	N	3900 U	**130 J**	820 U	980 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**1200 J**	**340 J**	820 U	980 U
NAPHTHALENE	34.6	36000	C	3900 U	460 U	820 U	980 U
PHENANTHRENE	86.7	1700000	N[8]	**2000 J**	**920**	820 U	980 U
PYRENE	153	1700000	N	**7200**	**1800**	820 U	980 U
TOTAL PAHS	1610	NA		**24440**	**9190**	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	39 U	23 U	41 U	49 U
AROCLOR-1254	59.8 [9]	1100	N[10]	39 U	23 U	41 U	49 U
AROCLOR-1260	40 [9]	2200	C	**150**	18 J	41 U	49 U
TOTAL AROCLOR	40	2200	C[11]	**150**	18	0 U	0 U
METALS (MG/KG)							
ANTIMONY	0.63	31	N	**0.88 L**	0.63 L	0.24 UL	0.28 UJ
ARSENIC	7.24	3.9	C	**8**	**6.6**	**8**	**7.8**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-76	SD-77	SD-79	SD-80
SAMPLE ID				SD-76-01	SD-77-01	SD-79-01	SD-80-01
SAMPLE DATE				20081111	20081110	20081114	20081114
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	10	10
BOTTOM DEPTH				14	14	14	14
METALS (CONTINUED) (MG/KG)							
BARIUM	130 [15]	15000	N	40.3	87.2	36.2	41.7
BERYLLIUM	NA	160	N	1.2	1.5	1.5	1.9
CADMIUM	0.68	70	N	**3.7**	**2.3**	0.014 U	0.017 U
CHROMIUM	43.4	120000	N[12]	**59.8**	**65.7**	30.4	37.3
COBALT	10 [15]	23	N	**12.7**	8.5	**13.9**	**16.1**
COPPER	18.7	3100	N	**72.5**	**35.6**	17	**18.9**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**82.7**	**48.6**	13.5	14.8
MERCURY	0.13	23	N[14]	**0.14**	**0.33**	0.027	0.027
MOLYBDENUM	NA	390	N	1.4	2.8	0.65 B	0.79 B
NICKEL	15.9	1500	N	**32.3**	**21.8**	**22.4**	**26.4**
SELENIUM	1 [15]	390	N	0.85 L	0.47 UL	0.78 U	**1.5**
SILVER	0.73	390	N	**1.5**	**2.8**	0.15 U	0.18 U
THALLIUM	NA	NA		0.39 U	0.25 U	0.41 U	0.48 U
VANADIUM	57 [15]	390	N	45.6 K	34.6 K	44.1	46.2
ZINC	121	23000	N	**290**	**155**	62	78.7
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		43	73	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	4600	NA	20000
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-81	SD-82	SD-83	SD-84
SAMPLE ID				SD-81-01	SD-82-01	SD-83-01	SD-84-01
SAMPLE DATE				20081114	20081114	20100820	20100820
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				10	10	12	12
BOTTOM DEPTH				14	14	12	12
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	510 U	780 U	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	510 U	780 U	NA	NA
ACENAPHTHENE	6.7	3400000	N	510 U	780 U	**16 J**	**29 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	510 U	780 U	**68**	**140**
ANTHRACENE	46.9	17000000	N	510 U	780 U	**63**	**88**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**576**	**877**	**373**	**622**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	14.5	58.3	**373**	**622**
BENZO(A)ANTHRACENE	74.8	1500	C	510 U	780 U	**190**	**330**
BENZO(A)PYRENE	88.8	150	C	510 U	780 U	**210**	**320**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	130 J	**400 J**	**380**	**660**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	59 J	780 U	**210**	**350**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**140 J**	**290 J**	5.4 U	12 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**140 J**	**370 J**	**260**	**400**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	510 U	780 U	**88**	**170**
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**260 J**	**500 J**	**330**	**500**
FLUORENE	21.2	2300000	N	510 U	780 U	**24 J**	**42 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	510 U	**150 J**	**180**	**330**
NAPHTHALENE	34.6	36000	C	510 U	780 U	30	**45 J**
PHENANTHRENE	86.7	1700000	N[8]	**150 J**	780 U	**180**	**260**
PYRENE	153	1700000	N	**410 J**	**670 J**	**290**	**430**
TOTAL PAHS	1610	NA		1289	**2380**	**2519**	**4094**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	25 U	390 UJ	1.3 U	1.4 U
AROCLOR-1254	59.8 [9]	1100	N[10]	25 U	390 UJ	1.9 U	2.1 U
AROCLOR-1260	40 [9]	2200	C	**70**	**270**	17	2.1 U
TOTAL AROCLOR	40	2200	C[11]	**70**	**270**	17	0 U
METALS (MG/KG)							
ANTIMONY	0.63	31	N	0.16 UJ	0.24 UJ	**0.78 L**	**2.4 L**
ARSENIC	7.24	3.9	C	1.9	**6.1**	**5.3 L**	**5.1 L**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-81	SD-82	SD-83	SD-84
SAMPLE ID			SD-81-01	SD-82-01	SD-83-01	SD-84-01
SAMPLE DATE			20081114	20081114	20100820	20100820
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL
MATRIX			SD	SD	SD	SD
SAMPLE TYPE			NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX			SB	SB	SB	SB
TOP DEPTH			10	10	12	12
BOTTOM DEPTH			14	14	12	12
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	13.4	34.4	NA	NA
BERYLLIUM	NA	160 N	0.34	1.2	1.4	2.4
CADMIUM	0.68	70 N	**12.3**	**14.6**	**0.83 L**	**113 L**
CHROMIUM	43.4	120000 N[12]	**120**	**229**	38.6	**1750**
COBALT	10 [15]	23 N	4.2	**16.2**	NA	NA
COPPER	18.7	3100 N	**24**	**92.7**	**27.9 L**	**77 L**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**59**	**143**	**66.5**	**107**
MERCURY	0.13	23 N[14]	**0.23**	**0.52**	**0.35**	**0.32**
MOLYBDENUM	NA	390 N	0.21 B	0.54 B	NA	NA
NICKEL	15.9	1500 N	9.1	**31.5**	**21.7 L**	**29.6 L**
SELENIUM	1 [15]	390 N	0.58	**1.3**	0.99 L	**1.1 L**
SILVER	0.73	390 N	**1.6**	**2.2**	0.23	0.19
THALLIUM	NA	NA	0.27 U	0.4 U	0.13	0.18
VANADIUM	57 [15]	390 N	11	35.6	NA	NA
ZINC	121	23000 N	113	**310**	**124 L**	**177 L**
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	22900	42300
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-85	SD-86	SD-87	SD-88
SAMPLE ID					SD-85-01	SD-86-01	SD-87-01	SD-88-01
SAMPLE DATE					20100819	20100818	20100818	20100819
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SB	SB	SB	SB
TOP DEPTH					12	12	12	12
BOTTOM DEPTH					12	12	12	12
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
2-BUTANONE	25,710	[4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030	[4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851		820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42		290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740	[4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050	[5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86		2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA		430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6		36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880	[4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210	[4]	NA		NA	NA	NA	NA
TOLUENE	1090		5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2	[6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2		310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7		3400000	N	1.2 J	**350**	**410**	**76 J**
ACENAPHTHYLENE	5.87		3400000	N[7]	1.1 U	**150**	**140 J**	**220**
ANTHRACENE	46.9		17000000	N	0.98 U	**620**	**660**	**320**
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	1 U	**3652**	**3232**	**1564**
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	1 U	**3652**	**3232**	**1564**
BENZO(A)ANTHRACENE	74.8		1500	C	1.3 U	**2400**	**2300**	**760**
BENZO(A)PYRENE	88.8		150	C	1 U	**2200**	**2000**	**880**
BENZO(B)FLUORANTHENE	130	[15]	1500	C	1.6 U	**3400**	**3200**	**1600**
BENZO(G,H,I)PERYLENE	67	[15]	1700000	N[8]	0.99 U	**2000**	**1600**	**910**
BENZO(K)FLUORANTHENE	70	[15]	15000	C	2 U	30 U	31 U	22 U
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900		2600000	C	NA	NA	NA	NA
CARBAZOLE	NA		NA		NA	NA	NA	NA
CHRYSENE	108		150000	C	1.2 U	**2300**	**2000**	**930**
DIBENZO(A,H)ANTHRACENE	6.22		150	C	1.1 U	**700**	**540**	**370**
DIBENZOFURAN	415		78000	N	NA	NA	NA	NA
FLUORANTHENE	113		2300000	N	1.9 J	**3900**	**3800**	**1600**
FLUORENE	21.2		2300000	N	1.3 U	**190**	**240**	**100 J**
INDENO(1,2,3-CD)PYRENE	17		1500	C	1 U	**1700**	**1400**	**770**
NAPHTHALENE	34.6		36000	C	0.86 U	**100 J**	**89 J**	**180**
PHENANTHRENE	86.7		1700000	N[8]	3.4 J	**2300**	**2300**	**600**
PYRENE	153		1700000	N	1.5 J	**4000**	**3500**	**1400**
TOTAL PAHS	1610		NA		8	**26310**	**24179**	**10716**
PCBS (UG/KG)								
AROCLOR-1248	40	[9]	2200	C	1.2 U	**2300**	**550**	2.5 U
AROCLOR-1254	59.8	[9]	1100	N[10]	1.8 U	2.2 U	2.2 U	3.8 U
AROCLOR-1260	40	[9]	2200	C	1.8 U	**2300 J**	**800 J**	**1800**
TOTAL AROCLOR	40		2200	C[11]	0 U	**4600**	**1350**	**1800**
METALS (MG/KG)								
ANTIMONY	0.63		31	N	0.11 B	**2.2 J**	**1.3 L**	**0.69 J**
ARSENIC	7.24		3.9	C	2.5 L	**4.6**	**4.2**	**8.5 L**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-85	SD-86	SD-87	SD-88
SAMPLE ID				SD-85-01	SD-86-01	SD-87-01	SD-88-01
SAMPLE DATE				20100819	20100818	20100818	20100819
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				12	12	12	12
BOTTOM DEPTH				12	12	12	12
METALS (CONTINUED) (MG/KG)							
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	1	0.99 J	1	1.8 L
CADMIUM	0.68	70	N	0.14 L	**69**	**64.7**	**15.7 J**
CHROMIUM	43.4	120000	N[12]	13.8	**718 K**	**541**	**277 L**
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	9.5 L	**84.6**	**88.7**	**95.2 L**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		7.2	**211**	**205 K**	**189**
MERCURY	0.13	23	N[14]	0.022 J	**0.31**	**0.37**	**1**
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	13.2 L	**31.6**	**31.5**	**42.1 L**
SELENIUM	1 [15]	390	N	0.53 L	0.95	0.88	**1.8 L**
SILVER	0.73	390	N	0.042 J	**1.8 J**	**2.7**	**6.8 L**
THALLIUM	NA	NA		0.13	0.12	0.16	0.27 K
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	34.5 L	**452**	**497**	**392 L**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		25500	NA	28800	32500
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		0.23 U	NA	2.4	8.8
CADMIUM	NA	NA		0.00026 J	NA	0.48	0.12
CHROMIUM	NA	NA		0.016 J	NA	4.6	2.4
COPPER	NA	NA		0.044	NA	0.18	0.52
LEAD	NA	NA		0.015 J	NA	0.73	0.75
NICKEL	NA	NA		0.035 J	NA	0.16	0.2
SILVER	NA	NA		0.0002 U	NA	0.001 J	0.0083
ZINC	NA	NA		0.11 J	NA	6.9	4.1

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-89	SD-90	SD-91	SD-92
SAMPLE ID					SD-89-01	SD-90-01	SD-91-01	SD-92-01
SAMPLE DATE					20100819	20100817	20100817	20100817
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SB	SB	SB	SB
TOP DEPTH					12	12	12	12
BOTTOM DEPTH					12	12	12	12
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
2-BUTANONE	25,710	(4)	28000000	N	NA	NA	NA	NA
ACETONE	60,030	(4)	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851		820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42		290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740	(4)	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050	(5)	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86		2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA		430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6		36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880	(4)	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210	(4)	NA		NA	NA	NA	NA
TOLUENE	1090		5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2	(6)	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2		310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7		3400000	N	**56 J**	**190**	2.1 U	0.95 U
ACENAPHTHYLENE	5.87		3400000	N[7]	**140**	**280**	2.5 U	1.1 U
ANTHRACENE	46.9		17000000	N	**200**	**530**	2.2 U	0.97 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	**1001**	**3533**	2.2 U	0.99 U
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	**1001**	**3533**	2.2 U	0.99 U
BENZO(A)ANTHRACENE	74.8		1500	C	**480**	**2100**	2.8 U	1.2 U
BENZO(A)PYRENE	88.8		150	C	**520**	**2300**	2.2 U	0.99 U
BENZO(B)FLUORANTHENE	130	(15)	1500	C	**880**	**3600**	3.5 U	1.6 U
BENZO(G,H,I)PERYLENE	67	(15)	1700000	N[8]	**610**	**1900**	2.2 U	0.99 U
BENZO(K)FLUORANTHENE	70	(15)	15000	C	22 U	9 U	4.5 U	2 U
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900		2600000	C	NA	NA	NA	NA
CARBAZOLE	NA		NA		NA	NA	NA	NA
CHRYSENE	108		150000	C	**510**	**2500**	2.6 U	1.2 U
DIBENZO(A,H)ANTHRACENE	6.22		150	C	**290**	**510**	2.5 U	1.1 U
DIBENZOFURAN	415		78000	N	NA	NA	NA	NA
FLUORANTHENE	113		2300000	N	**850**	**5500**	2.4 U	1.1 U
FLUORENE	21.2		2300000	N	**59 J**	**200**	2.9 U	1.3 U
INDENO(1,2,3-CD)PYRENE	17		1500	C	**540**	**1500**	2.3 U	1 U
NAPHTHALENE	34.6		36000	C	**98 J**	**120**	1.9 U	0.85 U
PHENANTHRENE	86.7		1700000	N[8]	**350**	**1800**	3.5 U	2.4 J
PYRENE	153		1700000	N	**830**	**3400**	2.2 U	1 U
TOTAL PAHS	1610		NA		**6413**	**26430**	0 U	2.4
PCBS (UG/KG)								
AROCLOR-1248	40	(9)	2200	C	2.5 U	2.1 U	1 U	1.2 U
AROCLOR-1254	59.8	(9)	1100	N[10]	3.8 U	3.1 U	1.6 U	1.8 U
AROCLOR-1260	40	(9)	2200	C	**1500**	**1000 J**	1.6 U	1.8 U
TOTAL AROCLOR	40		2200	C[11]	**1500**	**1000**	0 U	0 U
METALS (MG/KG)								
ANTIMONY	0.63		31	N	**0.95 L**	**1.4 J**	0.18 J	0.13 J
ARSENIC	7.24		3.9	C	**8.6**	**7.6**	3.6	**7.2**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-89	SD-90	SD-91	SD-92
SAMPLE ID				SD-89-01	SD-90-01	SD-91-01	SD-92-01
SAMPLE DATE				20100819	20100817	20100817	20100817
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				12	12	12	12
BOTTOM DEPTH				12	12	12	12
METALS (CONTINUED) (MG/KG)							
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	2.2	1.6	2.5	1.8
CADMIUM	0.68	70	N	**17.8 L**	**12.5**	0.18	0.2
CHROMIUM	43.4	120000	N[12]	**336**	**212**	17.6	16.1
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	**107 L**	**130**	**23**	16.6
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**187**	**257 J**	5.5 J	3.6 K
MERCURY	0.13	23	N[14]	**0.96**	**2**	0.0072 U	0.0082 U
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	**46.5 L**	**41.8**	**20.4**	**16.9**
SELENIUM	1 [15]	390	N	**2 L**	**1.8**	0.66	0.66
SILVER	0.73	390	N	**7.1**	**8.9**	0.025 J	0.022 J
THALLIUM	NA	NA		0.35	0.26 J	0.065 J	0.063 J
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**441**	**386**	44.7	46.6
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		27300	35900	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		4.6	19	NA	NA
CADMIUM	NA	NA		0.12	0.085	NA	NA
CHROMIUM	NA	NA		2.5	1.6	NA	NA
COPPER	NA	NA		0.41	0.037	NA	NA
LEAD	NA	NA		0.58	0.66	NA	NA
NICKEL	NA	NA		0.18	0.18	NA	NA
SILVER	NA	NA		0.0063	0.00095 J	NA	NA
ZINC	NA	NA		4	4.2	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-93	SD-94	SD-95	SD-95
SAMPLE ID				SD-93-01	SD-94-01	SD-95-01	SD-95-01-AVG
SAMPLE DATE				20100817	20100817	20100817	20100817
SAMPLE CODE				NORMAL	NORMAL	ORIG	AVG
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				12	12	12	12
BOTTOM DEPTH				12	12	12	12
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	**12 J**	3.9 U	**24 J**	**27 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	**18 J**	4.7 U	**50**	**56**
ANTHRACENE	46.9	17000000	N	35	4 U	**89**	**94.5**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**296**	4.1 U	**612**	**626**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**296**	4.1 U	**612**	**626**
BENZO(A)ANTHRACENE	74.8	1500	C	**180**	5.1 U	**330**	**325**
BENZO(A)PYRENE	88.8	150	C	**160**	4.1 U	**350**	**355**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**290**	6.5 U	**580**	**610**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**150**	4.1 U	**360**	**375**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	4 U	8.3 U	8.4 U	8.4 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**160**	4.9 U	**360**	**365**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	**75**	4.6 U	**140**	**145**
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**300**	4.4 U	**470**	**475**
FLUORENE	21.2	2300000	N	13 J	5.4 U	**34 J**	**33.5 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	**140**	4.2 U	**310**	**320**
NAPHTHALENE	34.6	36000	C	10 J	3.5 U	**50**	**50**
PHENANTHRENE	86.7	1700000	N[8]	**150**	6.5 U	**220**	**215**
PYRENE	153	1700000	N	**300**	4.2 U	**630**	**620**
TOTAL PAHS	1610	NA		**1993**	0 U	**3997**	**4066**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	1.2 U	1.9 U	2.5 U	2.5 U
AROCLOR-1254	59.8 [9]	1100	N[10]	1.8 U	2.9 U	3.7 U	3.7 U
AROCLOR-1260	40 [9]	2200	C	**280**	2.9 U	**610**	**495 J**
TOTAL AROCLOR	40	2200	C[11]	**280**	0 U	**610**	**495**
METALS (MG/KG)							
ANTIMONY	0.63	31	N	0.29 L	0.076 J	**0.67 L**	**0.685 L**
ARSENIC	7.24	3.9	C	3.9	**4.2**	**8.3**	**8.35**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-93	SD-94	SD-95	SD-95
SAMPLE ID			SD-93-01	SD-94-01	SD-95-01	SD-95-01-AVG
SAMPLE DATE			20100817	20100817	20100817	20100817
SAMPLE CODE			NORMAL	NORMAL	ORIG	AVG
MATRIX			SD	SD	SD	SD
SAMPLE TYPE			NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX			SB	SB	SB	SB
TOP DEPTH			12	12	12	12
BOTTOM DEPTH			12	12	12	12
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	NA	NA	NA	NA
BERYLLIUM	NA	160 N	1	1.7	2.1	2.15
CADMIUM	0.68	70 N	**2.7**	0.37	**12**	**12.15**
CHROMIUM	43.4	120000 N[12]	37.5	26	**241**	**245.5**
COBALT	10 [15]	23 N	NA	NA	NA	NA
COPPER	18.7	3100 N	**23.3**	18.4	**90.9**	**91.15**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**36.6 K**	9 J	**174 K**	**175.5 K**
MERCURY	0.13	23 N[14]	0.11	0.028 J	**0.66**	**0.64**
MOLYBDENUM	NA	390 N	NA	NA	NA	NA
NICKEL	15.9	1500 N	13.9	**18.7**	**42.7**	**43.05**
SELENIUM	1 [15]	390 N	0.6	1	**1.9**	**2**
SILVER	0.73	390 N	0.55	0.065 J	**4.6**	**4.7**
THALLIUM	NA	NA	0.07 J	0.15 J	0.28	0.29
VANADIUM	57 [15]	390 N	NA	NA	NA	NA
ZINC	121	23000 N	**125**	56	**382**	**384**
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-95	SD-96	SD-96	SD-96
SAMPLE ID				SD-95-01-D	SD-96-01	SD-96-01-AVG	SD-96-01-D
SAMPLE DATE				20100817	20100819	20100819	20100819
SAMPLE CODE				DUP	ORIG	AVG	DUP
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				12	12	12	12
BOTTOM DEPTH				12	12	12	12
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	**30 J**	**59 J**	**57 J**	**55 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	**62**	**160**	**145**	**130**
ANTHRACENE	46.9	17000000	N	**100**	**210**	**210**	**210**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**639**	**1169**	**1072**	**976**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**639**	**1169**	**1072**	**976**
BENZO(A)ANTHRACENE	74.8	1500	C	**320**	**560**	**535**	**510**
BENZO(A)PYRENE	88.8	150	C	**360**	**640**	**575**	**510**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**640**	**1100**	**1000**	**900**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**390**	**680**	**640**	**600**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	8.4 U	22 U	21.5 U	21 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**370**	**610**	**555**	**500**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	**150**	**300**	**285**	**270**
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**480**	**1100**	**1030**	**960**
FLUORENE	21.2	2300000	N	**33 J**	**77 J**	**69 J**	**61 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	**330**	**620**	**580**	**540**
NAPHTHALENE	34.6	36000	C	**50**	**130**	**125**	**120**
PHENANTHRENE	86.7	1700000	N[8]	**210**	**410**	**395**	**380**
PYRENE	153	1700000	N	**610**	**1100**	**995**	**890**
TOTAL PAHS	1610	NA		**4135**	**7756**	**7196**	**6636**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	2.5 U	2.5 U	2.45 U	2.4 U
AROCLOR-1254	59.8 [9]	1100	N[10]	3.7 U	3.7 U	3.7 U	3.7 U
AROCLOR-1260	40 [9]	2200	C	**380 J**	**1900**	**1850**	**1800**
TOTAL AROCLOR	40	2200	C[11]	**380**	**1900**	**1850**	**1800**
METALS (MG/KG)							
ANTIMONY	0.63	31	N	**0.7 L**	0.61 J	**0.805 L**	**1 L**
ARSENIC	7.24	3.9	C	**8.4**	**7.5 L**	**8.25 L**	**9**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	**Ecological Screening Value (ESV)[1][3]**	**Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]**	**SD-95** **SD-95-01-D** **20100817** **DUP** **SD** **NORMAL** **SB** **12** **12**	**SD-96** **SD-96-01** **20100819** **ORIG** **SD** **NORMAL** **SB** **12** **12**	**SD-96** **SD-96-01-AVG** **20100819** **AVG** **SD** **NORMAL** **SB** **12** **12**	**SD-96** **SD-96-01-D** **20100819** **DUP** **SD** **NORMAL** **SB** **12** **12**
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	NA	NA	NA	NA
BERYLLIUM	NA	160 N	2.2	1.8 L	2.05 L	2.3
CADMIUM	0.68	70 N	**12.3**	**14.9 J**	**16.3 L**	**17.7 L**
CHROMIUM	43.4	120000 N[12]	**250**	**276 L**	**304.5 L**	**333**
COBALT	10 [15]	23 N	NA	NA	NA	NA
COPPER	18.7	3100 N	**91.4**	**121 L**	**113.5 L**	**106 L**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**177 K**	**148**	**166**	**184**
MERCURY	0.13	23 N[14]	**0.62**	**0.9**	**0.88**	**0.86**
MOLYBDENUM	NA	390 N	NA	NA	NA	NA
NICKEL	15.9	1500 N	**43.4**	**39.4 L**	**43.05 L**	**46.7 L**
SELENIUM	1 [15]	390 N	**2.1**	**1.8 L**	**1.95 L**	**2.1 L**
SILVER	0.73	390 N	**4.8**	**6.3 L**	**6.8 L**	**7.3**
THALLIUM	NA	NA	0.3	0.28 K	0.31 K	0.34
VANADIUM	57 [15]	390 N	NA	NA	NA	NA
ZINC	121	23000 N	**386**	**377 L**	**403.5 L**	**430**
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-97	SD-98	SD-99	SD-100
SAMPLE ID				SD-97-01	SD-98-01	SD-99-01	SD-100-01
SAMPLE DATE				20100817	20100819	20100819	20100819
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				12	12	12	12
BOTTOM DEPTH				12	12	12	12
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	**22 J**	**62 J**	7.9 U	4 U
ACENAPHTHYLENE	5.87	3400000	N[7]	**47 J**	**150**	9.4 U	4.8 U
ANTHRACENE	46.9	17000000	N	**75 J**	**240**	8 U	4.1 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**409**	**1254**	8.2 U	4.2 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**409**	**1254**	8.2 U	4.2 U
BENZO(A)ANTHRACENE	74.8	1500	C	**190 J**	**620**	10 U	5.2 U
BENZO(A)PYRENE	88.8	150	C	**210 J**	**700**	8.2 U	4.2 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**370 J**	**1300**	13 U	6.6 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**240 J**	**750**	8.1 U	4.2 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	12 UJ	20 U	17 U	8.4 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**220 J**	**750**	9.7 U	5 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	**120 J**	**300**	9.1 U	4.6 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**500 J**	**1200**	8.7 U	24 J
FLUORENE	21.2	2300000	N	**37 J**	**92 J**	11 U	5.5 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**230 J**	**610**	8.4 U	4.3 U
NAPHTHALENE	34.6	36000	C	**86 J**	**160**	7 U	3.6 U
PHENANTHRENE	86.7	1700000	N[8]	**190 J**	**490**	13 U	15 J
PYRENE	153	1700000	N	**360 J**	**1100**	8.3 U	17 J
TOTAL PAHS	1610	NA		**2897**	**8524**	0 U	56
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	2.8 UJ	2.3 U	1.9 U	1.9 U
AROCLOR-1254	59.8 [9]	1100	N[10]	4.3 UJ	3.5 U	2.8 U	2.9 U
AROCLOR-1260	40 [9]	2200	C	**210 J**	**920**	2.8 U	2.9 U
TOTAL AROCLOR	40	2200	C[11]	**210**	**920**	0 U	0 U
METALS (MG/KG)							
ANTIMONY	0.63	31	N	**1 J**	**0.68 J**	0.076 B	0.14 B
ARSENIC	7.24	3.9	C	**11 J**	**8.2 L**	**5.4**	**4.1 L**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-97 SD-97-01 20100817 NORMAL SD NORMAL SB 12 12	SD-98 SD-98-01 20100819 NORMAL SD NORMAL SB 12 12	SD-99 SD-99-01 20100819 NORMAL SD NORMAL SB 12 12	SD-100 SD-100-01 20100819 NORMAL SD NORMAL SB 12 12
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	NA	NA	NA	NA
BERYLLIUM	NA	160 N	2.6 J	2 L	1.7	1.3 L
CADMIUM	0.68	70 N	**22 J**	**19 J**	0.4 L	0.28 J
CHROMIUM	43.4	120000 N[12]	**423 J**	**336 L**	27.7	25.1 L
COBALT	10 [15]	23 N	NA	NA	NA	NA
COPPER	18.7	3100 N	**110 J**	**99.6 L**	**20.1 L**	18.4 L
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**149 J**	**169**	12.5	14.6
MERCURY	0.13	23 N[14]	**0.99 J**	**0.92**	0.035 J	0.074
MOLYBDENUM	NA	390 N	NA	NA	NA	NA
NICKEL	15.9	1500 N	**46.4 J**	**44.1 L**	**20.5 L**	**19.3 L**
SELENIUM	1 [15]	390 N	**2.2 J**	**2 L**	**1.2 L**	0.96 L
SILVER	0.73	390 N	**5 J**	**6.6 L**	0.068 J	0.062 J
THALLIUM	NA	NA	0.3 J	0.34	0.17 K	0.19 K
VANADIUM	57 [15]	390 N	NA	NA	NA	NA
ZINC	121	23000 N	**439 J**	**421 L**	67.4	62.1 L
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	34900	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	0.38 U	NA
CADMIUM	NA	NA	NA	NA	0.0014 J	NA
CHROMIUM	NA	NA	NA	NA	0.033	NA
COPPER	NA	NA	NA	NA	0.06	NA
LEAD	NA	NA	NA	NA	0.024	NA
NICKEL	NA	NA	NA	NA	0.047	NA
SILVER	NA	NA	NA	NA	0.00033 U	NA
ZINC	NA	NA	NA	NA	0.37	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-101 SD-101-01 20100818 NORMAL SD NORMAL SB 12 12	SD-102 SD-102-01 20100818 NORMAL SD NORMAL SB 12 12	SD-103 SD-103-01 20100818 NORMAL SD NORMAL SB 12 12	SD-104 SD-104-01 20100818 NORMAL SD NORMAL SB 12 12
VOLATILES (UG/KG)						
1,3-DICHLOROBENZENE	842	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000 N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000 N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000 N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000 N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000 N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000 N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000 N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000 C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000 C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA	NA	NA	NA	NA
TOLUENE	1090	5000000 N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)						
1,2-DICHLOROBENZENE	16.5	1900000 N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000 C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000 N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000 N	**19 J**	10 U	1.1 U	4.2 U
ACENAPHTHYLENE	5.87	3400000 N[7]	**31 J**	**36 J**	1.3 U	5 U
ANTHRACENE	46.9	17000000 N	**57 J**	44 J	1.1 U	4.3 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150 C	**380**	**238**	1.1 U	4.4 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150 C	**380**	**232**	1.1 U	4.4 U
BENZO(A)ANTHRACENE	74.8	1500 C	**170**	**150**	1.4 U	5.5 U
BENZO(A)PYRENE	88.8	150 C	**180**	**150**	1.1 U	4.4 U
BENZO(B)FLUORANTHENE	130 [15]	1500 C	**310**	**350**	1.7 U	6.9 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000 N[8]	**230**	**310**	1.1 U	4.4 U
BENZO(K)FLUORANTHENE	70 [15]	15000 C	20 U	22 U	2.2 U	8.9 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000 C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000 C	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA	NA
CHRYSENE	108	150000 C	**190**	**180**	1.3 U	5.2 U
DIBENZO(A,H)ANTHRACENE	6.22	150 C	**130**	12 U	1.2 U	4.9 U
DIBENZOFURAN	415	78000 N	NA	NA	NA	NA
FLUORANTHENE	113	2300000 N	**260**	**310**	1.8 J	4.8 J
FLUORENE	21.2	2300000 N	17 J	**34 J**	1.5 U	5.8 U
INDENO(1,2,3-CD)PYRENE	17	1500 C	**220**	**320**	1.1 U	4.5 U
NAPHTHALENE	34.6	36000 C	**44 J**	**53 J**	0.96 U	3.8 U
PHENANTHRENE	86.7	1700000 N[8]	**120**	**130**	2.8 J	7 U
PYRENE	153	1700000 N	**310**	**330**	1.1 U	4.7 J
TOTAL PAHS	1610	NA	**2288**	**2397**	4.6	9.5
PCBS (UG/KG)						
AROCLOR-1248	40 [9]	2200 C	2.3 U	2.6 U	1.3 U	2.1 U
AROCLOR-1254	59.8 [9]	1100 N[10]	3.5 U	3.9 U	2 U	3.1 U
AROCLOR-1260	40 [9]	2200 C	**240**	**250**	2 U	3.1 U
TOTAL AROCLOR	40	2200 C[11]	**240**	**250**	0 U	0 U
METALS (MG/KG)						
ANTIMONY	0.63	31 N	0.59 L	**0.68 J**	0.057 B	0.094 B
ARSENIC	7.24	3.9 C	**8.7**	**9.8**	2.3	**5.6**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-101 SD-101-01 20100818 NORMAL SD NORMAL SB 12 12	SD-102 SD-102-01 20100818 NORMAL SD NORMAL SB 12 12	SD-103 SD-103-01 20100818 NORMAL SD NORMAL SB 12 12	SD-104 SD-104-01 20100818 NORMAL SD NORMAL SB 12 12
METALS (CONTINUED) (MG/KG)						
BARIUM	130 [15]	15000 N	NA	NA	NA	NA
BERYLLIUM	NA	160 N	1.8	2.1 J	0.73 J	1.6 J
CADMIUM	0.68	70 N	**12.6**	**11.2**	0.19	0.42
CHROMIUM	43.4	120000 N[12]	**247**	**251 K**	14.1 K	31.7 K
COBALT	10 [15]	23 N	NA	NA	NA	NA
COPPER	18.7	3100 N	**98.8**	**111**	7.8	**22.1**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**158 K**	**168**	5.9	17.1
MERCURY	0.13	23 N[14]	**0.6**	**0.73**	0.019 J	0.048
MOLYBDENUM	NA	390 N	NA	NA	NA	NA
NICKEL	15.9	1500 N	**39.8**	**45.1**	10.5	**23**
SELENIUM	1 [15]	390 N	**1.7**	**1.8**	0.51	**1.1**
SILVER	0.73	390 N	**3.1**	**4.3 J**	0.02 J	0.074 J
THALLIUM	NA	NA	0.27	0.3	0.096	0.2
VANADIUM	57 [15]	390 N	NA	NA	NA	NA
ZINC	121	23000 N	**371**	**406**	33.4	72.3
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	26000	NA	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	10.5	NA	NA	NA
CADMIUM	NA	NA	0.084	NA	NA	NA
CHROMIUM	NA	NA	1.5	NA	NA	NA
COPPER	NA	NA	0.41	NA	NA	NA
LEAD	NA	NA	0.51	NA	NA	NA
NICKEL	NA	NA	0.17	NA	NA	NA
SILVER	NA	NA	0.004	NA	NA	NA
ZINC	NA	NA	3.4	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	**Ecological Screening Value (ESV)[1][3]**	**Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]**	**SD-105 SD-105-01 20100818 NORMAL SD NORMAL SB 12 12**	**SD-106 SD-106-01 20100818 NORMAL SD NORMAL SB 12 12**
VOLATILES (UG/KG)				
1,3-DICHLOROBENZENE	842	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA	NA
2-BUTANONE	25,710 [4]	28000000 N	NA	NA
ACETONE	60,030 [4]	61000000 N	NA	NA
CARBON DISULFIDE	0.851	820000 N	NA	NA
CHLOROBENZENE	8.42	290000 N	NA	NA
CHLOROMETHANE	8,740 [4]	120000 N	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000 N	NA	NA
ISOPROPYLBENZENE	86	2100000 N	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000 C	NA	NA
NAPHTHALENE	34.6	36000 C	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA	NA	NA
TOLUENE	1090	5000000 N	NA	NA
SEMIVOLATILES (UG/KG)				
1,2-DICHLOROBENZENE	16.5	1900000 N	NA	NA
1,3-DICHLOROBENZENE	842	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000 C	NA	NA
2-METHYLNAPHTHALENE	20.2	310000 N	NA	NA
ACENAPHTHENE	6.7	3400000 N	**23 J**	8.8 U
ACENAPHTHYLENE	5.87	3400000 N[7]	13 U	10 U
ANTHRACENE	46.9	17000000 N	**61 J**	8.9 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150 C	**565**	9.1 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150 C	**565**	9.1 U
BENZO(A)ANTHRACENE	74.8	1500 C	**200**	11 U
BENZO(A)PYRENE	88.8	150 C	**240**	9.1 U
BENZO(B)FLUORANTHENE	130 [15]	1500 C	**480**	14 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000 N[8]	**360**	9.1 U
BENZO(K)FLUORANTHENE	70 [15]	15000 C	22 U	18 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000 C	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000 C	NA	NA
CARBAZOLE	NA	NA	NA	NA
CHRYSENE	108	150000 C	**240**	11 U
DIBENZO(A,H)ANTHRACENE	6.22	150 C	**220**	10 U
DIBENZOFURAN	415	78000 N	NA	NA
FLUORANTHENE	113	2300000 N	**290**	9.8 U
FLUORENE	21.2	2300000 N	**24 J**	12 U
INDENO(1,2,3-CD)PYRENE	17	1500 C	**370**	9.4 U
NAPHTHALENE	34.6	36000 C	**58 J**	7.9 U
PHENANTHRENE	86.7	1700000 N[8]	**140**	15 U
PYRENE	153	1700000 N	**440**	9.2 U
TOTAL PAHS	1610	NA	**3146**	0 U
PCBS (UG/KG)				
AROCLOR-1248	40 [9]	2200 C	2.6 U	2.2 U
AROCLOR-1254	59.8 [9]	1100 N[10]	3.9 U	3.2 U
AROCLOR-1260	40 [9]	2200 C	**230**	3.2 U
TOTAL AROCLOR	40	2200 C[11]	**230**	0 U
METALS (MG/KG)				
ANTIMONY	0.63	31 N	**0.65 J**	0.087 B
ARSENIC	7.24	3.9 C	**10.8**	**5 L**

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	**Ecological Screening Value (ESV)[1][3]**	**Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]**	**SD-105 SD-105-01 20100818 NORMAL SD NORMAL SB 12 12**	**SD-106 SD-106-01 20100818 NORMAL SD NORMAL SB 12 12**
METALS (CONTINUED) (MG/KG)				
BARIUM	130 [15]	15000 N	NA	NA
BERYLLIUM	NA	160 N	1.9	1.4 L
CADMIUM	0.68	70 N	**5.7**	0.26 J
CHROMIUM	43.4	120000 N[12]	**153 K**	26.6 L
COBALT	10 [15]	23 N	NA	NA
COPPER	18.7	3100 N	**142**	16.5 L
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA
LEAD	30.2	400	**144**	12.7
MERCURY	0.13	23 N[14]	**0.56**	0.052
MOLYBDENUM	NA	390 N	NA	NA
NICKEL	15.9	1500 N	**44.3**	**19.6 L**
SELENIUM	1 [15]	390 N	**1.9**	0.98 L
SILVER	0.73	390 N	**2.2 J**	0.059 J
THALLIUM	NA	NA	0.26	0.18 K
VANADIUM	57 [15]	390 N	NA	NA
ZINC	121	23000 N	**389**	65.8 L
METALS (UG/KG)				
DIBUTYLTIN	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)				
PERCENT SOLIDS	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)				
TOTAL ORGANIC CARBON	NA	NA	NA	NA
AVS/SEM (UMOLES/G)				
ACID VOLATILE SULFIDE	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA
COPPER	NA	NA	NA	NA
LEAD	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA
SILVER	NA	NA	NA	NA
ZINC	NA	NA	NA	NA

Table 4-4

Detected Concentrations Table for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Notes:
1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for freshwater sediment (USEPA, August 2006) and marine sediment (USEPA, July 2006). Lower of the freshwater and marine screening levels is presented.
2 - Screening criteria for sediment are based on USEPA Regional Screening Levels (RSLs) for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment, the screening criteria presented in the table for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.
3 - Concentrations exceeding the ESV are shaded black with white font. Concentrations exceeding the adjusted RSL for residential soil are shaded blue with black font. Concentrations exceeding both the ESV and the RSL are shaded red with white font.
4 - TCEQ Ecological Benchmarks for Sediment, January 2006.
5 - Value for trans-1,2-dichloroethene used as a surrogate for cis-1,2-dichloroethene.
6 - Value for 2-methylnaphthalene used as a surrogate for 1-methylnaphthalene.
7 - The value for acenapthene is used as a surrogate for acenaphthylene.
8 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
9 - Value for Total PCBs used as a surrogate for Aroclor-1248, Aroclor-1254 and Aroclor-1260.
10 - One tenth the noncarcinogenic value is less than the carcinogenic value; the noncarcinogenic value is presented.
11 - The value is for high risk PCBs.
12 - The value is for trivalent chromium.
13 - The value is for hexavalent chromium.
14 - The value is for mercuric chloride.
15 - NOAA Quick Reference Tables (Buchman, 2008).

Definitions:
B = Blank contamination
C = Carcinogenic
J = Estimated
K = Biased high
L = Biased low
N = Non-carcinogenic
NA = Not applicable or not available
R = Rejected
SS = Surface sediment
SD = Sediment
U = Non-detected

Table 4-5

Occurrence and Distribution of Chemicals - Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]	Adjusted Regional Screening Level (RSL) For Residential Soil[5]	# Detects Greater Than Adjusted RSL For Residential Soil[1]
Volatile Organics (ug/kg)												
2-BUTANONE	3/5	18 J	37 J	SD-19	52	64	27	28	25710 [6]	0	28000000 N	0
ACETONE	3/10	36 J	220	SD-19	50	270	152	87.7	60030 [6]	0	61000000 N	0
CARBON DISULFIDE	6/10	5 J	19 J	SD-14	13	15	8.0	7.6	0.851	6	820000 N	0
ISOPROPYLBENZENE	2/10	3 J	10 J	SD-19	9	54	6.5	8.4	86	0	2100000 N	0
METHYL TERT-BUTYL ETHER	2/10	3 J	4 J	SD-16	21	110	3.5	15.5	NA	0	430000 C	0
SEC-BUTYLBENZENE	2/10	20 L	33	SD-19	9	54	26.5	12.4	880 [6]	0	NA	0
TERT-BUTYLBENZENE	1/10	2 J	2 J	SD-19	9	54	2.0	8.1	1210 [6]	0	NA	0
TOLUENE	1/10	2 J	2 J	SD-31	9	54	2.0	8.3	1090	0	5000000 N	0
Semivolatile Organics (ug/kg)												
1,2-DICHLOROBENZENE	1/9	260 J	260 J	SD-13	710	1000	260	418	16.5	1	1900000 N	0
1,4-DICHLOROBENZENE	2/9	100 J	180 J	SD-13	100	1000	140	331	460	0	24000 C	0
1-METHYLNAPHTHALENE	1/47	150 J	150 J	SD-58	320	3900	150	429	20.2 [7]	1	220000 C	0
2-METHYLNAPHTHALENE	2/47	220 J	340 J	SD-13	320	3900	280	427	20.2	2	310000 N	0
ACENAPHTHENE	22/71	1.2 J	2400 J	SD-58	0.95	3900	277	329	6.7	21	3400000 N	0
ACENAPHTHYLENE	14/71	18 J	280	SD-90	1.1	3900	116	312	5.87	14	3400000 N[8]	0
ANTHRACENE	29/71	35	4400 J	SD-58	0.97	1400	477	381	46.9	27	17000000 N	0
BAP EQUIVALENT-HALFND	44/71	238	12075	SD-58	0.99	1100	1907	1280	NA	0	150 C	44
BAP EQUIVALENT-POS	44/71	0.093	12075	SD-58	0.99	1100	1436	988	NA	0	150 C	29
BENZO(A)ANTHRACENE	26/71	150	12000	SD-58	1.2	3900	1715	850	74.8	26	1500 C	8
BENZO(A)PYRENE	28/71	150	9000	SD-58	0.99	3900	1504	807	88.8	28	150 C	27
BENZO(B)FLUORANTHENE	43/71	120 J	10000 J	SD-13	1.6	1100	1510	1016	130 [15]	41	1500 C	10
BENZO(G,H,I)PERYLENE	33/71	59 J	4800 J	SD-13	0.99	1400	972	617	67 [15]	32	1700000 N[9]	0
BENZO(K)FLUORANTHENE	27/71	100 J	7300	SD-58	2	1100	1074	517	70 [15]	27	15000 C	0
BIS(2-ETHYLHEXYL)PHTHALATE	6/9	340 J	3400 J	SD-13	710	850	1080	848	180	6	350000 C	0
BUTYL BENZYL PHTHALATE	1/9	830 J	830 J	SD-13	710	1000	830	481	10900	0	2600000 C	0
CARBAZOLE	4/9	310 J	1000 J	SD-13	710	940	595	495	NA	0	NA	0
CHRYSENE	44/71	93 J	12000	SD-58	1.2	1100	1339	928	108	43	150000 C	0
DIBENZO(A,H)ANTHRACENE	19/71	75	790 J	SD-13	1.1	3900	340	350	6.22	19	150 C	14
DIBENZOFURAN	2/9	270 J	400 J	SD-13	710	1000	335	416	415	0	78000 N	0
FLUORANTHENE	51/71	1.8 J	20000 J	SD-58	1.1	1100	1791	1362	113	47	2300000 N	0
FLUORENE	23/71	13 J	2000 J	SD-58	1.3	3900	226	316	21.2	21	2300000 N	0
INDENO(1,2,3-CD)PYRENE	39/71	63 J	5600 J	SD-13	1	1100	855	592	17	39	1500 C	6
NAPHTHALENE	21/71	10 J	550 J	SD-13	0.85	3900	151	293	34.6	19	36000 C	0
PHENANTHRENE	46/71	2.4 J	15000 J	SD-58	3.5	1200	1160	860	86.7	42	1700000 N[9]	0
PYRENE	50/71	1.5 J	24000 J	SD-13	1	1100	2391	1760	153	47	1700000 N	0
TOTAL PAHS	52/71	2.4	118470	SD-58	0	0	11657	8537	1610	40	NA	0
PCBs (ug/kg)												
AROCLOR-1248	2/71	550	2300	SD-86	1	3000	1425	74.8	40 [10]	2	2200 C	1
AROCLOR-1260	42/71	17	14000	SD-58	1.6	57	968	578	40 [10]	39	2200 C	3
TOTAL AROCLOR	42/71	17	14000	SD-58	0	0	1036	613	40	39	2200 C[11]	3
Metals (mg/kg)												
ANTIMONY	38/72	0.076 J	55.1 J	SD-75	0.057	1.64	2.7	1.5	0.63 [15]	28	31 N	1
ARSENIC	71/72	1.4	12.6	SD-31	1.46	1.46	7.1	7.0	7.24	37	3.9 C	58
BARIUM	48/48	8.1	236	SD-58	--	--	53.8	53.8	130 [15]	1	15000 N	0
BERYLLIUM	72/72	0.34	6.9	SD-69	--	--	1.8	1.8	NA	0	160 N	0
CADMIUM	66/72	0.026	306	SD-46	0.0069	0.037	22.0	20.2	0.68	50	70 N	4
CHROMIUM	72/72	8.9	2460	SD-46	--	--	293	293	43.4	48	120000 N[12]	0
COBALT	48/48	1.6 J	33	SD-69	--	--	15.9	15.9	10 [15]	43	23 N	3
COPPER	72/72	5.1	178 J	SD-65	--	--	70.1	70.1	18.7	56	3100 N	0
HEXAVALENT CHROMIUM	1/10	1.6	1.6	SD-42	1	1.6	1.6	0.77	43.4	0	2.9 C[13]	0
LEAD	72/72	2.9	1370	SD-75	--	--	131	131	30.2	50	400	2
MERCURY	62/72	0.015	3.5 L	SD-16	0.0072	0.1	0.60	0.52	0.13	48	23 N[14]	0
MOLYBDENUM	38/48	0.18	3.3	SD-75	0.21	1.7	1.4	1.2	NA	0	390 N	0
NICKEL	72/72	4.1 J	70.4	SD-46	--	--	34.2	34.2	15.9	63	1500 N	0
SELENIUM	56/72	0.51	2.6	SD-66	0.38	1.44	1.5	1.2	1 [15]	39	390 N	0
SILVER	61/72	0.02 J	37.2	SD-75	0.074	0.42	5.7	4.8	0.73	46	390 N	0
THALLIUM	26/72	0.063 J	2.1	SD-16	0.2	2.45	0.28	0.30	NA	0	NA	0
VANADIUM	48/48	11	110	SD-16	--	--	54.3	54.3	57 [15]	20	390 N	0
ZINC	72/72	10.8	1300	SD-58	--	--	293	293	121	50	23000 N	0
Metals (ug/kg)												
DIBUTYLTIN	1/3	5	5	SD-40	3	3.5	5	2.8	NA	0	NA	0

Table 4-5

Occurrence and Distribution of Chemicals - Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]	Adjusted Regional Screening Level (RSL) For Residential Soil[5]	# Detects Greater Than Adjusted RSL For Residential Soil[1]
Miscellaneous Parameters (%)												
PERCENT SOLIDS	37/37	24	85	SD-44	--	--	45.6	45.6	NA	0	NA	0
Miscellaneous Parameters (mg/kg)												
TOTAL ORGANIC CARBON	18/18	2200	46000	SD-40	--	--	25606	25606	NA	0	NA	0
AVS/SEM (umoles/g)												
ACID VOLATILE SULFIDE	5/7	2.4	19	SD-90	0.23	0.38	9.1	6.5	NA	0	NA	0
CADMIUM	7/7	0.0003 J	0.48	SD-87	--	--	0.13	0.13	NA	0	NA	0
CHROMIUM	7/7	0.016 J	4.6	SD-87	--	--	1.8	1.8	NA	0	NA	0
COPPER	7/7	0.037	0.52	SD-88	--	--	0.24	0.24	NA	0	NA	0
LEAD	7/7	0.015 J	0.75	SD-88	--	--	0.47	0.47	NA	0	NA	0
NICKEL	7/7	0.035 J	0.2	SD-88	--	--	0.14	0.14	NA	0	NA	0
SILVER	5/7	0.001 J	0.0083	SD-88	0.0002	0.00033	0.0041	0.0030	NA	0	NA	0
ZINC	7/7	0.11 J	6.9	SD-87	--	--	3.3	3.3	NA	0	NA	0

Notes:

1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection and exceedances.

2 - Average of positive analytical results only.

3 - Average of all analytical results are calculated using half of the detection limit for nondetects.

4 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for freshwater sediment (USEPA, August 2006) and marine sediment (USEPA, July 2006). Lower of the freshwater and marine screening levels is presented.

5 - Screening criteria for sediment are based on USEPA Regional Screening Levels (RSLs) for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment, the screening criteria presented in the table for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.

6 - TCEQ Ecological Benchmarks for Sediment, January 2006.

7 - Value for 2-methylnaphthalene used as a surrogate for 1-methylnaphthalene.

8 - The value for acenapthene is used as a surrogate for acenaphthylene.

9 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.

10 - Value for Total PCBs used as a surrogate for Aroclor-1248 and Aroclor-1260.

11 - The value is for high risk PCBs.

12 - The value is for trivalent chromium.

13 - The value is for hexavalent chromium.

14 - The value is for mercuric chloride.

15 - NOAA Quick Reference Tables (Buchman, 2008).

Definitions:

C = Carcinogenic
J = Estimated
L = Biased low
N = Non-carcinogenic
NA = Not applicable or not available

Associated Samples:

SD-94-01	SD-27-01	SD-55-01	SD-73-01	SD-93-01
SD-95-01	SD-28-01	SD-56-01	SD-74-01	
SD-95-01-D	SD-29-01	SD-57-01	SD-75-01	
SD-96-01	SD-31-01	SD-58-01	SD-76-01	
SD-96-01-D	SD-40-01	SD-59-01	SD-77-01	
SD-97-01	SD-42-01	SD-60-01	SD-79-01	
SD-98-01	SD-43-01	SD-61-01	SD-80-01	
SD-99-01	SD-44-01	SD-62-01	SD-81-01	
SD-100-01	SD-45-01	SD-63-01	SD-82-01	
SD-101-01	SD-46-01	SD-64-01	SD-83-01	
SD-102-01	SD-46-01-D	SD-65-01	SD-84-01	
SD-103-01	SD-47-01	SD-66-01	SD-85-01	
SD-104-01	SD-48-01	SD-67-01	SD-86-01	
SD-105-01	SD-49-01	SD-68-01	SD-87-01	
SD-106-01	SD-50-01	SD-68-01-D	SD-88-01	
SD-13-01	SD-50-01-D	SD-69-01	SD-89-01	
SD-14-01	SD-51-01	SD-70-01	SD-90-01	
SD-16-01	SD-53-01	SD-71-01	SD-91-01	
SD-19-01	SD-54-01	SD-72-01	SD-92-01	

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-13
SAMPLE ID				BOWLEYS_QUARTERS-02	MIDDLE_RIVER_DOWNSTREAM-02	MARSHY_POINT-02	SD-13-02
SAMPLE DATE				20100821	20100820	20100821	20051020
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				BACKGROUND	OFFSITE	BACKGROUND	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	12 U
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	12 U
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	61 UR
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	120 B
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	12 U
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	12 U
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	24 U
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	12 U
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	38 K
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	24 U
NAPHTHALENE	34.6	36000	C	NA	NA	NA	12 U
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	180 K
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	12 U
TOLUENE	1090	5000000	N	NA	NA	NA	12 U
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	800 U
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	800 U
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	800 U
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	800 U
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	**520 J**
ACENAPHTHENE	6.7	3400000	N	3.9 U	2.6 U	4.4 U	**600 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	4.7 U	3.1 U	5.3 U	**110 J**
ANTHRACENE	46.9	17000000	N	4 U	4.8 J	4.5 U	**1400 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	4.1 U	2.7 U	4.6 U	**8963**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	4.1 U	2.7 U	4.6 U	**8963**
BENZO(A)ANTHRACENE	74.8	1500	C	5.1 U	3.4 U	5.8 U	**5800 J**
BENZO(A)PYRENE	88.8	150	C	4.1 U	2.7 U	4.6 U	**6000 J**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	6.5 U	4.3 U	7.2 U	**8400 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	4.1 U	2.7 U	4.6 U	**3900 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	8.3 U	5.5 U	9.3 U	**3400 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	**350 J**
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	800 UJ
CARBAZOLE	NA	NA		NA	NA	NA	400 J
CHRYSENE	108	150000	C	4.9 U	3.3 U	5.5 U	**8900 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	4.6 U	3 U	5.1 U	**1100 J**
DIBENZOFURAN	415	78000	N	NA	NA	NA	330 J
FLUORANTHENE	113	2300000	N	4.4 U	12 J	4.9 U	**9700 J**
FLUORENE	21.2	2300000	N	5.4 U	3.6 U	6.1 U	**920**
INDENO(1,2,3-CD)PYRENE	17	1500	C	4.2 U	2.8 U	4.7 U	**4000 J**
NAPHTHALENE	34.6	36000	C	3.5 U	2.4 U	4 U	**860**
PHENANTHRENE	86.7	1700000	N[8]	6.5 U	11 J	7.3 U	**6200 J**
PYRENE	153	1700000	N	4.2 U	8.9 J	4.7 U	**24000 J**
TOTAL PAHS	1610	NA		0 U	36.7	0 U	**85810**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	1.9 U	2.2 U	2.2 U	41 U
AROCLOR-1254	59.8 [9]	1100	N[10]	2.9 U	3.2 U	3.3 U	41 U
AROCLOR-1260	40 [9]	2200	C	2.9 U	3.2 U	3.3 U	**670**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	0 U	**670**
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.073 J	**0.7 L**	0.096 J	**3.4**
ARSENIC	7.24	3.9	C	**5**	**7.7 L**	**6.9**	**5.6**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	BOWLEY BOWLEYS_QUARTERS-02 20100821 NORMAL SD BACKGROUND SB 24 24	DOWNSTREAM MIDDLE_RIVER_DOWNSTREAM-02 20100820 NORMAL SD OFFSITE SB 24 24	MARSHY_POINT MARSHY_POINT-02 20100821 NORMAL SD BACKGROUND SB 24 24	SD-13 SD-13-02 20051020 NORMAL SD NORMAL SB 24 24
METALS CONTINUED (MG/KG)						
BARIUM	130 [15]	15000 N	NA	NA	NA	112
BERYLLIUM	NA	160 N	1	1.6	1.5	2
CADMIUM	0.68	70 N	0.28	**0.69 L**	0.36	**21.8**
CHROMIUM	43.4	120000 N[12]	23.1	37	33.2	**499**
COBALT	10 [15]	23 N	NA	NA	NA	**13.9**
COPPER	18.7	3100 N	15.6	**26.2 L**	16.2	**67.4**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	1.2 UL
LEAD	30.2	400	14.2	27.6	18.7	**169**
MERCURY	0.13	23 N[14]	0.05	0.083	0.053	**1.9 L**
MOLYBDENUM	NA	390 N	NA	NA	NA	2.7
NICKEL	15.9	1500 N	**18.7**	**25.6 L**	**27.6**	**34.2**
SELENIUM	1 [15]	390 N	1	**1.3 L**	**1.3**	0.57 L
SILVER	0.73	390 N	0.064 J	0.11 J	0.078 J	**28.6**
THALLIUM	NA	NA	0.18	0.23	0.21	1.3
VANADIUM	57 [15]	390 N	NA	NA	NA	51.7
ZINC	121	23000 N	61.1	93.5 L	95.9	**452**
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	NA	NA	41
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	24600	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-14	SD-16	SD-19	SD-27
SAMPLE ID				SD-14-02	SD-16-02	SD-19-02	SD-27-02
SAMPLE DATE				20051020	20051020	20051021	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		10 UL	16 U	7 U	7 U
1,4-DICHLOROBENZENE	460	24000	C	10 UL	16 U	7 U	7 U
2-BUTANONE	25,710 [4]	28000000	N	52 UR	40 J	21 J	34 UR
ACETONE	60,030 [4]	61000000	N	52 B	240	110	21 B
CARBON DISULFIDE	0.851	820000	N	10 UL	**11 J**	7 U	7 U
CHLOROBENZENE	8.42	290000	N	10 UL	16 U	7 U	7 J
CHLOROMETHANE	8,740 [4]	120000	N	21 UL	31 U	14 U	14 U
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	10 UL	16 U	2 J	7 U
ISOPROPYLBENZENE	86	2100000	N	10 UL	16 U	3 J	7 U
METHYL TERT-BUTYL ETHER	NA	430000	C	21 UL	2 J	14 U	14 U
NAPHTHALENE	34.6	36000	C	10 UL	16 U	7 U	7 U
SEC-BUTYLBENZENE	880 [4]	NA		10 UL	16 U	7 J	7 U
TERT-BUTYLBENZENE	1,210 [4]	NA		10 UL	16 U	7 U	7 U
TOLUENE	1090	5000000	N	10 UL	16 U	10	1 J
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	680 U	1000 U	490 U	460 U
1,3-DICHLOROBENZENE	842	NA		680 U	1000 U	490 U	460 U
1,4-DICHLOROBENZENE	460	24000	C	680 U	1000 U	490 U	460 U
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	680 U	1000 U	490 U	460 U
2-METHYLNAPHTHALENE	20.2	310000	N	680 U	**340 J**	490 U	460 U
ACENAPHTHENE	6.7	3400000	N	680 U	**530 J**	490 U	460 U
ACENAPHTHYLENE	5.87	3400000	N[7]	680 U	1000 U	490 U	460 U
ANTHRACENE	46.9	17000000	N	680 U	**1100**	490 U	460 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	680 U	**5716**	**466**	460 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	680 U	**5716**	**194**	460 U
BENZO(A)ANTHRACENE	74.8	1500	C	680 U	**3600 J**	**150 J**	460 U
BENZO(A)PYRENE	88.8	150	C	680 U	**3900 J**	**160 J**	460 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	680 U	**5200 J**	**190 J**	460 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	680 U	**2300 J**	490 UJ	460 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	680 U	**2100 J**	490 UJ	460 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	680 U	**350 J**	140 J	460 U
BUTYL BENZYL PHTHALATE	10900	2600000	C	680 U	1000 UJ	490 UJ	460 U
CARBAZOLE	NA	NA		680 U	410 J	490 U	460 U
CHRYSENE	108	150000	C	680 U	**5000 J**	**200 J**	460 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	680 U	**640 J**	490 UJ	460 U
DIBENZOFURAN	415	78000	N	680 U	240 J	490 U	460 U
FLUORANTHENE	113	2300000	N	680 U	**7700**	**340 J**	460 U
FLUORENE	21.2	2300000	N	680 U	**490 J**	490 U	460 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	680 U	**2700 J**	490 UJ	460 U
NAPHTHALENE	34.6	36000	C	680 U	**540 J**	490 U	460 U
PHENANTHRENE	86.7	1700000	N[8]	680 U	**3700**	**170 J**	460 U
PYRENE	153	1700000	N	680 U	**10000 J**	**370 J**	460 U
TOTAL PAHS	1610	NA		0 U	**49840**	1580	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	35 U	53 U	25 U	24 U
AROCLOR-1254	59.8 [9]	1100	N[10]	35 U	53 U	25 U	24 U
AROCLOR-1260	40 [9]	2200	C	35 U	53 U	**49 J**	**67 J**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	**49**	**67**
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.65 U	**2.2**	0.46 U	0.38 UL
ARSENIC	7.24	3.9	C	3.8	2.8	3	2.1

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-14 SD-14-02 20051020 NORMAL SD NORMAL SB 24 24	SD-16 SD-16-02 20051020 NORMAL SD NORMAL SB 24 24	SD-19 SD-19-02 20051021 NORMAL SD NORMAL SB 24 24	SD-27 SD-27-02 20051021 NORMAL SD NORMAL SB 24 24
METALS CONTINUED (MG/KG)						
BARIUM	130 [15]	15000 N	26.3	104	28.2	8
BERYLLIUM	NA	160 N	1.7	2.6	1.1	1.1
CADMIUM	0.68	70 N	0.52	**56.4**	**2.7**	0.64
CHROMIUM	43.4	120000 N[12]	35.6	**1080**	**79**	24.2 K
COBALT	10 [15]	23 N	9.5	**18.2**	6.4	3.9
COPPER	18.7	3100 N	16	**95.2**	15.2	7.4 J
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	1 UL	1.6 UL	0.75 UL	0.68 UL
LEAD	30.2	400	11	**219**	**37**	23.8
MERCURY	0.13	23 N[14]	0.04 L	**6.1 L**	**0.17 L**	0.05 B
MOLYBDENUM	NA	390 N	1.2	1.9	0.79	0.4
NICKEL	15.9	1500 N	**17.4**	**52.6**	14.6	8.4
SELENIUM	1 [15]	390 N	0.57 UL	1.04 UL	0.4 UL	0.33 U
SILVER	0.73	390 N	**2 L**	**24.7**	**3.5**	0.19 L
THALLIUM	NA	NA	0.97 U	1.78 U	0.86	0.57 U
VANADIUM	57 [15]	390 N	26.2	**78.3**	24.2	15.8
ZINC	121	23000 N	64.5	**612**	76	32.4
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	48	32	67	72
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	6800	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-28	SD-29	SD-31	SD-40
SAMPLE ID				SD-28-02	SD-29-02	SD-31-02	SD-40-02
SAMPLE DATE				20051021	20051021	20051021	20051021
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		11 U	9 U	1 B	13 UJ
1,4-DICHLOROBENZENE	460	24000	C	11 U	9 U	15 U	13 UJ
2-BUTANONE	25,710 [4]	28000000	N	13 J	43 U	74 U	66 UR
ACETONE	60,030 [4]	61000000	N	45 B	54 B	140 B	240 J
CARBON DISULFIDE	0.851	820000	N	11 U	9 U	**7 J**	**5 J**
CHLOROBENZENE	8.42	290000	N	11 U	9 U	15 U	13 U
CHLOROMETHANE	8,740 [4]	120000	N	22 U	17 U	30 U	27 U
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	11 U	9 U	15 U	13 U
ISOPROPYLBENZENE	86	2100000	N	11 U	9 U	15 U	13 UJ
METHYL TERT-BUTYL ETHER	NA	430000	C	22 U	17 U	3 J	27 U
NAPHTHALENE	34.6	36000	C	11 U	9 U	15 U	13 UJ
SEC-BUTYLBENZENE	880 [4]	NA		11 U	9 U	15 U	13 UJ
TERT-BUTYLBENZENE	1,210 [4]	NA		11 U	9 U	15 U	13 U
TOLUENE	1090	5000000	N	3 J	9	15 U	13 U
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	740 U	570 U	1000 UJ	880 U
1,3-DICHLOROBENZENE	842	NA		740 U	570 U	1000 UJ	880 U
1,4-DICHLOROBENZENE	460	24000	C	740 U	570 U	1000 UJ	74 B
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	740 U	570 U	1000 UJ	880 U
2-METHYLNAPHTHALENE	20.2	310000	N	740 U	570 U	1000 UJ	880 U
ACENAPHTHENE	6.7	3400000	N	740 U	570 U	1000 UJ	190 B
ACENAPHTHYLENE	5.87	3400000	N[7]	740 U	570 U	1000 UJ	880 U
ANTHRACENE	46.9	17000000	N	740 U	570 U	1000 UJ	**190 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	740 U	570 U	1000 U	**1408**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	740 U	570 U	1000 U	**964**
BENZO(A)ANTHRACENE	74.8	1500	C	740 U	570 U	1000 UJ	**660 J**
BENZO(A)PYRENE	88.8	150	C	740 U	570 U	1000 UJ	**740 J**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	740 U	570 U	1000 UJ	**1000**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	740 U	570 U	1000 UJ	**690 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	740 U	570 U	1000 UJ	880 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	740 U	570 U	**980 J**	**1700**
BUTYL BENZYL PHTHALATE	10900	2600000	C	740 U	570 U	1000 UJ	880 U
CARBAZOLE	NA	NA		740 U	570 U	1000 UJ	880 U
CHRYSENE	108	150000	C	740 U	570 U	1000 UJ	**1000**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	740 U	570 U	1000 UJ	880 U
DIBENZOFURAN	415	78000	N	740 U	570 U	1000 UJ	880 U
FLUORANTHENE	113	2300000	N	740 U	**140 J**	1000 UJ	**890**
FLUORENE	21.2	2300000	N	740 U	570 U	1000 UJ	880 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	740 U	570 U	1000 UJ	**570 J**
NAPHTHALENE	34.6	36000	C	740 U	570 U	1000 UJ	880 U
PHENANTHRENE	86.7	1700000	N[8]	740 U	570 U	1000 UJ	**400 J**
PYRENE	153	1700000	N	740 U	570 U	1000 UJ	**2100**
TOTAL PAHS	1610	NA		0 U	140	0 U	**8240**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	38 U	29 U	52 U	45 U
AROCLOR-1254	59.8 [9]	1100	N[10]	38 U	29 U	52 U	45 U
AROCLOR-1260	40 [9]	2200	C	38 U	29 U	**75**	**960**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	**75**	**960**
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.54 UL	**0.85 L**	**1 L**	0.94 U
ARSENIC	7.24	3.9	C	**5.4**	**5.9**	**8.1**	**4**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-28	SD-29	SD-31	SD-40
SAMPLE ID			SD-28-02	SD-29-02	SD-31-02	SD-40-02
SAMPLE DATE			20051021	20051021	20051021	20051021
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL
MATRIX			SD	SD	SD	SD
SAMPLE TYPE			NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX			SB	SB	SB	SB
TOP DEPTH			24	24	24	24
BOTTOM DEPTH			24	24	24	24
METALS CONTINUED (MG/KG)						
BARIUM	130 [15]	15000 N	32.7	26.8	45.7	73.5
BERYLLIUM	NA	160 N	1.9	2	1.9	2.2
CADMIUM	0.68	70 N	**1.1**	0.57	**2.9**	**56.6**
CHROMIUM	43.4	120000 N[12]	**56.2 K**	**47.9 K**	**102 K**	**945**
COBALT	10 [15]	23 N	**14**	9.8	**17.7**	**20**
COPPER	18.7	3100 N	**19.8 J**	**21.5 J**	**46 J**	**113**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	1.1 UL	0.87 UL	1.5 UL	1.3 U
LEAD	30.2	400	25.6	18.3	**58.5**	**316**
MERCURY	0.13	23 N[14]	**2.4 K**	**0.25 K**	**0.4 K**	**0.61**
MOLYBDENUM	NA	390 N	1.2	0.84	0.54	1.9
NICKEL	15.9	1500 N	**23.6**	**24.2**	**31**	**51.2**
SELENIUM	1 [15]	390 N	0.47 U	0.83 U	0.76 U	0.82 U
SILVER	0.73	390 N	0.21 L	0.17 L	**0.85 L**	**3.4**
THALLIUM	NA	NA	0.8 U	0.71 U	1.31 U	1.41 U
VANADIUM	57 [15]	390 N	35.9	43.5	40.4	**66.3**
ZINC	121	23000 N	91.9	62.1	**186**	**559**
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	2.8 U	NA	5.5	8.5
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	44	58	32	38
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	54000 K	50000
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-42	SD-43	SD-44	SD-45
SAMPLE ID				SD-42-02	SD-43-02	SD-44-02	SD-45-02
SAMPLE DATE				20051021	20081117	20081117	20081117
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	22	22	22
BOTTOM DEPTH				24	26	26	26
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		12 UJ	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	12 UJ	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	62 UR	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	120 J	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	**8 J**	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	12 UJ	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	25 UJ	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	12 UJ	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	12 UJ	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	25 UJ	NA	NA	NA
NAPHTHALENE	34.6	36000	C	12 UJ	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		12 UJ	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		12 UJ	NA	NA	NA
TOLUENE	1090	5000000	N	12 UJ	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	440 U	630 U	600 U
2-METHYLNAPHTHALENE	20.2	310000	N	NA	440 U	630 U	600 U
ACENAPHTHENE	6.7	3400000	N	NA	440 U	630 U	600 U
ACENAPHTHYLENE	5.87	3400000	N[7]	NA	440 U	630 U	600 U
ANTHRACENE	46.9	17000000	N	NA	440 U	630 U	600 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	NA	440 U	630 U	600 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	NA	440 U	630 U	600 U
BENZO(A)ANTHRACENE	74.8	1500	C	NA	440 U	630 U	600 U
BENZO(A)PYRENE	88.8	150	C	NA	440 U	630 U	600 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	NA	440 U	630 U	600 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	NA	440 U	630 U	600 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	NA	440 U	630 U	600 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	NA	440 U	630 U	600 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	NA	440 U	630 U	600 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	NA	440 U	630 U	600 U
FLUORENE	21.2	2300000	N	NA	440 U	630 U	600 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	NA	440 U	630 U	600 U
NAPHTHALENE	34.6	36000	C	NA	440 U	630 U	600 U
PHENANTHRENE	86.7	1700000	N[8]	NA	440 U	630 U	600 U
PYRENE	153	1700000	N	NA	440 U	630 U	600 U
TOTAL PAHS	1610	NA		NA	0 U	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	NA	28 U	31 U	30 U
AROCLOR-1254	59.8 [9]	1100	N[10]	NA	28 U	31 U	30 U
AROCLOR-1260	40 [9]	2200	C	NA	28 U	31 U	30 U
TOTAL AROCLOR	40	2200	C[11]	NA	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.7 U	0.17 U	0.18 U	0.18 U
ARSENIC	7.24	3.9	C	**5.6**	3.3	2.3	3.2

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-42	SD-43	SD-44	SD-45
SAMPLE ID				SD-42-02	SD-43-02	SD-44-02	SD-45-02
SAMPLE DATE				20051021	20081117	20081117	20081117
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	22	22	22
BOTTOM DEPTH				24	26	26	26
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	37.3	84.8 J	28.4	34.3
BERYLLIUM	NA	160	N	2.4	1.6 J	1.9	1.3
CADMIUM	0.68	70	N	**1.6**	**0.77**	0.11	0.2
CHROMIUM	43.4	120000	N[12]	**46.8**	25 J	19.2	20.1
COBALT	10 [15]	23	N	**22.3**	**17.6**	**14.2**	**10.5**
COPPER	18.7	3100	N	**34.5**	**19.9 J**	12.5	13.5
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	1.2 U	NA	NA	NA
LEAD	30.2	400		**68**	17 J	7.3	8.5
MERCURY	0.13	23	N[14]	**0.21**	0.054 B	0.037	0.016
MOLYBDENUM	NA	390	N	1.7	0.5	1.2	1.1
NICKEL	15.9	1500	N	**31.5**	**21.5**	**16**	14.3
SELENIUM	1 [15]	390	N	0.61 U	0.96	0.79	0.58 U
SILVER	0.73	390	N	0.46 B	0.1 U	0.11 U	0.15
THALLIUM	NA	NA		1.05 U	0.29 U	0.31 U	0.3 U
VANADIUM	57 [15]	390	N	34.9	36.5 J	30.1	34.2
ZINC	121	23000	N	**136**	56	41.4	46.6
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		40	60	53	56
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	16000	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-46	SD-47	SD-48	SD-49
SAMPLE ID					SD-46-02	SD-47-02	SD-48-02	SD-49-02
SAMPLE DATE					20081115	20081115	20081115	20081115
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SB	SB	SB	SB
TOP DEPTH					22	22	22	22
BOTTOM DEPTH					26	26	26	26
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
2-BUTANONE	25,710	[4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030	[4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851		820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42		290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740	[4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050	[5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86		2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA		430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6		36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880	[4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210	[4]	NA		NA	NA	NA	NA
TOLUENE	1090		5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2	[6]	220000	C	780 U	570 U	410 U	530 U
2-METHYLNAPHTHALENE	20.2		310000	N	780 U	570 U	410 U	530 U
ACENAPHTHENE	6.7		3400000	N	780 U	570 U	410 U	530 U
ACENAPHTHYLENE	5.87		3400000	N[7]	780 U	570 U	410 U	530 U
ANTHRACENE	46.9		17000000	N	780 U	570 U	410 U	530 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	780 U	570 U	410 U	530 U
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	780 U	570 U	410 U	530 U
BENZO(A)ANTHRACENE	74.8		1500	C	780 U	570 U	410 U	530 U
BENZO(A)PYRENE	88.8		150	C	780 U	570 U	410 U	530 U
BENZO(B)FLUORANTHENE	130	[15]	1500	C	780 U	570 U	410 U	530 U
BENZO(G,H,I)PERYLENE	67	[15]	1700000	N[8]	780 U	570 U	410 U	530 U
BENZO(K)FLUORANTHENE	70	[15]	15000	C	780 U	570 U	410 U	530 U
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900		2600000	C	NA	NA	NA	NA
CARBAZOLE	NA		NA		NA	NA	NA	NA
CHRYSENE	108		150000	C	780 U	570 U	410 U	530 U
DIBENZO(A,H)ANTHRACENE	6.22		150	C	780 U	570 U	410 U	530 U
DIBENZOFURAN	415		78000	N	NA	NA	NA	NA
FLUORANTHENE	113		2300000	N	780 U	570 U	410 U	530 U
FLUORENE	21.2		2300000	N	780 U	570 U	410 U	530 U
INDENO(1,2,3-CD)PYRENE	17		1500	C	780 U	570 U	410 U	530 U
NAPHTHALENE	34.6		36000	C	780 U	570 U	410 U	530 U
PHENANTHRENE	86.7		1700000	N[8]	780 U	570 U	410 U	530 U
PYRENE	153		1700000	N	780 U	570 U	410 U	530 U
TOTAL PAHS	1610		NA		0 U	0 U	0 U	0 U
PCBS (UG/KG)								
AROCLOR-1248	40	[9]	2200	C	39 U	28 U	20 U	33 U
AROCLOR-1254	59.8	[9]	1100	N[10]	39 U	28 U	20 U	33 U
AROCLOR-1260	40	[9]	2200	C	39 U	28 U	20 U	33 U
TOTAL AROCLOR	40		2200	C[11]	0 U	0 U	0 U	0 U
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	0.25 L	0.17 UL	0.12 UL	0.19 U
ARSENIC	7.24		3.9	C	**7**	**4.5**	0.77 B	**7**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-46	SD-47	SD-48	SD-49
SAMPLE ID				SD-46-02	SD-47-02	SD-48-02	SD-49-02
SAMPLE DATE				20081115	20081115	20081115	20081115
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				22	22	22	22
BOTTOM DEPTH				26	26	26	26
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	41.9	16.5	10.7	22.6 J
BERYLLIUM	NA	160	N	2.6	2	0.69	1.3 J
CADMIUM	0.68	70	N	**17.5**	0.1	0.016	0.011 U
CHROMIUM	43.4	120000	N[12]	**336**	16.3	11.8	20.6 J
COBALT	10 [15]	23	N	**21.7**	**12.6**	1.1	**13.8**
COPPER	18.7	3100	N	**42.4**	9.5	7.8	12.1 J
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**85.2**	5.1	4.1	7.3 J
MERCURY	0.13	23	N[14]	**0.19**	0.023 B	0.0095 B	0.034 B
MOLYBDENUM	NA	390	N	1.4	1.6	0.2 B	1.4
NICKEL	15.9	1500	N	**30.8**	**50.5**	4.1	15.7
SELENIUM	1 [15]	390	N	**1.9**	0.86	0.39 U	**1.8**
SILVER	0.73	390	N	**1.1**	0.11 U	0.075 U	0.14 B
THALLIUM	NA	NA		0.39 U	0.3 U	0.21 U	0.32 U
VANADIUM	57 [15]	390	N	42.6	22.2	20.4	26.8 J
ZINC	121	23000	N	**232**	37	7.6	51.9
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		43	59	82	50
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	9600	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-50	SD-51	SD-51	SD-51
SAMPLE ID				SD-50-02	SD-51-02	SD-51-02-AVG	SD-51-02-D
SAMPLE DATE				20081114	20081115	20081115	20081115
SAMPLE CODE				NORMAL	ORIG	AVG	DUP
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				22	20	20	20
BOTTOM DEPTH				26	28	28	28
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	1100 U	1100 U	1100 U	1100 U
2-METHYLNAPHTHALENE	20.2	310000	N	1100 U	1100 U	1100 U	1100 U
ACENAPHTHENE	6.7	3400000	N	1100 U	1100 U	1100 U	1100 U
ACENAPHTHYLENE	5.87	3400000	N[7]	1100 U	1100 U	1100 U	1100 U
ANTHRACENE	46.9	17000000	N	1100 U	1100 U	1100 U	1100 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**1225**	**1196**	**1196**	1100 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	69.5	40.5	40.5	1100 U
BENZO(A)ANTHRACENE	74.8	1500	C	1100 U	1100 U	1100 U	1100 U
BENZO(A)PYRENE	88.8	150	C	1100 U	1100 U	1100 U	1100 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**460 J**	**270 J**	**270 J**	1100 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	1100 U	1100 U	1100 U	1100 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**500 J**	**220 J**	**220 J**	1100 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**500 J**	**310 J**	**310 J**	1100 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	1100 U	1100 U	1100 U	1100 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**690 J**	**420 J**	**420 J**	1100 U
FLUORENE	21.2	2300000	N	1100 U	1100 U	1100 U	1100 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**180 J**	**110 J**	**110 J**	1100 U
NAPHTHALENE	34.6	36000	C	1100 U	1100 U	1100 U	1100 U
PHENANTHRENE	86.7	1700000	N[8]	**330 J**	1100 U	1100 U	1100 U
PYRENE	153	1700000	N	**1000 J**	**590 J**	**590 J**	1100 U
TOTAL PAHS	1610	NA		**3660**	**1920**	**1920**	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	2700 UJ	53 U	53 U	53 U
AROCLOR-1254	59.8 [9]	1100	N[10]	2700 UJ	53 U	53 U	53 U
AROCLOR-1260	40 [9]	2200	C	**610**	**270 J**	**148.25 J**	53 UJ
TOTAL AROCLOR	40	2200	C[11]	**610**	**270**	**148.25**	0 U
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.34 UJ	**1 L**	0.5825 L	0.33 UL
ARSENIC	7.24	3.9	C	**12.3**	**11.5**	**11.4**	**11.3**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-50 SD-50-02 20081114 NORMAL SD NORMAL SB 22 26	SD-51 SD-51-02 20081115 ORIG SD NORMAL SB 20 28	SD-51 SD-51-02-AVG 20081115 AVG SD NORMAL SB 20 28	SD-51 SD-51-02-D 20081115 DUP SD NORMAL SB 20 28
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	69.4	61.7	62.15	62.6
BERYLLIUM	NA	160	N	2.4	2.2	2.2	2.2
CADMIUM	0.68	70	N	**38.3**	**28.6**	**30.7**	**32.8**
CHROMIUM	43.4	120000	N[12]	**527**	**515**	**527.5**	**540**
COBALT	10 [15]	23	N	**30.9**	**20.9**	**21.05**	**21.2**
COPPER	18.7	3100	N	**115**	**116**	**115.5**	**115**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**196**	**214**	**216**	**218**
MERCURY	0.13	23	N[14]	**1.1**	**0.94**	**0.92**	**0.9**
MOLYBDENUM	NA	390	N	1.5 J	1.7	1.85	2
NICKEL	15.9	1500	N	**66.2**	**48.1**	**48.4**	**48.7**
SELENIUM	1 [15]	390	N	**2.2**	**2.5**	**2.6**	**2.7**
SILVER	0.73	390	N	**18**	**6.1**	**6.95**	**7.8**
THALLIUM	NA	NA		0.59 U	0.54 U	0.55 U	0.56 U
VANADIUM	57 [15]	390	N	**96**	**76.9**	**78.85**	**80.8**
ZINC	121	23000	N	**534**	**435**	**442.5**	**450**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	32	31.5	31
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-53	SD-54	SD-55	SD-56
SAMPLE ID					SD-53-02	SD-54-02	SD-55-02	SD-56-02
SAMPLE DATE					20081114	20081114	20081113	20081113
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SB	SB	SB	SB
TOP DEPTH					22	22	22	22
BOTTOM DEPTH					26	26	26	26
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
2-BUTANONE	25,710	[4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030	[4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851		820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42		290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740	[4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050	[5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86		2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA		430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6		36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880	[4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210	[4]	NA		NA	NA	NA	NA
TOLUENE	1090		5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2	[6]	220000	C	770 U	**140 J**	400 U	750 U
2-METHYLNAPHTHALENE	20.2		310000	N	770 U	**310 J**	400 U	750 U
ACENAPHTHENE	6.7		3400000	N	770 U	1100 U	400 U	750 U
ACENAPHTHYLENE	5.87		3400000	N[7]	770 U	1100 U	400 U	750 U
ANTHRACENE	46.9		17000000	N	770 U	**290 J**	400 U	**89 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	770 U	**1312**	400 U	**871**
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	770 U	**157**	400 U	83.6
BENZO(A)ANTHRACENE	74.8		1500	C	770 U	1100 U	400 U	750 U
BENZO(A)PYRENE	88.8		150	C	770 U	1100 U	400 U	750 U
BENZO(B)FLUORANTHENE	130	[15]	1500	C	770 U	**1000 J**	400 U	**540 J**
BENZO(G,H,I)PERYLENE	67	[15]	1700000	N[8]	770 U	**560 J**	400 U	**280 J**
BENZO(K)FLUORANTHENE	70	[15]	15000	C	770 U	**810 J**	400 U	**410 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900		2600000	C	NA	NA	NA	NA
CARBAZOLE	NA		NA		NA	NA	NA	NA
CHRYSENE	108		150000	C	770 U	**1000 J**	400 U	**480 J**
DIBENZO(A,H)ANTHRACENE	6.22		150	C	770 U	1100 U	400 U	750 U
DIBENZOFURAN	415		78000	N	NA	NA	NA	NA
FLUORANTHENE	113		2300000	N	770 U	**1700**	400 U	**750 J**
FLUORENE	21.2		2300000	N	770 U	**180 J**	400 U	750 U
INDENO(1,2,3-CD)PYRENE	17		1500	C	770 U	**480 J**	400 U	**250 J**
NAPHTHALENE	34.6		36000	C	770 U	**320 J**	400 U	750 U
PHENANTHRENE	86.7		1700000	N[8]	770 U	**1100 J**	400 U	**330 J**
PYRENE	153		1700000	N	770 U	**2600**	400 U	**990**
TOTAL PAHS	1610		NA		0 U	**10350**	0 U	**4119**
PCBS (UG/KG)								
AROCLOR-1248	40	[9]	2200	C	38 U	55 U	20 U	38 U
AROCLOR-1254	59.8	[9]	1100	N[10]	38 U	55 U	20 U	38 U
AROCLOR-1260	40	[9]	2200	C	38 U	55 U	20 U	**350**
TOTAL AROCLOR	40		2200	C[11]	0 U	0 U	0 U	**350**
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	0.23 UL	0.36 L	0.13 UL	0.48 L
ARSENIC	7.24		3.9	C	**8.1**	**10.9**	1.5	**7.2**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-53	SD-54	SD-55	SD-56
SAMPLE ID			SD-53-02	SD-54-02	SD-55-02	SD-56-02
SAMPLE DATE			20081114	20081114	20081113	20081113
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL
MATRIX			SD	SD	SD	SD
SAMPLE TYPE			NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX			SB	SB	SB	SB
TOP DEPTH			22	22	22	22
BOTTOM DEPTH			26	26	26	26
METALS CONTINUED (MG/KG)						
BARIUM	130 [15]	15000 N	28.8	87.7	11.6	32.9
BERYLLIUM	NA	160 N	1.8	2.4	1.9	1.5
CADMIUM	0.68	70 N	0.1	**53.5**	0.0074 U	**19**
CHROMIUM	43.4	120000 N[12]	31.5	**1050**	19.1	**264**
COBALT	10 [15]	23 N	**11.8**	**19.9**	4.6	**13.9**
COPPER	18.7	3100 N	18	**89.9**	9.3	**66.6**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	11	**162**	5.6	**108**
MERCURY	0.13	23 N[14]	0.048	**1.5**	0.0079	**0.65**
MOLYBDENUM	NA	390 N	1.9	1.2	0.26	1.1
NICKEL	15.9	1500 N	**19.9**	**50.8**	**19.4**	**33.8**
SELENIUM	1 [15]	390 N	1	**2.8**	0.49	**1.5**
SILVER	0.73	390 N	0.14 U	**8.4**	0.079 U	**11.7**
THALLIUM	NA	NA	0.39 U	0.59 U	0.22 U	0.38 U
VANADIUM	57 [15]	390 N	45.1	**62.6**	31	**62.7**
ZINC	121	23000 N	61.4	**543**	20.4	**267**
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	44	30	83	44
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-57	SD-58	SD-59	SD-59
SAMPLE ID				SD-57-02	SD-58-02	SD-59-02	SD-59-02-AVG
SAMPLE DATE				20081114	20081114	20081115	20081115
SAMPLE CODE				NORMAL	NORMAL	ORIG	AVG
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				22	22	20	20
BOTTOM DEPTH				26	26	28	28
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	850 U	**950**	600 U	600 U
2-METHYLNAPHTHALENE	20.2	310000	N	850 U	**1100 J**	600 U	600 U
ACENAPHTHENE	6.7	3400000	N	850 U	**11000 J**	600 U	600 U
ACENAPHTHYLENE	5.87	3400000	N[7]	850 U	610 U	600 U	600 U
ANTHRACENE	46.9	17000000	N	850 U	**19000**	**64 J**	**64 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	850 U	**38692**	**689**	**685**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	850 U	**38387**	29.5	24.9
BENZO(A)ANTHRACENE	74.8	1500	C	850 U	**38000**	600 U	600 U
BENZO(A)PYRENE	88.8	150	C	850 U	**30000**	600 U	600 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	850 U	**31000**	**260 J**	**225 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	850 U	**11000 J**	600 U	600 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	850 U	**25000**	**310 J**	**210 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	850 U	**37000**	**350 J**	**265 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	850 U	610 U	600 U	600 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	850 U	**78000**	**450 J**	**345 J**
FLUORENE	21.2	2300000	N	850 U	**10000 J**	600 U	600 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	850 U	**12000 J**	600 U	600 U
NAPHTHALENE	34.6	36000	C	850 U	**2200 J**	600 U	600 U
PHENANTHRENE	86.7	1700000	N[8]	850 U	**76000**	**260 J**	**195 J**
PYRENE	153	1700000	N	850 U	**76000**	**710 J**	**545 J**
TOTAL PAHS	1610	NA		0 U	**457300**	**2404**	**1849**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	42 U	6100 UJ	37 U	37 U
AROCLOR-1254	59.8 [9]	1100	N[10]	42 U	6100 UJ	37 U	37 U
AROCLOR-1260	40 [9]	2200	C	42 U	**790**	37 U	37 U
TOTAL AROCLOR	40	2200	C[11]	0 U	**790**	0 U	0 U
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.25 UJ	**132 L**	0.22 U	0.215 U
ARSENIC	7.24	3.9	C	**7**	**5.1**	**7**	**7.55**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-57	SD-58	SD-59	SD-59
SAMPLE ID				SD-57-02	SD-58-02	SD-59-02	SD-59-02-AVG
SAMPLE DATE				20081114	20081114	20081115	20081115
SAMPLE CODE				NORMAL	NORMAL	ORIG	AVG
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				22	22	20	20
BOTTOM DEPTH				26	26	28	28
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	29	**238**	56.9 J	59.3 J
BERYLLIUM	NA	160	N	2.1	1.1	1.7 J	1.85 J
CADMIUM	0.68	70	N	0.015 U	**16.9**	**24.2**	**26.5**
CHROMIUM	43.4	120000	N[12]	32.2	**1090**	**592 J**	**641 J**
COBALT	10 [15]	23	N	**13.2**	**12.2**	**12.7**	**13.45**
COPPER	18.7	3100	N	17.3	**63.2**	**49.5 J**	**53.15 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		10.8	**299**	**111 J**	**126 J**
MERCURY	0.13	23	N[14]	0.016	**0.5**	**0.91**	**0.94**
MOLYBDENUM	NA	390	N	0.098 UL	0.07 UL	1.1	1.15
NICKEL	15.9	1500	N	**22.5**	**27.6**	**27.6**	**29.15**
SELENIUM	1 [15]	390	N	0.81 U	0.98	**1.7**	**1.8**
SILVER	0.73	390	N	0.15 U	**3.5**	**10.7**	**11.25**
THALLIUM	NA	NA		0.42 U	2.3	0.37 U	0.37 U
VANADIUM	57 [15]	390	N	35.9	29.3	43.1 J	45.55 J
ZINC	121	23000	N	64.7	**2980**	**447**	**476.5**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	45	44.5
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	17000
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-59	SD-60	SD-61	SD-62
SAMPLE ID				SD-59-02-D	SD-60-02	SD-61-02	SD-62-02
SAMPLE DATE				20081115	20081112	20081113	20081112
SAMPLE CODE				DUP	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				20	22	22	22
BOTTOM DEPTH				28	26	26	26
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	600 U	520 U	**88 J**	650 U
2-METHYLNAPHTHALENE	20.2	310000	N	600 U	520 U	940 U	650 U
ACENAPHTHENE	6.7	3400000	N	600 U	520 U	**410 J**	650 U
ACENAPHTHYLENE	5.87	3400000	N[7]	600 U	520 U	940 U	650 U
ANTHRACENE	46.9	17000000	N	600 U	**75 J**	**350 J**	**140 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**680**	**571**	**2600**	**998**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	20.3	24.8	**2600**	**641**
BENZO(A)ANTHRACENE	74.8	1500	C	600 U	520 U	**1600**	650 U
BENZO(A)PYRENE	88.8	150	C	600 U	520 U	**1700**	**550 J**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**190 J**	**160 J**	**1700**	**570 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	600 U	520 U	**1200**	**320 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**110 J**	**160 J**	**1800**	**520 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**180 J**	**200 J**	**1800**	**680**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	600 U	520 U	**440 J**	650 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**240 J**	**340 J**	**2900**	**990**
FLUORENE	21.2	2300000	N	600 U	520 U	**180 J**	**90 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	600 U	**70 J**	**1100**	**280 J**
NAPHTHALENE	34.6	36000	C	600 U	520 U	**200 J**	650 U
PHENANTHRENE	86.7	1700000	N[8]	**130 J**	**350 J**	**1300**	**460 J**
PYRENE	153	1700000	N	**380 J**	**540 J**	**4100**	**1700 J**
TOTAL PAHS	1610	NA		1230	**1895**	**20780**	**6300**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	37 U	32 U	47 U	41 U
AROCLOR-1254	59.8 [9]	1100	N[10]	37 U	32 U	47 U	41 U
AROCLOR-1260	40 [9]	2200	C	37 U	32 U	**71**	**63 J**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	**71**	**63**
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.21 U	**2.7 J**	**0.93 L**	**2.1 J**
ARSENIC	7.24	3.9	C	**8.1**	**6.7**	**10.2**	**7.8**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-59	SD-60	SD-61	SD-62
SAMPLE ID				SD-59-02-D	SD-60-02	SD-61-02	SD-62-02
SAMPLE DATE				20081115	20081112	20081113	20081112
SAMPLE CODE				DUP	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				20	22	22	22
BOTTOM DEPTH				28	26	26	26
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	61.7 J	43 J	60.8	52.1 J
BERYLLIUM	NA	160	N	2 J	1.5 J	2.2	2 J
CADMIUM	0.68	70	N	**28.8**	**9.7**	**37.3**	**15.4 J**
CHROMIUM	43.4	120000	N[12]	**690 J**	**236 J**	**739**	**331 J**
COBALT	10 [15]	23	N	**14.2**	9.7 J	**18**	**13.8 J**
COPPER	18.7	3100	N	**56.8 J**	**31.8 J**	**93.3**	**43.1 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**141 J**	**89.3**	**179**	**67.9 J**
MERCURY	0.13	23	N[14]	**0.97**	**0.62**	**2.6**	**0.48**
MOLYBDENUM	NA	390	N	1.2	1.2	1.6	1.6 J
NICKEL	15.9	1500	N	**30.7**	**22 J**	**47.5**	**37.4 J**
SELENIUM	1 [15]	390	N	**1.9**	**1.2**	**2.3**	**2.1 J**
SILVER	0.73	390	N	**11.8**	**6.9**	**21.8**	**11.2 J**
THALLIUM	NA	NA		0.37 U	0.33 U	0.48 U	0.4 U
VANADIUM	57 [15]	390	N	48 J	39.2 J	**81.3**	50.9 J
ZINC	121	23000	N	**506**	**197 J**	**488**	**245 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		44	51	35	41
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		17000	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-63	SD-64	SD-65	SD-66
SAMPLE ID				SD-63-02	SD-64-02	SD-65-02	SD-66-02
SAMPLE DATE				20081112	20081112	20081111	20081112
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				22	22	22	22
BOTTOM DEPTH				26	26	26	26
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	470 U	730 U	780 UJ	900 UJ
2-METHYLNAPHTHALENE	20.2	310000	N	470 U	730 U	780 UJ	900 UJ
ACENAPHTHENE	6.7	3400000	N	470 U	730 U	780 UJ	900 UJ
ACENAPHTHYLENE	5.87	3400000	N[7]	470 U	730 U	780 UJ	900 UJ
ANTHRACENE	46.9	17000000	N	**48 J**	730 U	780 UJ	900 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	470 U	730 U	780 U	**1019**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	470 U	730 U	780 U	28.8
BENZO(A)ANTHRACENE	74.8	1500	C	470 U	730 U	780 UJ	900 UJ
BENZO(A)PYRENE	88.8	150	C	470 U	730 U	780 UJ	900 UJ
BENZO(B)FLUORANTHENE	130 [15]	1500	C	470 U	730 U	780 UJ	**260 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	470 U	730 U	780 UJ	900 UJ
BENZO(K)FLUORANTHENE	70 [15]	15000	C	470 U	730 U	780 UJ	**240 J**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	470 U	730 U	780 UJ	**370 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	470 U	730 U	780 UJ	900 UJ
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	59 J	730 U	780 UJ	**490 J**
FLUORENE	21.2	2300000	N	470 U	730 U	780 UJ	900 UJ
INDENO(1,2,3-CD)PYRENE	17	1500	C	470 U	730 U	780 UJ	900 UJ
NAPHTHALENE	34.6	36000	C	470 U	730 U	780 UJ	900 UJ
PHENANTHRENE	86.7	1700000	N[8]	470 U	730 U	780 UJ	**310 J**
PYRENE	153	1700000	N	120 J	730 U	780 UJ	**890 J**
TOTAL PAHS	1610	NA		227	0 U	0 U	**2560**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	29 UJ	46 U	39 U	56 UJ
AROCLOR-1254	59.8 [9]	1100	N[10]	29 UJ	46 U	39 U	56 UJ
AROCLOR-1260	40 [9]	2200	C	29 UJ	46 U	39 U	56 UJ
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.52 J	0.28 UL	0.24 UJ	**3.4 J**
ARSENIC	7.24	3.9	C	**5.3**	**7.2**	**7**	**10.4 J**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-63	SD-64	SD-65	SD-66
SAMPLE ID				SD-63-02	SD-64-02	SD-65-02	SD-66-02
SAMPLE DATE				20081112	20081112	20081111	20081112
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				22	22	22	22
BOTTOM DEPTH				26	26	26	26
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	33.1 J	42.1 J	43.8	120 J
BERYLLIUM	NA	160	N	1.3 J	2.2 J	2	1.8 J
CADMIUM	0.68	70	N	**2.6 J**	**1.4 J**	**5.2**	**33.8 J**
CHROMIUM	43.4	120000	N[12]	**80.6 J**	**73.2 J**	**139**	**684 J**
COBALT	10 [15]	23	N	8.1 J	**16.3 J**	**14.4**	**13.6 J**
COPPER	18.7	3100	N	**20.9 J**	**29.5 J**	**30.5 J**	**65.2 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		29.3 J	27.8 J	**39.2**	**126 J**
MERCURY	0.13	23	N[14]	0.12	0.1	**0.35**	**1.9 J**
MOLYBDENUM	NA	390	N	1.1 J	1.8 J	1.5	1.1 J
NICKEL	15.9	1500	N	**19 J**	**28.4 J**	**25.7 J**	**35 J**
SELENIUM	1 [15]	390	N	0.78 J	**1.8 J**	**1.1 J**	**2.2 J**
SILVER	0.73	390	N	**2.6 J**	**1.1 J**	**6.5**	**12.6 J**
THALLIUM	NA	NA		0.3 U	0.47 U	0.4 U	0.6 UJ
VANADIUM	57 [15]	390	N	41 J	42.6 J	38.9	53.3 J
ZINC	121	23000	N	78.1 J	108 J	**138 J**	**502 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		57	36	NA	30
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	9200	21000 J
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-67	SD-68	SD-69	SD-70
SAMPLE ID					SD-67-02	SD-68-02	SD-69-02	SD-70-02
SAMPLE DATE					20081111	20081112	20081111	20081111
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SB	SB	SB	SB
TOP DEPTH					22	22	22	22
BOTTOM DEPTH					26	26	26	26
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
2-BUTANONE	25,710	[4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030	[4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851		820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42		290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740	[4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050	[5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86		2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA		430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6		36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880	[4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210	[4]	NA		NA	NA	NA	NA
TOLUENE	1090		5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2	[6]	220000	C	1000 UJ	660 U	410 U	650 UJ
2-METHYLNAPHTHALENE	20.2		310000	N	1000 UJ	660 U	410 U	650 UJ
ACENAPHTHENE	6.7		3400000	N	1000 UJ	660 U	410 U	650 UJ
ACENAPHTHYLENE	5.87		3400000	N[7]	1000 UJ	660 U	410 U	650 UJ
ANTHRACENE	46.9		17000000	N	**150 J**	660 U	410 U	650 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	**2091**	**743**	410 U	650 U
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	**1591**	17.2	410 U	650 U
BENZO(A)ANTHRACENE	74.8		1500	C	**1100 J**	660 U	410 U	650 UJ
BENZO(A)PYRENE	88.8		150	C	**1200 J**	660 U	410 U	650 UJ
BENZO(B)FLUORANTHENE	130	[15]	1500	C	**2000 J**	**160 J**	410 U	650 UJ
BENZO(G,H,I)PERYLENE	67	[15]	1700000	N[8]	1000 UJ	660 U	410 U	650 UJ
BENZO(K)FLUORANTHENE	70	[15]	15000	C	**2500 J**	**100 J**	410 U	650 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900		2600000	C	NA	NA	NA	NA
CARBAZOLE	NA		NA		NA	NA	NA	NA
CHRYSENE	108		150000	C	**1300 J**	**190 J**	410 U	650 UJ
DIBENZO(A,H)ANTHRACENE	6.22		150	C	1000 UJ	660 U	410 U	650 UJ
DIBENZOFURAN	415		78000	N	NA	NA	NA	NA
FLUORANTHENE	113		2300000	N	**1700 J**	**240 J**	410 U	650 UJ
FLUORENE	21.2		2300000	N	1000 UJ	660 U	410 U	650 UJ
INDENO(1,2,3-CD)PYRENE	17		1500	C	**550 J**	660 U	410 U	650 UJ
NAPHTHALENE	34.6		36000	C	1000 UJ	660 U	410 U	650 UJ
PHENANTHRENE	86.7		1700000	N[8]	**830 J**	**130 J**	410 U	650 UJ
PYRENE	153		1700000	N	**2700 J**	**490 J**	410 U	650 UJ
TOTAL PAHS	1610		NA		**14030**	1310	0 U	0 U
PCBS (UG/KG)								
AROCLOR-1248	40	[9]	2200	C	52 U	41 U	21 U	32 U
AROCLOR-1254	59.8	[9]	1100	N[10]	52 U	41 U	21 U	32 U
AROCLOR-1260	40	[9]	2200	C	**230**	41 U	21 U	32 U
TOTAL AROCLOR	40		2200	C[11]	**230**	0 U	0 U	0 U
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	0.97 B	**5.4 J**	0.12 UL	0.19 UJ
ARSENIC	7.24		3.9	C	**10.5**	**8.7**	**6.5**	**5.3**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-67	SD-68	SD-69	SD-70
SAMPLE ID			SD-67-02	SD-68-02	SD-69-02	SD-70-02
SAMPLE DATE			20081111	20081112	20081111	20081111
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL
MATRIX			SD	SD	SD	SD
SAMPLE TYPE			NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX			SB	SB	SB	SB
TOP DEPTH			22	22	22	22
BOTTOM DEPTH			26	26	26	26
METALS CONTINUED (MG/KG)						
BARIUM	130 [15]	15000 N	85.4	112 J	24	20.6
BERYLLIUM	NA	160 N	2.1	2 J	2.9	1.8
CADMIUM	0.68	70 N	**36**	**23.9**	0.02	**2.1**
CHROMIUM	43.4	120000 N[12]	**714**	**497 J**	15.4	**70.2**
COBALT	10 [15]	23 N	**17.3**	**14 J**	**37.9**	**12.1**
COPPER	18.7	3100 N	**94.8 J**	**55.9 J**	15.1	**23.3 J**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	**208**	**104**	17.2	21.7
MERCURY	0.13	23 N[14]	**4.7**	**1.1**	0.015 B	0.055
MOLYBDENUM	NA	390 N	1.9	2	0.059	1.3
NICKEL	15.9	1500 N	**54.4 J**	**34 J**	**45.2**	**20.1 J**
SELENIUM	1 [15]	390 N	**1.7 J**	**1.7**	0.39 UL	0.91 J
SILVER	0.73	390 N	**40.9**	**21**	0.074 U	**3**
THALLIUM	NA	NA	0.55 U	0.42 U	0.2 U	0.32 U
VANADIUM	57 [15]	390 N	**90.9**	54.5 J	23.4 K	32.6
ZINC	121	23000 N	**490 J**	**390 J**	90.2	80.9 J
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	41	80	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	13000	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-71	SD-72	SD-73	SD-74
SAMPLE ID					SD-71-02	SD-72-02	SD-73-02	SD-74-02
SAMPLE DATE					20081111	20081112	20081111	20081111
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SB	SB	SB	SB
TOP DEPTH					22	22	22	22
BOTTOM DEPTH					26	26	26	26
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
2-BUTANONE	25,710	(4)	28000000	N	NA	NA	NA	NA
ACETONE	60,030	(4)	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851		820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42		290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740	(4)	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050	(5)	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86		2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA		430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6		36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880	(4)	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210	(4)	NA		NA	NA	NA	NA
TOLUENE	1090		5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2	(6)	220000	C	740 UJ	340 U	650 U	420 U
2-METHYLNAPHTHALENE	20.2		310000	N	740 UJ	340 U	650 U	420 U
ACENAPHTHENE	6.7		3400000	N	740 UJ	340 U	650 U	420 U
ACENAPHTHYLENE	5.87		3400000	N[7]	740 UJ	340 U	650 U	420 U
ANTHRACENE	46.9		17000000	N	740 UJ	340 U	650 U	420 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	740 U	340 U	650 U	420 U
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	740 U	340 U	650 U	420 U
BENZO(A)ANTHRACENE	74.8		1500	C	740 UJ	340 U	650 U	420 U
BENZO(A)PYRENE	88.8		150	C	740 UJ	340 U	650 U	420 U
BENZO(B)FLUORANTHENE	130	(15)	1500	C	740 UJ	340 U	650 U	420 U
BENZO(G,H,I)PERYLENE	67	(15)	1700000	N[8]	740 UJ	340 U	650 U	420 U
BENZO(K)FLUORANTHENE	70	(15)	15000	C	740 UJ	340 U	650 U	420 U
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900		2600000	C	NA	NA	NA	NA
CARBAZOLE	NA		NA		NA	NA	NA	NA
CHRYSENE	108		150000	C	740 UJ	340 U	650 U	420 U
DIBENZO(A,H)ANTHRACENE	6.22		150	C	740 UJ	340 U	650 U	420 U
DIBENZOFURAN	415		78000	N	NA	NA	NA	NA
FLUORANTHENE	113		2300000	N	**720 J**	340 U	650 U	420 U
FLUORENE	21.2		2300000	N	740 UJ	340 U	650 U	420 U
INDENO(1,2,3-CD)PYRENE	17		1500	C	740 UJ	340 U	650 U	420 U
NAPHTHALENE	34.6		36000	C	740 UJ	340 U	650 U	420 U
PHENANTHRENE	86.7		1700000	N[8]	**250 J**	340 U	650 U	420 U
PYRENE	153		1700000	N	**1300 J**	340 UJ	650 U	420 U
TOTAL PAHS	1610		NA		**2270**	0 U	0 U	0 U
PCBS (UG/KG)								
AROCLOR-1248	40	(9)	2200	C	37 U	21 U	33 U	21 U
AROCLOR-1254	59.8	(9)	1100	N[10]	37 U	21 U	33 U	21 U
AROCLOR-1260	40	(9)	2200	C	28 J	21 U	33 U	21 U
TOTAL AROCLOR	40		2200	C[11]	28	0 U	0 U	0 U
METALS (MG/KG)								
ANTIMONY	0.63	(15)	31	N	0.73 B	0.24 J	0.2 UL	0.13 UL
ARSENIC	7.24		3.9	C	**8**	**6.2**	**4.5**	**4.6**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-71	SD-72	SD-73	SD-74
SAMPLE ID				SD-71-02	SD-72-02	SD-73-02	SD-74-02
SAMPLE DATE				20081111	20081112	20081111	20081111
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				22	22	22	22
BOTTOM DEPTH				26	26	26	26
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	99.1	26 J	17.2	22.4
BERYLLIUM	NA	160	N	2	1.8 J	1.7	1.9
CADMIUM	0.68	70	N	**9.7**	0.0075 UL	0.03	0.65
CHROMIUM	43.4	120000	N[12]	**235**	28.5 J	22.3	33
COBALT	10 [15]	23	N	**12.4**	5.2 J	9.1	**14.6**
COPPER	18.7	3100	N	**37.4 J**	**31.7 J**	14.4	**25.8**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**59.9**	8.6 J	6.6	27.9
MERCURY	0.13	23	N[14]	**0.44**	0.022 B	0.022 B	**0.23**
MOLYBDENUM	NA	390	N	2	0.81 J	1.1	1.2
NICKEL	15.9	1500	N	**25.7 J**	**17.7 J**	15.7	**23.4**
SELENIUM	1 [15]	390	N	**1.1 J**	0.5 J	0.65 UL	0.43 UL
SILVER	0.73	390	N	**16.4**	0.079 UL	0.12 U	**2.5**
THALLIUM	NA	NA		0.36 U	0.22 U	0.34 U	0.22 U
VANADIUM	57 [15]	390	N	49.4	49.5 J	29.4 K	35.9 K
ZINC	121	23000	N	**216 J**	26.1 J	40.7	67.6
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	79	51	79
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	35000	3100
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-75	SD-75	SD-75	SD-76
SAMPLE ID				SD-75-02	SD-75-02-AVG	SD-75-02-D	SD-76-02
SAMPLE DATE				20081112	20081112	20081112	20081111
SAMPLE CODE				ORIG	AVG	DUP	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				20	20	20	20
BOTTOM DEPTH				28	28	28	28
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	430 U	435 U	440 U	800 U
2-METHYLNAPHTHALENE	20.2	310000	N	430 U	435 U	440 U	800 U
ACENAPHTHENE	6.7	3400000	N	**250 J**	**270 J**	**290 J**	**380 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	430 U	435 U	440 U	**82 J**
ANTHRACENE	46.9	17000000	N	**650**	**640**	**630**	**570 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**2370**	**1851**	**1331**	**5159**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**2155**	**1633**	**1111**	**5159**
BENZO(A)ANTHRACENE	74.8	1500	C	**2000 J**	**1550 J**	**1100 J**	**3000**
BENZO(A)PYRENE	88.8	150	C	**1700 J**	**1290 J**	**880 J**	**3100**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**1600 J**	**1190 J**	**780 J**	**6300**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**750**	**525 J**	**300 J**	**2300**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	**1700 J**	**1290 J**	**880 J**	**1500**
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**2200 J**	**1700 J**	**1200 J**	**4400**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	430 U	435 U	440 U	**900**
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**3400**	**2750**	**2100**	**6200**
FLUORENE	21.2	2300000	N	430 U	**340 J**	**340 J**	**250 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	**760**	**545 J**	**330 J**	**2100**
NAPHTHALENE	34.6	36000	C	430 U	**99 J**	**99 J**	800 U
PHENANTHRENE	86.7	1700000	N[8]	**2800**	**2500**	**2200**	**2400**
PYRENE	153	1700000	N	**4800 J**	**3750 J**	**2700 J**	**6900**
TOTAL PAHS	1610	NA		**22610**	**18439**	**13829**	**40382**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	27 U	27 U	27 U	40 U
AROCLOR-1254	59.8 [9]	1100	N[10]	27 U	27 U	27 U	40 U
AROCLOR-1260	40 [9]	2200	C	27 U	27 U	27 U	**180**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	0 U	**180**
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	**2.7 J**	**2.95 J**	**3.2 J**	**1.3 L**
ARSENIC	7.24	3.9	C	**5.2**	**5.95**	**6.7**	**9.4**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-75 SD-75-02 20081112 ORIG SD NORMAL SB 20 28	SD-75 SD-75-02-AVG 20081112 AVG SD NORMAL SB 20 28	SD-75 SD-75-02-D 20081112 DUP SD NORMAL SB 20 28	SD-76 SD-76-02 20081111 NORMAL SD NORMAL SB 20 28
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	87.2 J	94.6 J	102 J	77.9
BERYLLIUM	NA	160	N	0.89 J	0.945 J	1 J	1.5
CADMIUM	0.68	70	N	**11**	**11.45**	**11.9**	**30.9**
CHROMIUM	43.4	120000	N[12]	**277 J**	**329.5 J**	**382 J**	**433**
COBALT	10 [15]	23	N	6.9 J	7.4 J	7.9 J	**13.8**
COPPER	18.7	3100	N	**36.2 J**	**35.6 J**	**35 J**	**109**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**75.5**	**88.25**	**101**	**276**
MERCURY	0.13	23	N[14]	**1.4**	**1.35**	**1.3**	**2.7**
MOLYBDENUM	NA	390	N	4	4.35	4.7	2.3
NICKEL	15.9	1500	N	**17.4 J**	**18.75 J**	**20.1 J**	**58.5**
SELENIUM	1 [15]	390	N	0.82	**1.01**	**1.2**	**1.4 L**
SILVER	0.73	390	N	**35.6**	**36.8**	**38**	**55.8**
THALLIUM	NA	NA		0.27 U	0.275 U	0.28 U	0.41 U
VANADIUM	57 [15]	390	N	29.4 J	30.25 J	31.1 J	**110 K**
ZINC	121	23000	N	**267 J**	**364.5 J**	**462 J**	**537**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		63	62	61	41
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-77	SD-80	SD-81	SD-82
SAMPLE ID					SD-77-02	SD-80-02	SD-81-02	SD-82-02
SAMPLE DATE					20081110	20081114	20081114	20081114
SAMPLE CODE					NORMAL	NORMAL	NORMAL	NORMAL
MATRIX					SD	SD	SD	SD
SAMPLE TYPE					NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX					SB	SB	SB	SB
TOP DEPTH					22	22	22	22
BOTTOM DEPTH					26	26	24	26
VOLATILES (UG/KG)								
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
2-BUTANONE	25,710	[4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030	[4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851		820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42		290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740	[4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050	[5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86		2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA		430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6		36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880	[4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210	[4]	NA		NA	NA	NA	NA
TOLUENE	1090		5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)								
1,2-DICHLOROBENZENE	16.5		1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842		NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460		24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2	[6]	220000	C	480 U	980 U	850 U	740 U
2-METHYLNAPHTHALENE	20.2		310000	N	480 U	980 U	850 U	740 U
ACENAPHTHENE	6.7		3400000	N	480 U	980 U	850 U	740 U
ACENAPHTHYLENE	5.87		3400000	N[7]	480 U	980 U	850 U	740 U
ANTHRACENE	46.9		17000000	N	480 U	980 U	850 U	740 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	480 U	980 U	850 U	740 U
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	480 U	980 U	850 U	740 U
BENZO(A)ANTHRACENE	74.8		1500	C	480 U	980 U	850 U	740 U
BENZO(A)PYRENE	88.8		150	C	480 U	980 U	850 U	740 U
BENZO(B)FLUORANTHENE	130	[15]	1500	C	480 U	980 U	850 U	740 U
BENZO(G,H,I)PERYLENE	67	[15]	1700000	N[8]	480 U	980 U	850 U	740 U
BENZO(K)FLUORANTHENE	70	[15]	15000	C	480 U	980 U	850 U	740 U
BIS(2-ETHYLHEXYL)PHTHALATE	180		350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900		2600000	C	NA	NA	NA	NA
CARBAZOLE	NA		NA		NA	NA	NA	NA
CHRYSENE	108		150000	C	480 U	980 U	850 U	740 U
DIBENZO(A,H)ANTHRACENE	6.22		150	C	480 U	980 U	850 U	740 U
DIBENZOFURAN	415		78000	N	NA	NA	NA	NA
FLUORANTHENE	113		2300000	N	480 U	980 U	850 U	740 U
FLUORENE	21.2		2300000	N	480 U	980 U	850 U	740 U
INDENO(1,2,3-CD)PYRENE	17		1500	C	480 U	980 U	850 U	740 U
NAPHTHALENE	34.6		36000	C	480 U	980 U	850 U	740 U
PHENANTHRENE	86.7		1700000	N[8]	480 U	980 U	850 U	740 U
PYRENE	153		1700000	N	480 U	980 U	850 U	740 U
TOTAL PAHS	1610		NA		0 U	0 U	0 U	0 U
PCBS (UG/KG)								
AROCLOR-1248	40	[9]	2200	C	24 U	49 U	42 U	37 U
AROCLOR-1254	59.8	[9]	1100	N[10]	24 U	49 U	42 U	37 U
AROCLOR-1260	40	[9]	2200	C	24 U	49 U	42 U	37 U
TOTAL AROCLOR	40		2200	C[11]	0 U	0 U	0 U	0 U
METALS (MG/KG)								
ANTIMONY	0.63	[15]	31	N	0.15 UL	0.3 UL	0.27 UJ	0.21 UJ
ARSENIC	7.24		3.9	C	**5.4**	**9.6**	**6.4**	3.4

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-77	SD-80	SD-81	SD-82
SAMPLE ID				SD-77-02	SD-80-02	SD-81-02	SD-82-02
SAMPLE DATE				20081110	20081114	20081114	20081114
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				22	22	22	22
BOTTOM DEPTH				26	26	24	26
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	19.6	43.6	49.1	25.4
BERYLLIUM	NA	160	N	1.5	2	1.7	0.93
CADMIUM	0.68	70	N	**1.1**	0.018 U	**0.72**	0.13 B
CHROMIUM	43.4	120000	N[12]	**44.6**	38.3	34.9	24.7
COBALT	10 [15]	23	N	9.2	**18.6**	**15.9**	9.6
COPPER	18.7	3100	N	**21.3**	17.2	**39**	14.7
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		14.8	15.6	**134**	10.1
MERCURY	0.13	23	N[14]	**0.17**	0.025	**0.31**	0.028
MOLYBDENUM	NA	390	N	1.4	0.45 B	1.4 J	1.4 J
NICKEL	15.9	1500	N	**17.1**	**29.3**	**30**	15.3
SELENIUM	1 [15]	390	N	0.67 K	0.98 U	**1.9**	0.71 U
SILVER	0.73	390	N	**2.3**	0.19 U	0.17 U	0.13 U
THALLIUM	NA	NA		0.25 U	0.51 U	0.46 U	0.37 U
VANADIUM	57 [15]	390	N	42.9 K	49.2	35.2	28
ZINC	121	23000	N	54.4	88.4	**133**	42.9
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		70	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	23000	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-83	SD-84	SD-85	SD-86
SAMPLE ID				SD-83-02	SD-84-02	SD-85-02	SD-86-02
SAMPLE DATE				20100820	20100820	20100819	20100818
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	0.44 U	1.2 U	1.2 U	**2100**
ACENAPHTHYLENE	5.87	3400000	N[7]	0.52 U	**8.1 J**	1.4 U	**190**
ANTHRACENE	46.9	17000000	N	0.77 J	4.5 J	1.2 U	**2800**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	0.45 U	103	1.2 U	**9537**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	0.45 U	103	1.2 U	**9537**
BENZO(A)ANTHRACENE	74.8	1500	C	0.57 U	18	1.5 U	**7100**
BENZO(A)PYRENE	88.8	150	C	0.45 U	14	1.2 U	**6100**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	0.71 U	46	1.9 U	**9600**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	0.45 U	37	1.2 U	**3900**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	0.92 U	2.5 U	2.5 U	35 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	0.54 U	20	1.5 U	**7200**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	0.51 U	**75**	1.4 U	**1400**
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	3.6 J	32	1.3 U	**15000**
FLUORENE	21.2	2300000	N	1 J	4.6 J	1.6 U	**1400**
INDENO(1,2,3-CD)PYRENE	17	1500	C	0.47 U	**77**	1.3 U	**3600**
NAPHTHALENE	34.6	36000	C	0.39 U	1.1 U	1.1 U	**300**
PHENANTHRENE	86.7	1700000	N[8]	3.1 J	19	3.8 J	**9600**
PYRENE	153	1700000	N	2.2 J	22	1.2 U	**12000**
TOTAL PAHS	1610	NA		10.67	377.2	3.8	**82290**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	1.1 U	1.5 U	1.5 U	**430 J**
AROCLOR-1254	59.8 [9]	1100	N[10]	1.6 U	2.2 U	2.2 U	2.5 U
AROCLOR-1260	40 [9]	2200	C	1.6 U	2.2 U	2.2 U	**250**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	0 U	**680**
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.097 B	0.5 L	0.05 B	**5.3 J**
ARSENIC	7.24	3.9	C	2 L	**4.3 L**	2 L	**6.6 J**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-83	SD-84	SD-85	SD-86
SAMPLE ID				SD-83-02	SD-84-02	SD-85-02	SD-86-02
SAMPLE DATE				20100820	20100820	20100819	20100818
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	0.62	2.7	1.3	1.9 J
CADMIUM	0.68	70	N	0.076 L	**1.9 L**	0.19 L	**296**
CHROMIUM	43.4	120000	N[12]	9.4	39.6	12.8	**2060 J**
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	8.7 L	**28.4 L**	9.7 L	**147 J**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		7	**38.1**	4.9	**250**
MERCURY	0.13	23	N[14]	0.036	**0.14**	0.02 J	**0.37**
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	8 L	**34.3 L**	11.2 L	**59.7 J**
SELENIUM	1 [15]	390	N	0.33 J	0.9 L	0.55 L	**1.4 J**
SILVER	0.73	390	N	0.027 J	0.081 J	0.038 J	**3.2 J**
THALLIUM	NA	NA		0.07	0.19	0.093	0.19
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	20.5 L	112 L	35.4 L	**1570 J**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		8850	33400	25500	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	0.29 U	NA
CADMIUM	NA	NA		NA	NA	0.0007 J	NA
CHROMIUM	NA	NA		NA	NA	0.0089 J	NA
COPPER	NA	NA		NA	NA	0.03	NA
LEAD	NA	NA		NA	NA	0.011 J	NA
NICKEL	NA	NA		NA	NA	0.044 J	NA
SILVER	NA	NA		NA	NA	0.00025 U	NA
ZINC	NA	NA		NA	NA	0.35 J	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-87	SD-88	SD-89	SD-90
SAMPLE ID				SD-87-02	SD-88-02	SD-89-02	SD-90-02
SAMPLE DATE				20100818	20100819	20100819	20100817
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	**230**	**210**	**99 J**	**410**
ACENAPHTHYLENE	5.87	3400000	N[7]	**320**	**260**	**240**	**460**
ANTHRACENE	46.9	17000000	N	**740**	**670**	**330**	**1300**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**4683**	**3332**	**1486**	**7625**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**4683**	**3332**	**1486**	**7625**
BENZO(A)ANTHRACENE	74.8	1500	C	**2500**	**2200**	**810**	**5000 J**
BENZO(A)PYRENE	88.8	150	C	**2900**	**2100**	**940**	**5100 J**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**4600**	**3700**	**1300**	**7300 J**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**2300**	**1500**	**910**	**3100 J**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	35 U	19 U	20 U	8 J
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**3100**	**2200**	**930**	**5400 J**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	**860**	**510**	**250**	**1000 J**
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**4600**	**5100**	**1800**	**13000**
FLUORENE	21.2	2300000	N	**180**	**260**	**130**	**560**
INDENO(1,2,3-CD)PYRENE	17	1500	C	**2100**	**1300**	**840**	**2900 J**
NAPHTHALENE	34.6	36000	C	**130 J**	**230**	**210**	**230**
PHENANTHRENE	86.7	1700000	N[8]	**1500**	**1800**	**700**	**4600**
PYRENE	153	1700000	N	**4900**	**3700**	**1500**	**7300 J**
TOTAL PAHS	1610	NA		**30960**	**25740**	**10989**	**57668**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	1.6 U	2.2 U	2.4 U	1.9 U
AROCLOR-1254	59.8 [9]	1100	N[10]	2.5 U	3.3 U	3.5 U	2.8 U
AROCLOR-1260	40 [9]	2200	C	**770 J**	**220**	**1300**	**400**
TOTAL AROCLOR	40	2200	C[11]	**770**	**220**	**1300**	**400**
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	**2.4 L**	**2.2 J**	**1.3 L**	**3 J**
ARSENIC	7.24	3.9	C	**5.3**	**8.3 L**	**10.2**	**6.5**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-87	SD-88	SD-89	SD-90
SAMPLE ID				SD-87-02	SD-88-02	SD-89-02	SD-90-02
SAMPLE DATE				20100818	20100819	20100819	20100817
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	1.5	2.1 L	2.3	1.8
CADMIUM	0.68	70	N	**207**	**35.5 J**	**30.2 L**	**38.7**
CHROMIUM	43.4	120000	N[12]	**1530**	**727 L**	**569**	**690**
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	**112**	**72.2 L**	**121 L**	**82.7**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**288 K**	**158**	**226**	**195 J**
MERCURY	0.13	23	N[14]	**0.76**	**2**	**2.5**	**4.7**
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	**43.8**	**38.8 L**	**54.6 L**	**46.1**
SELENIUM	1 [15]	390	N	**1.3**	**2 L**	**2.4 L**	**1.9**
SILVER	0.73	390	N	**8.5**	**13.6 L**	**23**	**29.3**
THALLIUM	NA	NA		0.23	0.29	0.36	0.32 J
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**762**	**572 L**	**492**	**524**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		28700	35900	37100	35900
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		4.4	5	0.74 J	18.7
CADMIUM	NA	NA		1.4	0.25	0.19	0.22
CHROMIUM	NA	NA		15.4	5.6	3.9	5.9
COPPER	NA	NA		0.32	0.3	0.48	0.0021 U
LEAD	NA	NA		1	0.5	0.68	0.47
NICKEL	NA	NA		0.29	0.15	0.2	0.19
SILVER	NA	NA		0.0048	0.0072	0.014	0.00066 J
ZINC	NA	NA		9.3	6	4.1	5.3

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-93	SD-94	SD-95	SD-96
SAMPLE ID				SD-93-02	SD-94-02	SD-95-02	SD-96-02
SAMPLE DATE				20100817	20100817	20100817	20100819
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	**22 J**	3.5 U	**34 J**	**110**
ACENAPHTHYLENE	5.87	3400000	N[7]	**26**	4.2 U	**51**	**200**
ANTHRACENE	46.9	17000000	N	**66**	3.6 U	**110**	**300**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**420**	3.6 U	**751**	**1332**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**420**	3.6 U	**751**	**1332**
BENZO(A)ANTHRACENE	74.8	1500	C	**250**	4.5 U	**400**	**750**
BENZO(A)PYRENE	88.8	150	C	**240**	3.6 U	**450**	**740**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	**420**	5.7 U	**750**	**1400**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**220**	3.6 U	**390**	**760**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	5.2 U	7.3 U	8 U	19 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	**260**	4.3 U	**450**	**770**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	**92**	4 U	**150**	**310**
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**420**	3.9 U	**670**	**1500**
FLUORENE	21.2	2300000	N	**23 J**	4.8 U	**48**	**120**
INDENO(1,2,3-CD)PYRENE	17	1500	C	**210**	3.7 U	**360**	**660**
NAPHTHALENE	34.6	36000	C	23 J	3.1 U	**68**	**180**
PHENANTHRENE	86.7	1700000	N[8]	**190**	5.8 U	**320**	**660**
PYRENE	153	1700000	N	**430**	3.7 U	**800**	**1400**
TOTAL PAHS	1610	NA		**2892**	0 U	**5051**	**9860**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	1.5 U	1.7 U	2.4 U	2.2 U
AROCLOR-1254	59.8 [9]	1100	N[10]	2.2 U	2.6 U	3.5 U	3.3 U
AROCLOR-1260	40 [9]	2200	C	**150**	2.6 U	**290**	**770**
TOTAL AROCLOR	40	2200	C[11]	**150**	0 U	**290**	**770**
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.46 L	0.048 J	**0.92 L**	**0.83 J**
ARSENIC	7.24	3.9	C	**5.5**	**4.4**	**8.8**	**8.2 L**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-93	SD-94	SD-95	SD-96
SAMPLE ID				SD-93-02	SD-94-02	SD-95-02	SD-96-02
SAMPLE DATE				20100817	20100817	20100817	20100819
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	1.6	1.7	2	1.8 L
CADMIUM	0.68	70	N	**17.9**	0.37	**31.1**	**25.9 J**
CHROMIUM	43.4	120000	N[12]	**218**	24.7	**534**	**441 L**
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	**42.9**	15.9	**100**	**88.1 L**
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		**73 K**	7.4 J	**191 K**	**163**
MERCURY	0.13	23	N[14]	**1.1**	0.024 J	**2.7**	**1.8**
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	**27.4**	**17**	**49.7**	**41.1 L**
SELENIUM	1 [15]	390	N	**1.2**	1	**2.1**	**1.9 L**
SILVER	0.73	390	N	**8.1**	0.055 J	**26.8**	**14.4 L**
THALLIUM	NA	NA		0.17	0.12 J	0.31	0.27 K
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**213**	52.8	**456**	**387 L**
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-97	SD-98	SD-99	SD-100
SAMPLE ID				SD-97-02	SD-98-02	SD-99-02	SD-100-02
SAMPLE DATE				20100817	20100819	20100819	20100819
SAMPLE CODE				NORMAL	NORMAL	NORMAL	ORIG
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	4.1 U	**63 J**	8.4 U	6.8 U
ACENAPHTHYLENE	5.87	3400000	N[7]	**11 J**	**160**	10 U	8.1 U
ANTHRACENE	46.9	17000000	N	17 J	**230**	8.5 U	6.9 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	58.5	**1023**	8.7 U	7 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	58.5	**1023**	8.7 U	7 U
BENZO(A)ANTHRACENE	74.8	1500	C	48	**560**	11 U	8.8 U
BENZO(A)PYRENE	88.8	150	C	34 J	**570**	8.7 U	7 U
BENZO(B)FLUORANTHENE	130 [15]	1500	C	67 J	**1100**	14 U	11 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	**80 J**	**600**	8.7 U	7 U
BENZO(K)FLUORANTHENE	70 [15]	15000	C	8.6 UJ	19 U	18 U	14 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	90	**580**	10 U	8.4 U
DIBENZO(A,H)ANTHRACENE	6.22	150	C	4.7 J	**230**	9.7 U	7.8 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	**150**	**990**	9.3 U	7.5 U
FLUORENE	21.2	2300000	N	5.6 U	**75 J**	11 U	9.3 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**82 J**	**560**	9 U	7.3 U
NAPHTHALENE	34.6	36000	C	3.7 U	**160**	7.5 U	6.1 U
PHENANTHRENE	86.7	1700000	N[8]	40 J	**440**	14 U	11 U
PYRENE	153	1700000	N	100	**1000**	8.8 U	7.1 U
TOTAL PAHS	1610	NA		723.7	**7318**	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	2 U	2.2 U	2.1 U	1.7 U
AROCLOR-1254	59.8 [9]	1100	N[10]	3 U	3.4 U	3.1 U	2.5 U
AROCLOR-1260	40 [9]	2200	C	3 U	**880**	3.1 U	2.5 U
TOTAL AROCLOR	40	2200	C[11]	0 U	**880**	0 U	0 U
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.17 J	**0.7 J**	0.082 B	0.066 B
ARSENIC	7.24	3.9	C	**6.2**	**7.8 L**	**6.1**	3.8 L

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-97	SD-98	SD-99	SD-100
SAMPLE ID				SD-97-02	SD-98-02	SD-99-02	SD-100-02
SAMPLE DATE				20100817	20100819	20100819	20100819
SAMPLE CODE				NORMAL	NORMAL	NORMAL	ORIG
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				24	24	24	24
BOTTOM DEPTH				24	24	24	24
METALS CONTINUED (MG/KG)							
BARIUM	130 [15]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	1.8	1.8 L	1.8	1 L
CADMIUM	0.68	70	N	**2.5**	**19.2 J**	0.4 L	0.2 J
CHROMIUM	43.4	120000	N[12]	**80.6**	**304 L**	29.6	19.4 L
COBALT	10 [15]	23	N	NA	NA	NA	NA
COPPER	18.7	3100	N	**21.7**	**88.8 L**	**19.7 L**	12.3 J
HEXAVALENT CHROMIUM	43.4	2.9	C[13]	NA	NA	NA	NA
LEAD	30.2	400		24.4 J	**165**	12.8	9
MERCURY	0.13	23	N[14]	0.1	**0.97**	0.037 J	0.031 J
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	15.9	1500	N	**23**	**40.8 L**	**22.3 L**	14.1 L
SELENIUM	1 [15]	390	N	**1.3**	**1.8 L**	**1.2 L**	0.71 L
SILVER	0.73	390	N	0.73	**8.3 L**	0.066 J	0.043 J
THALLIUM	NA	NA		0.17 J	0.29	0.18 K	0.12 K
VANADIUM	57 [15]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	102	**379 L**	74.8	47.4 L
METALS (UG/KG)							
DIBUTYLTIN	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	34900	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	0.41 U	NA
CADMIUM	NA	NA		NA	NA	0.0013 J	NA
CHROMIUM	NA	NA		NA	NA	0.032	NA
COPPER	NA	NA		NA	NA	0.023 J	NA
LEAD	NA	NA		NA	NA	0.017	NA
NICKEL	NA	NA		NA	NA	0.039 J	NA
SILVER	NA	NA		NA	NA	0.00036 U	NA
ZINC	NA	NA		NA	NA	0.43	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-100 SD-100-02-AVG 20100819 AVG SD NORMAL SB 24 24	SD-100 SD-100-02-D 20100819 DUP SD NORMAL SB 24 24	SD-101 SD-101-02 20100818 NORMAL SD NORMAL SB 24 24	SD-102 SD-102-02 20100818 NORMAL SD NORMAL SB 24 24
VOLATILES (UG/KG)							
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000	N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000	N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000	N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000	N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000	N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000	N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000	N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000	C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000	C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA		NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA		NA	NA	NA	NA
TOLUENE	1090	5000000	N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)							
1,2-DICHLOROBENZENE	16.5	1900000	N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA		NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000	C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	6.5 U	6.2 U	**29 J**	**25 J**
ACENAPHTHYLENE	5.87	3400000	N[7]	7.75 U	7.4 U	**50**	**56 J**
ANTHRACENE	46.9	17000000	N	6.65 U	6.4 U	**110**	**97 J**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	6.75 U	6.5 U	**580**	**452**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	6.75 U	6.5 U	**580**	**446**
BENZO(A)ANTHRACENE	74.8	1500	C	8.45 U	8.1 U	**320**	**280**
BENZO(A)PYRENE	88.8	150	C	6.75 U	6.5 U	**340**	**320**
BENZO(B)FLUORANTHENE	130 [15]	1500	C	10.5 U	10 U	**580**	**580**
BENZO(G,H,I)PERYLENE	67 [15]	1700000	N[8]	6.75 U	6.5 U	**310**	**410**
BENZO(K)FLUORANTHENE	70 [15]	15000	C	13.5 U	13 U	9.7 U	21 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000	C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000	C	NA	NA	NA	NA
CARBAZOLE	NA	NA		NA	NA	NA	NA
CHRYSENE	108	150000	C	8.05 U	7.7 U	**350**	**370**
DIBENZO(A,H)ANTHRACENE	6.22	150	C	7.5 U	7.2 U	**120**	12 U
DIBENZOFURAN	415	78000	N	NA	NA	NA	NA
FLUORANTHENE	113	2300000	N	7.25 U	7 U	**520**	**600**
FLUORENE	21.2	2300000	N	8.95 U	8.6 U	**58**	**69 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	7 U	6.7 U	**300**	**400**
NAPHTHALENE	34.6	36000	C	5.85 U	5.6 U	**120**	**130**
PHENANTHRENE	86.7	1700000	N[8]	10.5 U	10 U	**300**	**280**
PYRENE	153	1700000	N	6.85 U	6.6 U	**610**	**640**
TOTAL PAHS	1610	NA		0 U	0 U	**4117**	**4257**
PCBS (UG/KG)							
AROCLOR-1248	40 [9]	2200	C	1.6 U	1.5 U	2.2 U	2.4 U
AROCLOR-1254	59.8 [9]	1100	N[10]	2.4 U	2.3 U	3.4 U	3.6 U
AROCLOR-1260	40 [9]	2200	C	2.4 U	2.3 U	**62**	**160**
TOTAL AROCLOR	40	2200	C[11]	0 U	0 U	**62**	**160**
METALS (MG/KG)							
ANTIMONY	0.63 [15]	31	N	0.058 B	0.05 B	**0.86 L**	**1 J**
ARSENIC	7.24	3.9	C	3.85 L	3.9 L	**8.7**	**9.3**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-100 SD-100-02-AVG 20100819 AVG SD NORMAL SB 24 24	SD-100 SD-100-02-D 20100819 DUP SD NORMAL SB 24 24	SD-101 SD-101-02 20100818 NORMAL SD NORMAL SB 24 24	SD-102 SD-102-02 20100818 NORMAL SD NORMAL SB 24 24
METALS CONTINUED (MG/KG)						
BARIUM	130 [15]	15000 N	NA	NA	NA	NA
BERYLLIUM	NA	160 N	1.05 L	1.1 L	2.1	2.2 J
CADMIUM	0.68	70 N	0.225 J	0.25 J	**44.7**	**34.9**
CHROMIUM	43.4	120000 N[12]	19.45 L	19.5 L	**719**	**647 K**
COBALT	10 [15]	23 N	NA	NA	NA	NA
COPPER	18.7	3100 N	18 J	**23.7 J**	**83.3**	**99.5**
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	9.1	9.2	**169 K**	**207**
MERCURY	0.13	23 N[14]	0.027 J	0.023 J	**1.6**	**1.6**
MOLYBDENUM	NA	390 N	NA	NA	NA	NA
NICKEL	15.9	1500 N	14.2 L	14.3 L	**46.6**	**54.5**
SELENIUM	1 [15]	390 N	0.72 L	0.73 L	**2.2**	**2.3**
SILVER	0.73	390 N	0.045 J	0.047 J	**12.8**	**18.4 J**
THALLIUM	NA	NA	0.12 K	0.12 K	0.31	0.36
VANADIUM	57 [15]	390 N	NA	NA	NA	NA
ZINC	121	23000 N	48.2 L	49 L	**479**	**497**
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	28400	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	4.4	NA
CADMIUM	NA	NA	NA	NA	0.27	NA
CHROMIUM	NA	NA	NA	NA	4.9	NA
COPPER	NA	NA	NA	NA	0.43	NA
LEAD	NA	NA	NA	NA	0.47	NA
NICKEL	NA	NA	NA	NA	0.21	NA
SILVER	NA	NA	NA	NA	0.0067	NA
ZINC	NA	NA	NA	NA	4.2	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-103 SD-103-02 20100818 NORMAL SD NORMAL SB 24 24	SD-104 SD-104-02 20100818 NORMAL SD NORMAL SB 24 24	SD-105 SD-105-02 20100818 NORMAL SD NORMAL SB 24 24	SD-106 SD-106-02 20100818 NORMAL SD NORMAL SB 24 24
VOLATILES (UG/KG)						
1,3-DICHLOROBENZENE	842	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA	NA	NA	NA
2-BUTANONE	25,710 [4]	28000000 N	NA	NA	NA	NA
ACETONE	60,030 [4]	61000000 N	NA	NA	NA	NA
CARBON DISULFIDE	0.851	820000 N	NA	NA	NA	NA
CHLOROBENZENE	8.42	290000 N	NA	NA	NA	NA
CHLOROMETHANE	8,740 [4]	120000 N	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1,050 [5]	780000 N	NA	NA	NA	NA
ISOPROPYLBENZENE	86	2100000 N	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	430000 C	NA	NA	NA	NA
NAPHTHALENE	34.6	36000 C	NA	NA	NA	NA
SEC-BUTYLBENZENE	880 [4]	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	1,210 [4]	NA	NA	NA	NA	NA
TOLUENE	1090	5000000 N	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)						
1,2-DICHLOROBENZENE	16.5	1900000 N	NA	NA	NA	NA
1,3-DICHLOROBENZENE	842	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	460	24000 C	NA	NA	NA	NA
1-METHYLNAPHTHALENE	20.2 [6]	220000 C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000 N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000 N	0.39 U	1.8 U	**20 J**	9.2 U
ACENAPHTHYLENE	5.87	3400000 N[7]	0.46 U	2.1 U	**32 J**	11 U
ANTHRACENE	46.9	17000000 N	0.4 U	1.8 U	**69 J**	9.3 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150 C	0.4 U	1.8 U	**535**	9.6 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150 C	0.4 U	1.8 U	**535**	9.6 U
BENZO(A)ANTHRACENE	74.8	1500 C	0.51 U	2.3 U	**170**	12 U
BENZO(A)PYRENE	88.8	150 C	0.4 U	1.8 U	**240**	9.6 U
BENZO(B)FLUORANTHENE	130 [15]	1500 C	0.64 U	2.9 U	**420**	15 U
BENZO(G,H,I)PERYLENE	67 [15]	1700000 N[8]	0.4 U	1.8 U	**380**	9.5 U
BENZO(K)FLUORANTHENE	70 [15]	15000 C	0.82 U	3.7 U	20 U	19 U
BIS(2-ETHYLHEXYL)PHTHALATE	180	350000 C	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	10900	2600000 C	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA	NA
CHRYSENE	108	150000 C	0.48 U	2.2 U	**250**	11 U
DIBENZO(A,H)ANTHRACENE	6.22	150 C	0.45 U	2 U	**200**	11 U
DIBENZOFURAN	415	78000 N	NA	NA	NA	NA
FLUORANTHENE	113	2300000 N	0.43 U	2 U	**330**	10 U
FLUORENE	21.2	2300000 N	0.53 U	2.4 U	**29 J**	13 U
INDENO(1,2,3-CD)PYRENE	17	1500 C	0.42 U	1.9 U	**360**	9.8 U
NAPHTHALENE	34.6	36000 C	0.35 U	1.6 U	**78 J**	8.2 U
PHENANTHRENE	86.7	1700000 N[8]	1.2 J	4.3 J	**190**	15 U
PYRENE	153	1700000 N	0.41 U	1.9 U	**470**	9.7 U
TOTAL PAHS	1610	NA	1.2	4.3	**3238**	0 U
PCBS (UG/KG)						
AROCLOR-1248	40 [9]	2200 C	0.96 U	2.1 U	2.4 U	2.3 U
AROCLOR-1254	59.8 [9]	1100 N[10]	1.4 U	3.2 U	3.6 U	3.4 U
AROCLOR-1260	40 [9]	2200 C	1.4 U	3.2 U	**140**	3.4 U
TOTAL AROCLOR	40	2200 C[11]	0 U	0 U	**140**	0 U
METALS (MG/KG)						
ANTIMONY	0.63 [15]	31 N	0.057 B	0.095 B	**0.75 J**	0.07 B
ARSENIC	7.24	3.9 C	1.4	**6**	**9.2**	**4.9 L**

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]	SD-103	SD-104	SD-105	SD-106
SAMPLE ID			SD-103-02	SD-104-02	SD-105-02	SD-106-02
SAMPLE DATE			20100818	20100818	20100818	20100818
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL
MATRIX			SD	SD	SD	SD
SAMPLE TYPE			NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX			SB	SB	SB	SB
TOP DEPTH			24	24	24	24
BOTTOM DEPTH			24	24	24	24
METALS CONTINUED (MG/KG)						
BARIUM	130 [15]	15000 N	NA	NA	NA	NA
BERYLLIUM	NA	160 N	0.22 J	1.7 J	2.1 J	1.4 L
CADMIUM	0.68	70 N	0.13	0.39	**10.9**	0.29 J
CHROMIUM	43.4	120000 N[12]	15.7 K	35.9 K	**260 K**	27.9 L
COBALT	10 [15]	23 N	NA	NA	NA	NA
COPPER	18.7	3100 N	**22.1**	**18.9**	**113**	16 L
HEXAVALENT CHROMIUM	43.4	2.9 C[13]	NA	NA	NA	NA
LEAD	30.2	400	6.9 J	13.5	**182**	12.5
MERCURY	0.13	23 N[14]	0.0066 U	0.043 J	**0.75**	0.041 J
MOLYBDENUM	NA	390 N	NA	NA	NA	NA
NICKEL	15.9	1500 N	0.67	**22.7**	**47.4**	**20.5 L**
SELENIUM	1 [15]	390 N	0.81	**1.1**	**2.1**	1 L
SILVER	0.73	390 N	0.0088 J	0.064 J	**4 J**	0.055 J
THALLIUM	NA	NA	0.059 J	0.2	0.28	0.18 K
VANADIUM	57 [15]	390 N	NA	NA	NA	NA
ZINC	121	23000 N	2	72.3	**418**	70.2 L
METALS (UG/KG)						
DIBUTYLTIN	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA

Table 4-6

Detected Concentrations Table for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Notes:
1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for freshwater sediment (USEPA, August 2006) and marine sediment (USEPA, July 2006). Lower of the freshwater and marine screening levels is presented.
2 - Screening criteria for sediment are based on USEPA Regional Screening Levels (RSLs) for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment, the screening criteria presented in the table for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.
3 - Concentrations exceeding the ESV are shaded black with white font. Concentrations exceeding the adjusted RSL for residential soil are shaded blue with black font. Concentrations exceeding both the ESV and the RSL are shaded red with white font.
4 - TCEQ Ecological Benchmarks for Sediment, January 2006.
5 - Value for trans-1,2-dichloroethene used as a surrogate for cis-1,2-dichloroethene.
6 - Value for 2-methylnaphthalene used as a surrogate for 1-methylnaphthalene.
7 - The value for acenapthene is used as a surrogate for acenaphthylene.
8 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
9 - Value for Total PCBs used as a surrogate for Aroclor-1248, Aroclor-1254 and Aroclor-1260.
10 - One tenth the noncarcinogenic value is less than the carcinogenic value; the noncarcinogenic value is presented.
11 - The value is for high risk PCBs.
12 - The value is for trivalent chromium.
13 - The value is for hexavalent chromium.
14 - The value is for mercuric chloride.
15 - NOAA Quick Reference Tables (Buchman, 2008).

Definitions:
B = Blank contamination
C = Carcinogenic
J = Estimated
K = Biased high
L = Biased low
N = Non-carcinogenic
NA = Not applicable or not available
R = Rejected
SB = Subsurface sediment
SD = Sediment
U = Non-detected

Table 4-7

Occurrence and Distribution of Chemicals - Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]	Adjusted Regional Screening Level (RSL) For Residential Soil[5]	# Detects Greater Than Adjusted RSL For Residential Soil[1]
Volatile Organics (ug/kg)												
2-BUTANONE	3/5	13 J	40 J	SD-16	43	74	24.7	26.5	25710 [6]	0	28000000 N	0
ACETONE	4/10	110	240	SD-16, SD-40	21	140	178	92.6	60030 [6]	0	61000000 N	0
CARBON DISULFIDE	4/10	5 J	11 J	SD-16	7	12	7.8	5.9	0.851	4	820000 N	0
CHLOROBENZENE	1/10	7 J	7 J	SD-27	7	16	7	6.0	8.42	0	290000 N	0
CIS-1,2-DICHLOROETHENE	1/10	2 J	2 J	SD-19	7	16	2	5.5	1050 [7]	0	780000 N	0
ISOPROPYLBENZENE	2/10	3 J	38 K	SD-13	7	16	20.5	8.8	86	0	2100000 N	0
METHYL TERT-BUTYL ETHER	2/10	2 J	3 J	SD-31	14	27	2.5	8.7	NA	0	430000 C	0
SEC-BUTYLBENZENE	2/10	7 J	180 K	SD-13	7	16	93.5	23.4	880 [6]	0	NA	0
TOLUENE	4/10	1 J	10	SD-19	10	16	5.8	6.2	1090	0	5000000 N	0
Semivolatile Organics (ug/kg)												
1-METHYLNAPHTHALENE	3/46	88 J	950	SD-58	340	1100	393	345	20.2 [8]	3	220000 C	0
2-METHYLNAPHTHALENE	4/46	310 J	1100 J	SD-58	340	1100	568	359	20.2	4	310000 N	0
ACENAPHTHENE	18/68	20 J	11000 J	SD-58	0.39	1100	919	440	6.7	18	3400000 N	0
ACENAPHTHYLENE	16/68	8.1 J	460	SD-90	0.46	1100	141	257	5.87	16	3400000 N[9]	0
ANTHRACENE	29/68	0.77 J	19000	SD-58	0.4	1100	1067	613	46.9	26	17000000 N	0
BAP EQUIVALENT-HALFND	32/68	58.5	38692	SD-58	0.4	1100	3359	1711	NA	0	150 C	30
BAP EQUIVALENT-POS	32/68	17.2	38387	SD-58	0.4	1100	3069	1574	NA	0	150 C	23
BENZO(A)ANTHRACENE	23/68	18	38000	SD-58	0.51	1100	3299	1300	74.8	21	1500 C	10
BENZO(A)PYRENE	24/68	14	30000	SD-58	0.4	1100	2864	1190	88.8	22	150 C	22
BENZO(B)FLUORANTHENE	32/68	46	31000	SD-58	0.64	1100	2890	1490	130 [15]	30	1500 C	10
BENZO(G,H,I)PERYLENE	24/68	37	11000 J	SD-58	0.4	1100	1582	735	67 [15]	23	1700000 N[10]	0
BENZO(K)FLUORANTHENE	17/68	8 J	25000	SD-58	0.82	1100	2398	742	70 [15]	16	15000 C	1
BIS(2-ETHYLHEXYL)PHTHALATE	5/9	140 J	1700	SD-40	460	740	704	527	180	4	350000 C	0
CARBAZOLE	2/9	400 J	410 J	SD-16	460	1000	405	358	NA	0	NA	0
CHRYSENE	32/68	20	37000	SD-58	0.48	1100	2727	1414	108	30	150000 C	0
DIBENZO(A,H)ANTHRACENE	17/68	4.7 J	1400	SD-86	0.45	1100	487	331	6.22	16	150 C	12
DIBENZOFURAN	2/9	240 J	330 J	SD-13	460	1000	285	331	415	0	78000 N	0
FLUORANTHENE	36/68	3.6 J	78000	SD-58	0.43	1100	4494	2496	113	33	2300000 N	0
FLUORENE	22/68	1 J	10000 J	SD-58	0.53	1100	700	416	21.2	20	2300000 N	0
INDENO(1,2,3-CD)PYRENE	28/68	70 J	12000 J	SD-58	0.42	1100	1382	719	17	28	1500 C	7
NAPHTHALENE	18/68	23 J	2200 J	SD-58	0.35	1100	338	289	34.6	17	36000 C	0
PHENANTHRENE	36/68	1.2 J	76000	SD-58	5.8	1100	3267	1862	86.7	30	1700000 N[10]	0
PYRENE	35/68	2.2 J	76000	SD-58	0.41	1100	5016	2703	153	31	1700000 N	0
TOTAL PAHS	39/68	1.2	457300	SD-58	0	0	25090	14390	1610	29	NA	0
PCBs (ug/kg)												
AROCLOR-1248	1/68	430 J	430 J	SD-86	0.96	6100	430	83.1	40 [11]	1	2200 C	0
AROCLOR-1260	26/68	28 J	1300	SD-89	1.4	56	372	151	40 [11]	25	2200 C	0
TOTAL AROCLOR	26/68	28	1300	SD-89	0	0	389	149	40	25	2200 C[12]	0
Metals (mg/kg)												
ANTIMONY	33/69	0.048 J	132 L	SD-58	0.05	0.97	5.5	2.7	0.63 [15]	23	31 N	1
ARSENIC	68/69	1.4	12.3	SD-50	0.77	0.77	6.3	6.2	7.24	22	3.9 C	55
BARIUM	47/47	8	238	SD-58	--	--	52.4	52.4	130 [15]	1	15000 N	0
BERYLLIUM	69/69	0.22 J	2.9	SD-69	--	--	1.8	1.8	NA	0	160 N	0
CADMIUM	63/69	0.016	296	SD-86	0.0074	0.13	21.7	19.8	0.68	44	70 N	2
CHROMIUM	69/69	9.4	2060 J	SD-86	--	--	309	309	43.4	42	120000 N[13]	0
COBALT	47/47	1.1	37.9	SD-69	--	--	14.0	14.0	10 [15]	34	23 N	2
COPPER	69/69	7.4 J	147 J	SD-86	--	--	47.5	47.5	18.7	49	3100 N	0
LEAD	69/69	4.1	316	SD-40	--	--	89.4	89.4	30.2	37	400	0
MERCURY	60/69	0.0079	6.1 L	SD-16	0.0066	0.054	0.94	0.82	0.13	41	23 N[14]	0
MOLYBDENUM	43/47	0.059	4.7	SD-75	0.07	0.45	1.4	1.3	NA	0	390 N	0
NICKEL	69/69	0.67	66.2	SD-50	--	--	30.5	30.5	15.9	58	1500 N	0
SELENIUM	52/69	0.33 J	2.8	SD-54	0.33	1.04	1.4	1.2	1 [15]	34	390 N	0
SILVER	54/69	0.0088 J	55.8	SD-76	0.074	0.46	10.0	7.8	0.73	40	390 N	0
THALLIUM	25/69	0.059 J	2.3	SD-58	0.2	1.78	0.37	0.29	NA	0	NA	0
VANADIUM	47/47	15.8	110 K	SD-76	--	--	45.2	45.2	57 [15]	9	390 N	0
ZINC	69/69	2	2980	SD-58	--	--	288	288	121	35	23000 N	0

Table 4-7

Occurrence and Distribution of Chemicals - Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]	Adjusted Regional Screening Level (RSL) For Residential Soil[5]	# Detects Greater Than Adjusted RSL For Residential Soil[1]
Metals (ug/kg)												
DIBUTYLTIN	2/3	5.5	8.5	SD-40	2.8	2.8	7.0	5.1	NA	0	NA	0
Miscellaneous Parameters (%)												
PERCENT SOLIDS	37/37	30	83	SD-55	--	--	51.5	51.5	NA	0	NA	0
Miscellaneous Parameters (mg/kg)												
TOTAL ORGANIC CARBON	21/21	3100	54000 K	SD-31	--	--	25064	25064	NA	0	NA	0
AVS/SEM (umoles/g)												
ACID VOLATILE SULFIDE	5/7	0.74 J	18.7	SD-90	0.29	0.41	6.6	4.8	NA	0	NA	0
CADMIUM	7/7	0.0007 J	1.4	SD-87	--	--	0.33	0.33	NA	0	NA	0
CHROMIUM	7/7	0.0089 J	15.4	SD-87	--	--	5.1	5.1	NA	0	NA	0
COPPER	6/7	0.023 J	0.48	SD-89	0.0021	0.0021	0.26	0.23	NA	0	NA	0
LEAD	7/7	0.011 J	1	SD-87	--	--	0.45	0.45	NA	0	NA	0
NICKEL	7/7	0.039 J	0.29	SD-87	--	--	0.16	0.16	NA	0	NA	0
SILVER	5/7	0.0007 J	0.014	SD-89	0.00025	0.00036	0.0067	0.0048	NA	0	NA	0
ZINC	7/7	0.35 J	9.3	SD-87	--	--	4.2	4.2	NA	0	NA	0

Notes:

1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection and exceedances.

2 - Average of positive analytical results only.

3 - Average of all analytical results are calculated using half of the detection limit for nondetects.

4 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for freshwater sediment (USEPA, August 2006) and marine sediment (USEPA, July 2006). Lower of the freshwater and marine screening levels is presented.

5 - Screening criteria for sediment are based on USEPA Regional Screening Levels (RSLs) for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment, the screening criteria presented in the table for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.

6 - TCEQ Ecological Benchmarks for Sediment, January 2006.

7 - Value for trans-1,2-dichloroethene used as a surrogate for cis-1,2-dichloroethene.

8 - Value for 2-methylnaphthalene used as a surrogate for 1-methylnaphthalene.

9 - The value for acenapthene is used as a surrogate for acenaphthylene.

10 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.

11 - Value for Total PCBs used as a surrogate for Aroclor-1248 and Aroclor-1260.

12 - The value is for high risk PCBs.

13 - The value is for trivalent chromium.

14 - The value is for mercuric chloride.

15 - NOAA Quick Reference Tables (Buchman, 2008).

Definitions:

C = Carcinogenic
J = Estimated
K = Biased high
L = Biased low
N = Non-carcinogenic
NA = Not applicable or not available

Associated Samples:

SD-95-02	SD-14-02	SD-48-02	SD-75-02
SD-96-02	SD-16-02	SD-49-02	SD-75-02-D
SD-97-02	SD-19-02	SD-50-02	SD-76-02
SD-98-02	SD-27-02	SD-51-02	SD-77-02
SD-99-02	SD-28-02	SD-51-02-D	SD-80-02
SD-100-02	SD-29-02	SD-53-02	SD-81-02
SD-100-02-D	SD-31-02	SD-54-02	SD-82-02
SD-101-02	SD-40-02	SD-55-02	SD-83-02
SD-102-02	SD-42-02	SD-56-02	SD-84-02
SD-103-02	SD-43-02	SD-57-02	SD-85-02
SD-104-02	SD-44-02	SD-58-02	SD-86-02
SD-105-02	SD-45-02	SD-59-02	SD-87-02
SD-106-02	SD-46-02	SD-59-02-D	SD-88-02
SD-13-02	SD-47-02	SD-60-02	

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil[2][3]		BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-43
SAMPLE ID				BOWLEYS_QUARTERS-04	MIDDLE_RIVER_DOWNSTREAM-04	MARSHY_POINT-04	SD-43-04
SAMPLE DATE				20100821	20100820	20100821	20081117
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				BACKGROUND	OFFSITE	BACKGROUND	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				48	48	48	36
BOTTOM DEPTH				48	48	48	40
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	NA	NA	NA	450 U
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	450 U
ACENAPHTHENE	6.7	3400000	N	2.3 U	1.9 U	4.3 U	450 U
ACENAPHTHYLENE	5.9	3400000	N[5]	2.8 U	2.3 U	5.1 U	450 U
ANTHRACENE	57.2	17000000	N	2.4 U	2 U	4.4 U	450 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	2.4 U	2 U	4.5 U	450 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	2.4 U	2 U	4.5 U	450 U
BENZO(A)ANTHRACENE	108	1500	C	3.1 U	2.5 U	5.6 U	450 U
BENZO(A)PYRENE	150	150	C	2.4 U	2 U	4.5 U	450 U
BENZO(B)FLUORANTHENE	NA	1500	C	3.8 U	3.2 U	7 U	450 U
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	2.4 U	2 U	4.4 U	450 U
BENZO(K)FLUORANTHENE	240	15000	C	4.9 U	4.1 U	9 U	450 U
CHRYSENE	166	150000	C	2.9 U	2.4 U	5.3 U	450 U
DIBENZO(A,H)ANTHRACENE	33	150	C	2.7 U	2.2 U	5 U	450 U
FLUORANTHENE	423	2300000	N	2.6 U	2.1 U	4.8 U	450 U
FLUORENE	77.4	2300000	N	3.2 U	2.6 U	5.9 U	450 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	2.5 U	2.1 U	4.6 U	450 U
NAPHTHALENE	176	36000	C	2.1 U	1.7 U	3.8 U	450 U
PHENANTHRENE	204	1700000	N[6]	3.9 U	3.2 U	7.1 U	450 U
PYRENE	195	1700000	N	2.5 U	2 U	4.5 U	450 U
TOTAL PAHS	1610	NA		0 U	0 U	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	1.2 U	2.4 U	2.1 U	28 U
AROCLOR-1254	59.8 [7]	1100	N[8]	1.7 U	3.6 U	3.1 U	28 U
AROCLOR-1260	59.8 [7]	2200	C	1.7 U	3.6 U	3.1 U	28 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.032 J	0.48 B	0.079 J	0.16 U
ARSENIC	9.8	3.9	C	1.6	**5.7 L**	**6.8**	3
BARIUM	130 [12]	15000	N	NA	NA	NA	46.1 J
BERYLLIUM	NA	160	N	0.33	1.6	1.4	1.1 J
CADMIUM	0.99	70	N	0.096	0.64 L	0.34	0.12 B
CHROMIUM	43.4	120000	N[10]	8.9	33.7	32.9	24.1 J
COBALT	50	23	N	NA	NA	NA	9.4
COPPER	31.6	3100	N	4.9	18.8 L	14	13.3 J
LEAD	35.8	400		4.3	16.6	18.6	8.1 J
MERCURY	0.18	23	N[11]	0.008 U	0.045 J	0.051	0.039 B
MOLYBDENUM	NA	390	N	NA	NA	NA	0.56
NICKEL	22.7	1500	N	6.6	**24.8 L**	**27.3**	13.8
SELENIUM	2	390	N	0.42	1 L	1.1	0.94
SILVER	1	390	N	0.026 J	0.062 J	0.07 J	0.11 B
THALLIUM	21.3 [13]	NA		0.061 J	0.19	0.19	0.27 U
VANADIUM	57 [12]	390	N	NA	NA	NA	42.5 J
ZINC	121	23000	N	23.1	101 L	94.7	32
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	60
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	32000	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-44 SD-44-04 20081117 NORMAL SD NORMAL SB 30 34	SD-45 SD-45-04 20081117 NORMAL SD NORMAL SB 45 49	SD-46 SD-46-04 20081115 NORMAL SD NORMAL SB 46 50	SD-47 SD-47-04 20081115 ORIG SD NORMAL SB 43 51
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	670 U	680 U	740 U	400 U
2-METHYLNAPHTHALENE	20.2	310000	N	670 U	680 U	740 U	400 U
ACENAPHTHENE	6.7	3400000	N	670 U	680 U	740 U	400 U
ACENAPHTHYLENE	5.9	3400000	N[5]	670 U	680 U	740 U	400 U
ANTHRACENE	57.2	17000000	N	670 U	680 U	740 U	400 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	670 U	680 U	740 U	400 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	670 U	680 U	740 U	400 U
BENZO(A)ANTHRACENE	108	1500	C	670 U	680 U	740 U	400 U
BENZO(A)PYRENE	150	150	C	670 U	680 U	740 U	400 U
BENZO(B)FLUORANTHENE	NA	1500	C	670 U	680 U	740 U	400 U
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	670 U	680 U	740 U	400 U
BENZO(K)FLUORANTHENE	240	15000	C	670 U	680 U	740 U	400 U
CHRYSENE	166	150000	C	670 U	680 U	740 U	400 U
DIBENZO(A,H)ANTHRACENE	33	150	C	670 U	680 U	740 U	400 U
FLUORANTHENE	423	2300000	N	670 U	680 U	740 U	400 U
FLUORENE	77.4	2300000	N	670 U	680 U	740 U	400 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	670 U	680 U	740 U	400 U
NAPHTHALENE	176	36000	C	670 U	680 U	740 U	400 U
PHENANTHRENE	204	1700000	N[6]	670 U	680 U	740 U	400 U
PYRENE	195	1700000	N	670 U	680 U	740 U	400 U
TOTAL PAHS	1610	NA		0 U	0 U	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	33 U	34 U	37 U	20 U
AROCLOR-1254	59.8 [7]	1100	N[8]	33 U	34 U	37 U	20 U
AROCLOR-1260	59.8 [7]	2200	C	33 U	34 U	37 U	20 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.19 U	0.2 U	0.22 UL	0.12 UL
ARSENIC	9.8	3.9	C	2.3	3.8	**4.5**	2.2
BARIUM	130 [12]	15000	N	27.7	22.8	27.5	11.9
BERYLLIUM	NA	160	N	2.4	1.5	1.9	1.6
CADMIUM	0.99	70	N	0.15	0.19	0.23	0.13
CHROMIUM	43.4	120000	N[10]	18.5	21.4	25.9	16.6
COBALT	50	23	N	16.6	10	13.6	2.9
COPPER	31.6	3100	N	12.6	12.4	16.5	7.7
LEAD	35.8	400		6.3	7.2	9.6	4.1
MERCURY	0.18	23	N[11]	0.015	0.022	0.057 B	0.014 B
MOLYBDENUM	NA	390	N	1.5	1.3	1.1	0.45
NICKEL	22.7	1500	N	18.5	12.8	18.3	11.6
SELENIUM	2	390	N	1	0.97	0.74	0.91
SILVER	1	390	N	0.17	0.16	0.14	0.18
THALLIUM	21.3 [13]	NA		0.33 U	0.34 U	0.37 U	0.21 U
VANADIUM	57 [12]	390	N	27.7	25.7	34.9	27.7
ZINC	121	23000	N	48.9	44.7	53.1	28.3
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		50	49	45	82
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		30000	NA	20000	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-47 SD-47-04-AVG 20081115 AVG SD NORMAL SB 43 51	SD-47 SD-47-04-D 20081115 DUP SD NORMAL SB 43 51	SD-48 SD-48-04 20081115 NORMAL SD NORMAL SB 46 50	SD-49 SD-49-04 20081115 NORMAL SD NORMAL SB 46 50
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	400 U	400 U	400 U	470 U
2-METHYLNAPHTHALENE	20.2	310000	N	400 U	400 U	400 U	470 U
ACENAPHTHENE	6.7	3400000	N	400 U	400 U	400 U	470 U
ACENAPHTHYLENE	5.9	3400000	N[5]	400 U	400 U	400 U	470 U
ANTHRACENE	57.2	17000000	N	400 U	400 U	400 U	470 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	400 U	400 U	400 U	470 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	400 U	400 U	400 U	470 U
BENZO(A)ANTHRACENE	108	1500	C	400 U	400 U	400 U	470 U
BENZO(A)PYRENE	150	150	C	400 U	400 U	400 U	470 U
BENZO(B)FLUORANTHENE	NA	1500	C	400 U	400 U	400 U	470 U
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	400 U	400 U	400 U	470 U
BENZO(K)FLUORANTHENE	240	15000	C	400 U	400 U	400 U	470 U
CHRYSENE	166	150000	C	400 U	400 U	400 U	470 U
DIBENZO(A,H)ANTHRACENE	33	150	C	400 U	400 U	400 U	470 U
FLUORANTHENE	423	2300000	N	400 U	400 U	400 U	470 U
FLUORENE	77.4	2300000	N	400 U	400 U	400 U	470 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	400 U	400 U	400 U	470 U
NAPHTHALENE	176	36000	C	400 U	400 U	400 U	470 U
PHENANTHRENE	204	1700000	N[6]	400 U	400 U	400 U	470 U
PYRENE	195	1700000	N	400 U	400 U	400 U	470 U
TOTAL PAHS	1610	NA		0 U	0 U	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	20 U	20 U	20 U	30 U
AROCLOR-1254	59.8 [7]	1100	N[8]	20 U	20 U	20 U	30 U
AROCLOR-1260	59.8 [7]	2200	C	20 U	20 U	20 U	30 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.12 UL	0.12 UL	0.11 UL	0.17 U
ARSENIC	9.8	3.9	C	2.35	2.5	0.75 B	3.5
BARIUM	130 [12]	15000	N	11.35	10.8	11.6	18.3 J
BERYLLIUM	NA	160	N	1.65	1.7	0.46	1.1 J
CADMIUM	0.99	70	N	0.14	0.15	0.022	0.14 B
CHROMIUM	43.4	120000	N[10]	16.85	17.1	13.8	18.4 J
COBALT	50	23	N	2.75	2.6	1.3	8.7
COPPER	31.6	3100	N	7.8	7.9	5	10.8 J
LEAD	35.8	400		3.95	3.8	4.5	8.3 J
MERCURY	0.18	23	N[11]	0.014 B	0.014 B	0.037 B	0.027 B
MOLYBDENUM	NA	390	N	0.455	0.46	0.16 B	0.96
NICKEL	22.7	1500	N	11.6	11.6	3.9	12.2
SELENIUM	2	390	N	0.905	0.9	0.37 U	0.67
SILVER	1	390	N	0.225	0.27	0.072 U	0.11 U
THALLIUM	21.3 [13]	NA		0.21 U	0.21 U	0.2 U	0.3 U
VANADIUM	57 [12]	390	N	27.85	28	23.7	18.8 J
ZINC	121	23000	N	28.3	28.3	7	45.3
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		82.5	83	84	56
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	14000
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-50 SD-50-04 20081114 NORMAL SD NORMAL SB 44 48	SD-51 SD-51-04 20081115 NORMAL SD NORMAL SB 46 50	SD-53 SD-53-04 20081114 NORMAL SD NORMAL SB 42 46	SD-54 SD-54-04 20081114 NORMAL SD NORMAL SB 40 44
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	720 U	870 U	600 U	530 U
2-METHYLNAPHTHALENE	20.2	310000	N	720 U	870 U	600 U	530 U
ACENAPHTHENE	6.7	3400000	N	720 U	870 U	600 U	530 U
ACENAPHTHYLENE	5.9	3400000	N[5]	720 U	870 U	600 U	530 U
ANTHRACENE	57.2	17000000	N	720 U	870 U	600 U	530 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**810**	870 U	600 U	530 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	18.2	870 U	600 U	530 U
BENZO(A)ANTHRACENE	108	1500	C	720 U	870 U	600 U	530 U
BENZO(A)PYRENE	150	150	C	720 U	870 U	600 U	530 U
BENZO(B)FLUORANTHENE	NA	1500	C	160 J	870 U	600 U	530 U
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	720 U	870 U	600 U	530 U
BENZO(K)FLUORANTHENE	240	15000	C	200 J	870 U	600 U	530 U
CHRYSENE	166	150000	C	**220 J**	870 U	600 U	530 U
DIBENZO(A,H)ANTHRACENE	33	150	C	720 U	870 U	600 U	530 U
FLUORANTHENE	423	2300000	N	360 J	870 U	600 U	530 U
FLUORENE	77.4	2300000	N	720 U	870 U	600 U	530 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	720 U	870 U	600 U	530 U
NAPHTHALENE	176	36000	C	720 U	870 U	600 U	530 U
PHENANTHRENE	204	1700000	N[6]	180 J	870 U	600 U	530 U
PYRENE	195	1700000	N	**480 J**	870 U	600 U	530 U
TOTAL PAHS	1610	NA		1600	0 U	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	720 UJ	44 U	30 U	27 U
AROCLOR-1254	59.8 [7]	1100	N[8]	720 UJ	44 U	30 U	27 U
AROCLOR-1260	59.8 [7]	2200	C	36 U	44 U	30 U	27 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.21 UJ	0.27 UL	0.18 UL	0.16 UL
ARSENIC	9.8	3.9	C	**7.4**	**8.8**	**4.6**	2.6
BARIUM	130 [12]	15000	N	37.4	48.2	18.2	16
BERYLLIUM	NA	160	N	1.8	2.2	1.2	2.3
CADMIUM	0.99	70	N	**12**	**3.6**	0.054	0.0092 U
CHROMIUM	43.4	120000	N[10]	**242**	**153**	19.4	19.6
COBALT	50	23	N	16	20	6.5	8
COPPER	31.6	3100	N	**34.2**	**42.3**	12.6	10.9
LEAD	35.8	400		**46.9**	**76.6**	6.5	6.5
MERCURY	0.18	23	N[11]	**0.43**	**0.24**	0.023	0.023
MOLYBDENUM	NA	390	N	1.1 J	1.3	0.78	0.91
NICKEL	22.7	1500	N	**27.5**	**30.4**	12.1	17.4
SELENIUM	2	390	N	1	1.8	0.99	0.94
SILVER	1	390	N	**2.7**	**1.8**	0.11 U	0.13
THALLIUM	21.3 [13]	NA		0.37 U	0.46 U	0.3 U	0.27 U
VANADIUM	57 [12]	390	N	34.5	45	21.3	31
ZINC	121	23000	N	**190**	**146**	36.3	34.7
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	38	55	63
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-56 SD-56-04 20081113 ORIG SD NORMAL SB 44 52	SD-56 SD-56-04-AVG 20081113 AVG SD NORMAL SB 44 52	SD-56 SD-56-04-D 20081113 DUP SD NORMAL SB 44 52	SD-57 SD-57-04 20081114 NORMAL SD NORMAL SB 44 48
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	640 U	645 U	650 U	770 U
2-METHYLNAPHTHALENE	20.2	310000	N	640 U	645 U	650 U	770 U
ACENAPHTHENE	6.7	3400000	N	640 U	645 U	650 U	770 U
ACENAPHTHYLENE	5.9	3400000	N[5]	640 U	645 U	650 U	770 U
ANTHRACENE	57.2	17000000	N	640 U	645 U	650 U	770 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	640 U	645 U	650 U	770 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	640 U	645 U	650 U	770 U
BENZO(A)ANTHRACENE	108	1500	C	640 U	645 U	650 U	770 U
BENZO(A)PYRENE	150	150	C	640 U	645 U	650 U	770 U
BENZO(B)FLUORANTHENE	NA	1500	C	640 U	645 U	650 U	770 U
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	640 U	645 U	650 U	770 U
BENZO(K)FLUORANTHENE	240	15000	C	640 U	645 U	650 U	770 U
CHRYSENE	166	150000	C	640 U	645 U	650 U	770 U
DIBENZO(A,H)ANTHRACENE	33	150	C	640 U	645 U	650 U	770 U
FLUORANTHENE	423	2300000	N	79 J	79 J	650 U	770 U
FLUORENE	77.4	2300000	N	640 U	645 U	650 U	770 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	640 U	645 U	650 U	770 U
NAPHTHALENE	176	36000	C	640 U	645 U	650 U	770 U
PHENANTHRENE	204	1700000	N[6]	640 U	645 U	650 U	770 U
PYRENE	195	1700000	N	640 U	645 U	650 U	770 U
TOTAL PAHS	1610	NA		79	79	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	32 U	32 U	32 U	39 U
AROCLOR-1254	59.8 [7]	1100	N[8]	32 U	32 U	32 U	39 U
AROCLOR-1260	59.8 [7]	2200	C	32 U	32 U	32 U	39 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.19 UL	0.195 UL	0.2 UL	0.24 UJ
ARSENIC	9.8	3.9	C	**5.8**	**5.95**	**6.1**	**8.5**
BARIUM	130 [12]	15000	N	27.2	27.4	27.6	27.6
BERYLLIUM	NA	160	N	1.9	1.95	2	1.9
CADMIUM	0.99	70	N	**3.6**	**3.5**	**3.4**	0.014 U
CHROMIUM	43.4	120000	N[10]	**79.2**	**78.95**	**78.7**	31.6
COBALT	50	23	N	11.3	11.45	11.6	12
COPPER	31.6	3100	N	29.2	29.75	30.3	18.3
LEAD	35.8	400		24.5	24.7	24.9	10.6
MERCURY	0.18	23	N[11]	0.087	0.0905	0.094	0.022
MOLYBDENUM	NA	390	N	1.1	1.15	1.2	1 B
NICKEL	22.7	1500	N	**23.6**	**24.15**	**24.7**	21.7
SELENIUM	2	390	N	1.1	1.15	1.2	0.84
SILVER	1	390	N	**1.5**	**1.5**	**1.5**	0.15 U
THALLIUM	21.3 [13]	NA		0.32 U	0.33 U	0.34 U	0.41 U
VANADIUM	57 [12]	390	N	41.5	43.2	44.9	36.9
ZINC	121	23000	N	81.3	82.15	83	63.2
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		52	52	52	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil[2][3]		SD-58 SD-58-04 20081114 NORMAL SD NORMAL SB 45 49	SD-59 SD-59-04 20081115 NORMAL SD NORMAL SB 46 50	SD-60 SD-60-04 20081112 NORMAL SD NORMAL SB 38 42	SD-61 SD-61-04 20081113 NORMAL SD NORMAL SB 46 50
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	620 U	340 U	340 U	400 U
2-METHYLNAPHTHALENE	20.2	310000	N	620 U	340 U	340 U	400 U
ACENAPHTHENE	6.7	3400000	N	620 U	340 U	340 U	400 U
ACENAPHTHYLENE	5.9	3400000	N[5]	620 U	340 U	340 U	400 U
ANTHRACENE	57.2	17000000	N	620 U	340 U	340 U	400 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**716**	340 U	340 U	400 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	0.090	340 U	340 U	400 U
BENZO(A)ANTHRACENE	108	1500	C	620 U	340 U	340 U	400 U
BENZO(A)PYRENE	150	150	C	620 U	340 U	340 U	400 U
BENZO(B)FLUORANTHENE	NA	1500	C	620 U	340 U	340 U	400 U
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	620 U	340 U	340 U	400 U
BENZO(K)FLUORANTHENE	240	15000	C	620 U	340 U	340 U	400 U
CHRYSENE	166	150000	C	90 J	340 U	340 U	400 U
DIBENZO(A,H)ANTHRACENE	33	150	C	620 U	340 U	340 U	400 U
FLUORANTHENE	423	2300000	N	180 J	340 U	340 U	400 U
FLUORENE	77.4	2300000	N	620 U	340 U	340 U	400 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	620 U	340 U	340 U	400 U
NAPHTHALENE	176	36000	C	620 U	340 U	340 U	400 U
PHENANTHRENE	204	1700000	N[6]	160 J	340 U	340 U	400 U
PYRENE	195	1700000	N	180 J	340 U	340 U	400 U
TOTAL PAHS	1610	NA		610	0 U	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	31 U	22 U	21 U	20 U
AROCLOR-1254	59.8 [7]	1100	N[8]	31 U	22 U	21 U	20 U
AROCLOR-1260	59.8 [7]	2200	C	31 U	22 U	21 U	20 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.19 UJ	0.12 U	0.22 J	0.12 UL
ARSENIC	9.8	3.9	C	**8.1**	2.1	3.3	1.1
BARIUM	130 [12]	15000	N	33.2	9.2 J	15.7 J	4.4
BERYLLIUM	NA	160	N	2.8	2.4 J	0.76 J	0.17
CADMIUM	0.99	70	N	0.012 U	0.0072 U	0.0077 U	0.0073 U
CHROMIUM	43.4	120000	N[10]	39.7	19.8 J	20.7 J	8
COBALT	50	23	N	16.2	4.5	2.6 J	0.76
COPPER	31.6	3100	N	19.4	7.5 J	7.3 J	1.6
LEAD	35.8	400		11.5	5.8 J	5.4	1.5
MERCURY	0.18	23	N[11]	0.015	0.015 B	0.0087	0.0072 U
MOLYBDENUM	NA	390	N	1.7	0.5	0.32	0.052
NICKEL	22.7	1500	N	**39.6**	15	10.8 J	2.7
SELENIUM	2	390	N	0.72	0.67	0.53	0.41 U
SILVER	1	390	N	0.12 U	0.077 U	0.082 U	0.078 U
THALLIUM	21.3 [13]	NA		0.33 U	0.21 U	0.22 U	0.21 U
VANADIUM	57 [12]	390	N	48.1	30.3 J	31.2 J	13.7
ZINC	121	23000	N	78.4	24.5	21.4 J	3.8
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	77	78	83
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]		Adjusted Regional Screening Level (RSL) for Residential Soil[2][3]		SD-62 SD-62-04 20081112 NORMAL SD NORMAL SB 46 50	SD-63 SD-63-04 20081112 NORMAL SD NORMAL SB 46 50	SD-64 SD-64-04 20081112 NORMAL SD NORMAL SB 46 50	SD-65 SD-65-04 20081111 NORMAL SD NORMAL SB 37 41
SEMIVOLATILES (UG/KG)								
1-METHYLNAPHTHALENE	20.2	[4]	220000	C	350 U	340 U	660 U	410 UJ
2-METHYLNAPHTHALENE	20.2		310000	N	350 U	340 U	660 U	410 UJ
ACENAPHTHENE	6.7		3400000	N	350 U	340 U	660 U	410 UJ
ACENAPHTHYLENE	5.9		3400000	N[5]	350 U	340 U	660 U	410 UJ
ANTHRACENE	57.2		17000000	N	350 U	340 U	660 U	410 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	350 U	340 U	660 U	410 U
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	350 U	340 U	660 U	410 U
BENZO(A)ANTHRACENE	108		1500	C	350 U	340 U	660 U	410 UJ
BENZO(A)PYRENE	150		150	C	350 U	340 U	660 U	410 UJ
BENZO(B)FLUORANTHENE	NA		1500	C	350 U	340 U	660 U	410 UJ
BENZO(G,H,I)PERYLENE	170		1700000	N[6]	350 U	340 U	660 U	410 UJ
BENZO(K)FLUORANTHENE	240		15000	C	350 U	340 U	660 U	410 UJ
CHRYSENE	166		150000	C	350 U	340 U	660 U	410 UJ
DIBENZO(A,H)ANTHRACENE	33		150	C	350 U	340 U	660 U	410 UJ
FLUORANTHENE	423		2300000	N	350 U	340 U	660 U	410 UJ
FLUORENE	77.4		2300000	N	350 U	340 U	660 U	410 UJ
INDENO(1,2,3-CD)PYRENE	17		1500	C	350 U	340 U	660 U	410 UJ
NAPHTHALENE	176		36000	C	350 U	340 U	660 U	410 UJ
PHENANTHRENE	204		1700000	N[6]	350 U	340 U	660 U	410 UJ
PYRENE	195		1700000	N	350 UJ	340 UJ	660 U	410 UJ
TOTAL PAHS	1610		NA		0 U	0 U	0 U	0 U
PCBS (UG/KG)								
AROCLOR-1248	59.8	[7]	2200	C	22 U	21 U	41 U	21 U
AROCLOR-1254	59.8	[7]	1100	N[8]	22 U	21 U	41 U	21 U
AROCLOR-1260	59.8	[7]	2200	C	22 U	21 U	41 U	21 U
TOTAL AROCLOR	59.8		2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)								
ANTIMONY	2		31	N	0.13 UL	0.13 UL	0.24 UL	0.12 UJ
ARSENIC	9.8		3.9	C	**9.9**	1.8	**6.8**	**6.8**
BARIUM	130	[12]	15000	N	12.2 J	10.6 J	31.9 J	19.2
BERYLLIUM	NA		160	N	1.6 J	0.73 J	2.1 J	1.7
CADMIUM	0.99		70	N	0.017 J	0.0077 UL	0.17 J	0.0069 U
CHROMIUM	43.4		120000	N[10]	15.8 J	16.2 J	29.4 J	20.9
COBALT	50		23	N	2.9 J	3.3 J	11.7 J	15.5
COPPER	31.6		3100	N	11.7 J	9 J	21.8 J	14.7 J
LEAD	35.8		400		5.2 J	6.6 J	8.8 J	8.1
MERCURY	0.18		23	N[11]	0.011 B	0.034	0.039 B	0.011
MOLYBDENUM	NA		390	N	0.22 J	0.31 J	2.4 J	0.34 B
NICKEL	22.7		1500	N	10.5 J	11.4 J	22.1 J	**38 J**
SELENIUM	2		390	N	0.43 UL	0.63 J	1.3 J	0.38 UL
SILVER	1		390	N	0.083 UL	0.081 UL	0.15 UL	0.073 U
THALLIUM	21.3	[13]	NA		0.23 U	0.22 U	0.41 U	0.2 U
VANADIUM	57	[12]	390	N	22.8 J	27.4 J	31.2 J	36
ZINC	121		23000	N	19 J	19.8 J	72.2 J	76.2 J
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	NA		NA		77	79	41	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA		NA		2000	1400	NA	NA
AVS/SEM (UMOLES/G)								
ACID VOLATILE SULFIDE	NA		NA		NA	NA	NA	NA
CADMIUM	NA		NA		NA	NA	NA	NA
CHROMIUM	NA		NA		NA	NA	NA	NA
COPPER	NA		NA		NA	NA	NA	NA
LEAD	NA		NA		NA	NA	NA	NA
NICKEL	NA		NA		NA	NA	NA	NA
SILVER	NA		NA		NA	NA	NA	NA
ZINC	NA		NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil[2][3]		SD-66	SD-67	SD-68	SD-70
SAMPLE ID				SD-66-04	SD-67-04	SD-68-04	SD-70-04
SAMPLE DATE				20081112	20081111	20081112	20081111
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				39	46	43	34
BOTTOM DEPTH				43	50	47	38
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	360 U	470 UJ	330 U	420 UJ
2-METHYLNAPHTHALENE	20.2	310000	N	360 U	470 UJ	330 U	420 UJ
ACENAPHTHENE	6.7	3400000	N	360 U	470 UJ	330 U	420 UJ
ACENAPHTHYLENE	5.9	3400000	N[5]	360 U	470 UJ	330 U	420 UJ
ANTHRACENE	57.2	17000000	N	360 U	470 UJ	330 U	420 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	360 U	470 U	330 U	420 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	360 U	470 U	330 U	420 U
BENZO(A)ANTHRACENE	108	1500	C	360 U	470 UJ	330 U	420 UJ
BENZO(A)PYRENE	150	150	C	360 U	470 UJ	330 U	420 UJ
BENZO(B)FLUORANTHENE	NA	1500	C	360 U	470 UJ	330 U	420 UJ
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	360 U	470 UJ	330 U	420 UJ
BENZO(K)FLUORANTHENE	240	15000	C	360 U	470 UJ	330 U	420 UJ
CHRYSENE	166	150000	C	360 U	470 UJ	330 U	420 UJ
DIBENZO(A,H)ANTHRACENE	33	150	C	360 U	470 UJ	330 U	420 UJ
FLUORANTHENE	423	2300000	N	360 U	470 UJ	330 U	420 UJ
FLUORENE	77.4	2300000	N	360 U	470 UJ	330 U	420 UJ
INDENO(1,2,3-CD)PYRENE	17	1500	C	360 U	470 UJ	330 U	420 UJ
NAPHTHALENE	176	36000	C	360 U	470 UJ	330 U	420 UJ
PHENANTHRENE	204	1700000	N[6]	360 U	470 UJ	330 U	420 UJ
PYRENE	195	1700000	N	360 U	470 UJ	330 U	420 UJ
TOTAL PAHS	1610	NA		0 U	0 U	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	22 U	24 U	21 U	21 U
AROCLOR-1254	59.8 [7]	1100	N[8]	22 U	24 U	21 U	21 U
AROCLOR-1260	59.8 [7]	2200	C	22 U	24 U	21 UJ	21 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.14 UL	0.14 UJ	0.13 UL	0.13 UJ
ARSENIC	9.8	3.9	C	1.5	**4.6**	2.7	1.6
BARIUM	130 [12]	15000	N	9.3 J	25.6	15.6 J	8.1
BERYLLIUM	NA	160	N	0.59 J	5.6	2.4 J	0.55
CADMIUM	0.99	70	N	0.052 B	**1.1**	0.013 B	0.039
CHROMIUM	43.4	120000	N[10]	11.9 J	25.4	15 J	11.8
COBALT	50	23	N	3.8 J	**39.7**	**70.8 J**	6.2
COPPER	31.6	3100	N	5.8 J	28.4 J	12.4 J	8.5 J
LEAD	35.8	400		3.8	13.7	6.5	3.2
MERCURY	0.18	23	N[11]	0.0074 U	0.033	0.012	0.0079
MOLYBDENUM	NA	390	N	0.43	0.2 B	0.051 U	0.31 B
NICKEL	22.7	1500	N	8.8 J	**55.2 J**	**25.3 J**	11.7 J
SELENIUM	2	390	N	0.45 U	0.45 UL	0.78	0.42 UL
SILVER	1	390	N	0.086 U	0.13	0.079 U	0.081 U
THALLIUM	21.3 [13]	NA		0.23 U	0.23 U	0.22 U	0.22 U
VANADIUM	57 [12]	390	N	16.7 J	32.3	23.3 J	18.2
ZINC	121	23000	N	25.1 J	**204 J**	71.7 J	47.5 J
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		74	NA	81	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	4400
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil[2][3]		SD-71	SD-73	SD-75	SD-76
SAMPLE ID				SD-71-04	SD-73-04	SD-75-04	SD-76-04
SAMPLE DATE				20081111	20081111	20081112	20081111
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				SD	SD	SD	SD
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				SB	SB	SB	SB
TOP DEPTH				42	42	42	46
BOTTOM DEPTH				46	46	46	50
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	430 UJ	660 U	320 U	470 U
2-METHYLNAPHTHALENE	20.2	310000	N	430 UJ	660 U	320 U	470 U
ACENAPHTHENE	6.7	3400000	N	430 UJ	660 U	320 U	**130 J**
ACENAPHTHYLENE	5.9	3400000	N[5]	430 UJ	660 U	320 U	470 U
ANTHRACENE	57.2	17000000	N	430 UJ	660 U	320 U	**110 K**
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	430 U	660 U	320 U	**543**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	430 U	660 U	320 U	0.14
BENZO(A)ANTHRACENE	108	1500	C	430 UJ	660 U	320 U	470 U
BENZO(A)PYRENE	150	150	C	430 UJ	660 U	320 U	470 U
BENZO(B)FLUORANTHENE	NA	1500	C	430 UJ	660 U	320 U	470 U
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	430 UJ	660 U	320 U	470 U
BENZO(K)FLUORANTHENE	240	15000	C	430 UJ	660 U	320 U	470 U
CHRYSENE	166	150000	C	430 UJ	660 U	320 U	140 J
DIBENZO(A,H)ANTHRACENE	33	150	C	430 UJ	660 U	320 U	470 U
FLUORANTHENE	423	2300000	N	430 UJ	660 U	320 U	320 J
FLUORENE	77.4	2300000	N	430 UJ	660 U	320 U	**180 J**
INDENO(1,2,3-CD)PYRENE	17	1500	C	430 UJ	660 U	320 U	470 U
NAPHTHALENE	176	36000	C	430 UJ	660 U	320 U	470 U
PHENANTHRENE	204	1700000	N[6]	430 UJ	660 U	320 U	**700**
PYRENE	195	1700000	N	430 UJ	660 U	320 U	**440 J**
TOTAL PAHS	1610	NA		0 U	0 U	0 U	**2020**
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	22 U	33 U	20 U	24 U
AROCLOR-1254	59.8 [7]	1100	N[8]	22 U	33 U	20 U	24 U
AROCLOR-1260	59.8 [7]	2200	C	22 U	33 U	20 U	**81**
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	**81**
METALS (MG/KG)							
ANTIMONY	2	31	N	0.13 UJ	0.2 UL	0.12 UL	**23.9 L**
ARSENIC	9.8	3.9	C	3.5	**5.2**	0.55	**6.3**
BARIUM	130 [12]	15000	N	16.7	20.6	13.5 J	54.1
BERYLLIUM	NA	160	N	1.2	1.8	0.27 J	1.3
CADMIUM	0.99	70	N	0.0076 U	0.048	0.0072 U	**3.3**
CHROMIUM	43.4	120000	N[10]	15.6	27.5	6 J	**60.9**
COBALT	50	23	N	22.7	10.1	1.4 J	7.5
COPPER	31.6	3100	N	12.6 J	14.8	6.9 J	23.9
LEAD	35.8	400		5.1	7.1	1.7	**61.9**
MERCURY	0.18	23	N[11]	0.014	0.028 B	0.0068 U	0.15
MOLYBDENUM	NA	390	N	0.31 B	1.1	0.14 B	1.6
NICKEL	22.7	1500	N	**38.5 J**	19	2.9 J	16.5
SELENIUM	2	390	N	0.47 J	0.67 UL	0.52	0.47 UL
SILVER	1	390	N	0.081 U	0.13 U	0.1 B	**9.1**
THALLIUM	21.3 [13]	NA		0.22 U	0.35 U	0.21 U	0.24 U
VANADIUM	57 [12]	390	N	33.9	29.8 K	6.4 J	36.6 K
ZINC	121	23000	N	59.3 J	47.1	15.1 J	107
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	50	84	70
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	10000
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	**Ecological Screening Value (ESV)[1][3]**	**Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]**		**SD-77 SD-77-04 20081110 ORIG SD NORMAL SB 44 52**	**SD-77 SD-77-04-AVG 20081110 AVG SD NORMAL SB 44 52**	**SD-77 SD-77-04-D 20081110 DUP SD NORMAL SB 44 52**	**SD-79 SD-79-02 20081114 NORMAL SD NORMAL SB 31 35**
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	500 U	510 U	520 U	850 U
2-METHYLNAPHTHALENE	20.2	310000	N	500 U	510 U	520 U	850 U
ACENAPHTHENE	6.7	3400000	N	500 U	510 U	520 U	850 U
ACENAPHTHYLENE	5.9	3400000	N[5]	500 U	510 U	520 U	850 U
ANTHRACENE	57.2	17000000	N	500 U	510 U	520 U	850 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	500 U	510 U	520 U	850 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	500 U	510 U	520 U	850 U
BENZO(A)ANTHRACENE	108	1500	C	500 U	510 U	520 U	850 U
BENZO(A)PYRENE	150	150	C	500 U	510 U	520 U	850 U
BENZO(B)FLUORANTHENE	NA	1500	C	500 U	510 U	520 U	850 U
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	500 U	510 U	520 U	850 U
BENZO(K)FLUORANTHENE	240	15000	C	500 U	510 U	520 U	850 U
CHRYSENE	166	150000	C	500 U	510 U	520 U	850 U
DIBENZO(A,H)ANTHRACENE	33	150	C	500 U	510 U	520 U	850 U
FLUORANTHENE	423	2300000	N	500 U	510 U	520 U	850 U
FLUORENE	77.4	2300000	N	500 U	510 U	520 U	850 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	500 U	510 U	520 U	850 U
NAPHTHALENE	176	36000	C	500 U	510 U	520 U	850 U
PHENANTHRENE	204	1700000	N[6]	500 U	510 U	520 U	850 U
PYRENE	195	1700000	N	500 U	510 U	520 U	850 U
TOTAL PAHS	1610	NA		0 U	0 U	0 U	0 U
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	25 U	25.5 U	26 U	42 U
AROCLOR-1254	59.8 [7]	1100	N[8]	25 U	25.5 U	26 U	42 U
AROCLOR-1260	59.8 [7]	2200	C	25 U	25.5 U	26 U	42 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.15 UL	0.15 UL	0.15 UL	0.26 UL
ARSENIC	9.8	3.9	C	3.9	**3.95**	**4**	**7.6**
BARIUM	130 [12]	15000	N	13.8	13.6	13.4	34.6
BERYLLIUM	NA	160	N	1.2	1.2	1.2	1.6
CADMIUM	0.99	70	N	0.0086 U	0.0088 U	0.009 U	0.016 U
CHROMIUM	43.4	120000	N[10]	20.7	21.95	23.2	31.8
COBALT	50	23	N	6.9	6.8	6.7	14.8
COPPER	31.6	3100	N	16.1	16.4	16.7	16.2
LEAD	35.8	400		6.7	6.8	6.9	13
MERCURY	0.18	23	N[11]	0.011 B	0.0135 B	0.016 B	0.031
MOLYBDENUM	NA	390	N	1.4	1.35	1.3	0.83 B
NICKEL	22.7	1500	N	12.5	12.65	12.8	**23.7**
SELENIUM	2	390	N	0.48 UL	0.49 UL	0.5 UL	0.86 U
SILVER	1	390	N	0.092 U	0.094 U	0.096 U	0.17 U
THALLIUM	21.3 [13]	NA		0.25 U	0.255 U	0.26 U	0.45 U
VANADIUM	57 [12]	390	N	37.2 K	37.8 K	38.4 K	40
ZINC	121	23000	N	27.5	27.35	27.2	69.7
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		66	65	64	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-83 SD-83-04 20100820 NORMAL SD NORMAL SB 48 48	SD-85 SD-85-04 20100819 NORMAL SD NORMAL SB 48 48	SD-86 SD-86-04 20100818 NORMAL SD NORMAL SB 48 48	SD-87 SD-87-04 20100818 NORMAL SD NORMAL SB 48 48
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	0.47 U	1.6 U	**8.2 J**	**16 J**
ACENAPHTHYLENE	5.9	3400000	N[5]	0.56 U	1.9 U	3.9 U	**15 J**
ANTHRACENE	57.2	17000000	N	0.9 J	1.6 U	4.8 J	37
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	0.49 U	1.7 U	41.9	**267**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	0.49 U	1.7 U	39.9	**267**
BENZO(A)ANTHRACENE	108	1500	C	0.61 U	2.1 U	24 J	**160**
BENZO(A)PYRENE	150	150	C	0.49 U	1.7 U	25 J	**160**
BENZO(B)FLUORANTHENE	NA	1500	C	0.76 U	2.6 U	41	250
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	0.48 U	1.6 U	71	130
BENZO(K)FLUORANTHENE	240	15000	C	0.98 U	3.3 U	6.9 U	3.3 U
CHRYSENE	166	150000	C	0.58 U	2 U	26 J	160
DIBENZO(A,H)ANTHRACENE	33	150	C	0.54 U	1.8 U	3.8 U	**54**
FLUORANTHENE	423	2300000	N	3.1 J	1.8 U	33 J	240
FLUORENE	77.4	2300000	N	1.2 J	2.2 U	5.6 J	13 J
INDENO(1,2,3-CD)PYRENE	17	1500	C	0.5 U	1.7 U	**84**	**120**
NAPHTHALENE	176	36000	C	0.42 U	1.4 U	2.9 U	13 J
PHENANTHRENE	204	1700000	N[6]	5	5.8 J	21 J	120
PYRENE	195	1700000	N	3.5 J	1.7 U	48	**250**
TOTAL PAHS	1610	NA		13.7	5.8	391.6	**1738**
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	1.1 U	1.3 U	1.6 U	2 U
AROCLOR-1254	59.8 [7]	1100	N[8]	1.7 U	2 U	2.4 U	2.9 U
AROCLOR-1260	59.8 [7]	2200	C	1.7 U	2 U	2.4 U	2.9 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.14 B	0.042 B	0.16 J	0.27 L
ARSENIC	9.8	3.9	C	2 L	2 L	3.8	**5.1**
BARIUM	130 [12]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	0.72	0.94	1.6 J	2.1
CADMIUM	0.99	70	N	0.11 L	0.21 L	**2.9**	**11.4**
CHROMIUM	43.4	120000	N[10]	14.8	9.8	**52.4 K**	**114**
COBALT	50	23	N	NA	NA	NA	NA
COPPER	31.6	3100	N	12.2 L	7.1 L	18.6	**33.1**
LEAD	35.8	400		9.9	3.8	14	35.6 K
MERCURY	0.18	23	N[11]	0.045	0.009 U	0.05	**0.25**
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	22.7	1500	N	10.8 L	9.3 L	**27.1**	**29.1**
SELENIUM	2	390	N	0.45 L	0.45 L	0.75	1.1
SILVER	1	390	N	0.036 J	0.029 J	0.068 J	0.85
THALLIUM	21.3 [13]	NA		0.11	0.064 J	0.16	0.26
VANADIUM	57 [12]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	29.3 L	29.2 L	71.4	**139**
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		9340	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	0.26 U	NA	0.38 U
CADMIUM	NA	NA		NA	0.00062 J	NA	0.035
CHROMIUM	NA	NA		NA	0.0057 J	NA	0.52
COPPER	NA	NA		NA	0.013 J	NA	0.26
LEAD	NA	NA		NA	0.0071 J	NA	0.2
NICKEL	NA	NA		NA	0.03 J	NA	0.13
SILVER	NA	NA		NA	0.00022 U	NA	0.0022 J
ZINC	NA	NA		NA	0.24 J	NA	1.2

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-88 SD-88-04 20100819 NORMAL SD NORMAL SB 48 48	SD-89 SD-89-04 20100819 NORMAL SD NORMAL SB 48 48	SD-90 SD-90-04 20100817 NORMAL SD NORMAL SB 48 48	SD-93 SD-93-04 20100817 NORMAL SD NORMAL SB 48 48
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	6.3 U	3.3 U	**10 J**	**8.2 J**
ACENAPHTHYLENE	5.9	3400000	N[5]	**21 J**	**18 J**	**27 J**	**16 J**
ANTHRACENE	57.2	17000000	N	13 J	29 J	26 J	25
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	57.6	87.1	139	**160**
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	53.8	85.2	138	**160**
BENZO(A)ANTHRACENE	108	1500	C	47 J	72	73	73
BENZO(A)PYRENE	150	150	C	30 J	60	63 J	77
BENZO(B)FLUORANTHENE	NA	1500	C	41 J	75	93 J	140
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	6.5 U	99	69 J	99
BENZO(K)FLUORANTHENE	240	15000	C	13 U	49	5.9 UJ	4.5 U
CHRYSENE	166	150000	C	37 J	58	82	100
DIBENZO(A,H)ANTHRACENE	33	150	C	7.3 U	3.8 U	**51 J**	**52**
FLUORANTHENE	423	2300000	N	79	110	160	140
FLUORENE	77.4	2300000	N	8.6 U	32 J	24 J	7.6 J
INDENO(1,2,3-CD)PYRENE	17	1500	C	**150**	**100**	**78 J**	**91**
NAPHTHALENE	176	36000	C	12 J	23 J	8.5 J	14 J
PHENANTHRENE	204	1700000	N[6]	56 J	84	56	75
PYRENE	195	1700000	N	53 J	130	120	170
TOTAL PAHS	1610	NA		539	939	940.5	1087.8
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	1.6 U	1.6 U	1.4 U	1.3 U
AROCLOR-1254	59.8 [7]	1100	N[8]	2.3 U	2.4 U	2.1 U	2 U
AROCLOR-1260	59.8 [7]	2200	C	2.3 U	15 J	2.1 U	2 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	15	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.45 L	0.3 L	0.25 J	0.33 L
ARSENIC	9.8	3.9	C	**35.9**	**5.3**	3.3	3.3
BARIUM	130 [12]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	2.5	1.9	1.5	1.9
CADMIUM	0.99	70	N	**4.9 L**	**4.2 L**	**1.1**	**4.5**
CHROMIUM	43.4	120000	N[10]	**49.5**	**102**	**44.7**	**113**
COBALT	50	23	N	NA	NA	NA	NA
COPPER	31.6	3100	N	**31.7 L**	30.5 L	15.9	22.5
LEAD	35.8	400		31	33.9	13.7 J	29.8 K
MERCURY	0.18	23	N[11]	0.057	0.12	0.099	0.16
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	22.7	1500	N	**103 L**	**24.6 L**	15.4	20.1
SELENIUM	2	390	N	2 L	1.2 L	0.89	0.92
SILVER	1	390	N	0.56	**1.9**	**1.7**	**2.4**
THALLIUM	21.3 [13]	NA		20.3	0.16 K	0.12 J	0.11
VANADIUM	57 [12]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**4370**	102	51.2	114
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		0.31 U	0.32 U	0.27 U	NA
CADMIUM	NA	NA		0.012	0.025	0.0068	NA
CHROMIUM	NA	NA		0.19	0.48	0.18	NA
COPPER	NA	NA		0.11	0.11	0.064	NA
LEAD	NA	NA		0.065	0.087	0.033	NA
NICKEL	NA	NA		0.052	0.042	0.024 J	NA
SILVER	NA	NA		0.0019 J	0.0038	0.0055	NA
ZINC	NA	NA		0.48	0.7	0.42	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil[2][3]		SD-94 SD-94-04 20100817 NORMAL SD NORMAL SB 48 48	SD-95 SD-95-04 20100817 NORMAL SD NORMAL SB 48 48	SD-96 SD-96-04 20100819 NORMAL SD NORMAL SB 48 48	SD-97 SD-97-04 20100817 NORMAL SD NORMAL SB 48 48
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	2.7 U	**16 J**	**27**	3.9 U
ACENAPHTHYLENE	5.9	3400000	N[5]	3.2 U	**26 J**	**29**	4.7 U
ANTHRACENE	57.2	17000000	N	2.7 U	36	41	4 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	2.8 U	**205**	144	4.1 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	2.8 U	**205**	143	4.1 U
BENZO(A)ANTHRACENE	108	1500	C	3.5 U	92	81	5.1 U
BENZO(A)PYRENE	150	150	C	2.8 U	95	81	4.1 U
BENZO(B)FLUORANTHENE	NA	1500	C	4.4 U	170	150	6.4 U
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	2.8 U	120	81	4.1 U
BENZO(K)FLUORANTHENE	240	15000	C	5.7 U	7.1 U	2.1 U	8.2 U
CHRYSENE	166	150000	C	3.3 U	120	92	4.9 U
DIBENZO(A,H)ANTHRACENE	33	150	C	3.1 U	**71**	32	4.5 U
FLUORANTHENE	423	2300000	N	3 U	170	210	4.4 U
FLUORENE	77.4	2300000	N	3.7 U	40	24	5.4 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	2.9 U	**130**	**73**	4.2 U
NAPHTHALENE	176	36000	C	2.4 U	30 J	35	3.5 U
PHENANTHRENE	204	1700000	N[6]	4.4 U	120	94	6.5 U
PYRENE	195	1700000	N	2.8 U	190	**210**	4.1 U
TOTAL PAHS	1610	NA		0 U	1426	1260	0 U
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	1.3 U	1.7 U	1.2 U	1.9 U
AROCLOR-1254	59.8 [7]	1100	N[8]	2 U	2.5 U	1.9 U	2.9 U
AROCLOR-1260	59.8 [7]	2200	C	2 U	12 J	11 J	2.9 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	12	11	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.2 J	0.52 L	0.53 J	0.16 J
ARSENIC	9.8	3.9	C	**5.7**	**5.5**	**8.2 L**	**6.5**
BARIUM	130 [12]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	3.4	2.1	2 L	1.9
CADMIUM	0.99	70	N	0.32	**9.3**	**4.1 J**	0.35
CHROMIUM	43.4	120000	N[10]	27.7	**194**	**98.9 L**	34.1
COBALT	50	23	N	NA	NA	NA	NA
COPPER	31.6	3100	N	18.9	**32.9**	**52.3 L**	17.5
LEAD	35.8	400		5.7 J	**43.6 K**	24	13.7 J
MERCURY	0.18	23	N[11]	0.0091 U	**0.35**	0.098	0.036 J
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	22.7	1500	N	21.8	**26.4**	**24 L**	22.6
SELENIUM	2	390	N	0.97	1.3	0.94 L	1.1
SILVER	1	390	N	0.039 J	**4.7**	**2.3 L**	0.076 J
THALLIUM	21.3 [13]	NA		0.077 J	0.18	0.11 K	0.16 J
VANADIUM	57 [12]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	56.3	**162**	89.1 L	76.7
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-98 SD-98-04 20100819 NORMAL SD NORMAL SB 48 48	SD-99 SD-99-04 20100819 NORMAL SD NORMAL SB 48 48	SD-100 SD-100-04 20100819 NORMAL SD NORMAL SB 48 48	SD-101 SD-101-04 20100818 NORMAL SD NORMAL SB 48 48
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	**43**	3.8 U	5.1 U	2.2 J
ACENAPHTHYLENE	5.9	3400000	N[5]	**58**	4.5 U	6 U	2.4 J
ANTHRACENE	57.2	17000000	N	**80**	3.9 U	5.2 U	3.9 J
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	**319**	4 U	5.3 U	9.8
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	**319**	4 U	5.3 U	9.2
BENZO(A)ANTHRACENE	108	1500	C	**190**	5 U	6.6 U	7.2 J
BENZO(A)PYRENE	150	150	C	**170**	4 U	5.3 U	5 J
BENZO(B)FLUORANTHENE	NA	1500	C	310	6.2 U	8.3 U	8.5 J
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	170	3.9 U	5.2 U	22
BENZO(K)FLUORANTHENE	240	15000	C	5.5 U	8 U	11 U	2.3 U
CHRYSENE	166	150000	C	**190**	4.7 U	6.3 U	7.3 J
DIBENZO(A,H)ANTHRACENE	33	150	C	**83**	4.4 U	5.9 U	1.3 U
FLUORANTHENE	423	2300000	N	**430**	4.2 J	5.6 U	12
FLUORENE	77.4	2300000	N	42	5.2 U	6.9 U	3.2 J
INDENO(1,2,3-CD)PYRENE	17	1500	C	**160**	4.1 U	5.4 U	**26**
NAPHTHALENE	176	36000	C	68	3.4 U	4.5 U	4.7 J
PHENANTHRENE	204	1700000	N[6]	180	6.7 J	8.4 U	10 J
PYRENE	195	1700000	N	**370**	4 U	5.3 U	14
TOTAL PAHS	1610	NA		**2544**	10.9	0 U	128.4
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	1.3 U	1.9 U	1.2 U	1.4 U
AROCLOR-1254	59.8 [7]	1100	N[8]	2 U	2.8 U	1.8 U	2.1 U
AROCLOR-1260	59.8 [7]	2200	C	27	2.8 U	1.8 U	2.1 U
TOTAL AROCLOR	59.8	2200	C[9]	27	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.45 J	0.069 B	0.027 B	0.16 J
ARSENIC	9.8	3.9	C	**4.2 L**	**5.2**	2.2 L	3.7
BARIUM	130 [12]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	1.3 L	1.7	0.51 L	0.95
CADMIUM	0.99	70	N	**9 J**	0.34 L	0.11 J	**1.9**
CHROMIUM	43.4	120000	N[10]	**173 L**	25.8	10.2 L	**56.7**
COBALT	50	23	N	NA	NA	NA	NA
COPPER	31.6	3100	N	25.3 L	17.6 L	5.8 L	13.3
LEAD	35.8	400		**36.6**	11.5	4.4	19.8 K
MERCURY	0.18	23	N[11]	**0.39**	0.031 J	0.0087 U	0.055
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	22.7	1500	N	20.1 L	20.3 L	7.4 L	12.1
SELENIUM	2	390	N	0.92 L	1 L	0.42 L	0.64
SILVER	1	390	N	**2.9 L**	0.061 J	0.021 J	0.41
THALLIUM	21.3 [13]	NA		0.12 K	0.16 K	0.065 K	0.094
VANADIUM	57 [12]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**124 L**	70.9	26.4 L	57.7
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	5.7	NA	0.33 J
CADMIUM	NA	NA		NA	0.0014 J	NA	0.012
CHROMIUM	NA	NA		NA	0.038	NA	0.29
COPPER	NA	NA		NA	0.042	NA	0.053
LEAD	NA	NA		NA	0.019	NA	0.057
NICKEL	NA	NA		NA	0.049	NA	0.035
SILVER	NA	NA		NA	0.00032 U	NA	0.001 J
ZINC	NA	NA		NA	0.49	NA	0.46

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][3]	Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]		SD-102 SD-102-04 20100818 ORIG SD NORMAL SB 48 48	SD-102 SD-102-04-AVG 20100818 AVG SD NORMAL SB 48 48	SD-102 SD-102-04-D 20100818 DUP SD NORMAL SB 48 48	SD-104 SD-104-04 20100818 NORMAL SD NORMAL SB 48 48
SEMIVOLATILES (UG/KG)							
1-METHYLNAPHTHALENE	20.2 [4]	220000	C	NA	NA	NA	NA
2-METHYLNAPHTHALENE	20.2	310000	N	NA	NA	NA	NA
ACENAPHTHENE	6.7	3400000	N	4.3 U	4.3 U	4.3 U	1.5 U
ACENAPHTHYLENE	5.9	3400000	N[5]	**7.9 J**	5.225 J	5.1 U	1.7 U
ANTHRACENE	57.2	17000000	N	9 J	9.5 J	10 J	1.5 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA	150	C	40.0	30.5	21.0	1.5 U
BAP EQUIVALENT-POSITIVE RESULTS	NA	150	C	37.4	28.0	18.3	1.5 U
BENZO(A)ANTHRACENE	108	1500	C	18 J	21 J	24 J	1.9 U
BENZO(A)PYRENE	150	150	C	21 J	17.5 J	14 J	1.5 U
BENZO(B)FLUORANTHENE	NA	1500	C	46	31.5 J	17 J	2.4 U
BENZO(G,H,I)PERYLENE	170	1700000	N[6]	84	43.125	4.5 U	1.5 U
BENZO(K)FLUORANTHENE	240	15000	C	9 U	10.25 J	16 J	3.1 U
CHRYSENE	166	150000	C	32 J	21.5 J	11 J	1.8 U
DIBENZO(A,H)ANTHRACENE	33	150	C	5 U	5 U	5 U	1.7 U
FLUORANTHENE	423	2300000	N	40 J	33.5 J	27 J	1.6 U
FLUORENE	77.4	2300000	N	8.4 J	5.675 J	5.9 U	2 U
INDENO(1,2,3-CD)PYRENE	17	1500	C	**100 J**	**51.15 J**	4.6 UJ	1.6 U
NAPHTHALENE	176	36000	C	21 J	16.5 J	12 J	1.3 U
PHENANTHRENE	204	1700000	N[6]	38 J	30 J	22 J	2.4 J
PYRENE	195	1700000	N	41 J	34 J	27 J	1.5 U
TOTAL PAHS	1610	NA		466.3	330.425	180	2.4
PCBS (UG/KG)							
AROCLOR-1248	59.8 [7]	2200	C	2.1 U	2.1 U	2.1 U	1.8 U
AROCLOR-1254	59.8 [7]	1100	N[8]	3.2 U	3.2 U	3.2 U	2.7 U
AROCLOR-1260	59.8 [7]	2200	C	3.2 U	3.2 U	3.2 U	2.7 U
TOTAL AROCLOR	59.8	2200	C[9]	0 U	0 U	0 U	0 U
METALS (MG/KG)							
ANTIMONY	2	31	N	0.45 J	0.37 L	0.29 L	0.074 B
ARSENIC	9.8	3.9	C	**7.8**	**7.7**	**7.6**	**5.4**
BARIUM	130 [12]	15000	N	NA	NA	NA	NA
BERYLLIUM	NA	160	N	2 J	2 J	2	1.4 J
CADMIUM	0.99	70	N	**10**	**8.35**	**6.7**	0.32
CHROMIUM	43.4	120000	N[10]	**209 K**	**183.5 K**	**158**	27.7 K
COBALT	50	23	N	NA	NA	NA	NA
COPPER	31.6	3100	N	**32.8**	30.85	28.9	13.7
LEAD	35.8	400		**56.8**	**50.1 K**	**43.4 K**	11.6
MERCURY	0.18	23	N[11]	0.18	**0.195**	**0.21**	0.032 J
MOLYBDENUM	NA	390	N	NA	NA	NA	NA
NICKEL	22.7	1500	N	**30.4**	**29.5**	**28.6**	20
SELENIUM	2	390	N	1.4	1.35	1.3	0.89
SILVER	1	390	N	**2.3 J**	**2 J**	**1.7**	0.044 J
THALLIUM	21.3 [13]	NA		0.24	0.225	0.21	0.15
VANADIUM	57 [12]	390	N	NA	NA	NA	NA
ZINC	121	23000	N	**176**	**163.5**	**151**	67.7
MISCELLANEOUS PARAMETERS (%)							
PERCENT SOLIDS	NA	NA		NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON	NA	NA		NA	NA	NA	NA
AVS/SEM (UMOLES/G)							
ACID VOLATILE SULFIDE	NA	NA		NA	NA	NA	NA
CADMIUM	NA	NA		NA	NA	NA	NA
CHROMIUM	NA	NA		NA	NA	NA	NA
COPPER	NA	NA		NA	NA	NA	NA
LEAD	NA	NA		NA	NA	NA	NA
NICKEL	NA	NA		NA	NA	NA	NA
SILVER	NA	NA		NA	NA	NA	NA
ZINC	NA	NA		NA	NA	NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	**Ecological Screening Value (ESV)[1][3]**		**Adjusted Regional Screening Level (RSL) for Residential Soil [2][3]**		**SD-105 SD-105-04 20100818 NORMAL SD NORMAL SB 48 48**	**SD-106 SD-106-04 20100818 NORMAL SD NORMAL SB 48 48**
SEMIVOLATILES (UG/KG)						
1-METHYLNAPHTHALENE	20.2	[4]	220000	C	NA	NA
2-METHYLNAPHTHALENE	20.2		310000	N	NA	NA
ACENAPHTHENE	6.7		3400000	N	**16 J**	9 U
ACENAPHTHYLENE	5.9		3400000	N[5]	**26**	11 U
ANTHRACENE	57.2		17000000	N	**58**	9.1 U
BAP EQUIVALENT-1/2 NON-DETECTS	NA		150	C	**290**	9.3 U
BAP EQUIVALENT-POSITIVE RESULTS	NA		150	C	**290**	9.3 U
BENZO(A)ANTHRACENE	108		1500	C	**160**	12 U
BENZO(A)PYRENE	150		150	C	**160**	9.3 U
BENZO(B)FLUORANTHENE	NA		1500	C	290	15 U
BENZO(G,H,I)PERYLENE	170		1700000	N[6]	170	9.3 U
BENZO(K)FLUORANTHENE	240		15000	C	3.9 U	19 U
CHRYSENE	166		150000	C	**180**	11 U
DIBENZO(A,H)ANTHRACENE	33		150	C	**70**	10 U
FLUORANTHENE	423		2300000	N	270	10 U
FLUORENE	77.4		2300000	N	30	12 U
INDENO(1,2,3-CD)PYRENE	17		1500	C	**150**	9.6 U
NAPHTHALENE	176		36000	C	83	8 U
PHENANTHRENE	204		1700000	N[6]	190	15 U
PYRENE	195		1700000	N	**370**	9.4 U
TOTAL PAHS	1610		NA		**2223**	0 U
PCBS (UG/KG)						
AROCLOR-1248	59.8	[7]	2200	C	2.3 U	2.2 U
AROCLOR-1254	59.8	[7]	1100	N[8]	3.4 U	3.3 U
AROCLOR-1260	59.8	[7]	2200	C	**120**	3.3 U
TOTAL AROCLOR	59.8		2200	C[9]	**120**	0 U
METALS (MG/KG)						
ANTIMONY	2		31	N	0.96 J	0.075 B
ARSENIC	9.8		3.9	C	**8.3**	**6.1 L**
BARIUM	130	[12]	15000	N	NA	NA
BERYLLIUM	NA		160	N	1.9 J	1.6 L
CADMIUM	0.99		70	N	**33.6**	0.33 J
CHROMIUM	43.4		120000	N[10]	**597 K**	31.7 L
COBALT	50		23	N	NA	NA
COPPER	31.6		3100	N	**84.1**	15.8 L
LEAD	35.8		400		**163**	15
MERCURY	0.18		23	N[11]	**1.5**	0.034 J
MOLYBDENUM	NA		390	N	NA	NA
NICKEL	22.7		1500	N	**47.5**	**24.8 L**
SELENIUM	2		390	N	**2.1**	1.1 L
SILVER	1		390	N	**8.9 J**	0.062 J
THALLIUM	21.3	[13]	NA		0.3	0.2 K
VANADIUM	57	[12]	390	N	NA	NA
ZINC	121		23000	N	**436**	88 L
MISCELLANEOUS PARAMETERS (%)						
PERCENT SOLIDS	NA		NA		NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	NA		NA		NA	NA
AVS/SEM (UMOLES/G)						
ACID VOLATILE SULFIDE	NA		NA		NA	NA
CADMIUM	NA		NA		NA	NA
CHROMIUM	NA		NA		NA	NA
COPPER	NA		NA		NA	NA
LEAD	NA		NA		NA	NA
NICKEL	NA		NA		NA	NA
SILVER	NA		NA		NA	NA
ZINC	NA		NA		NA	NA

Table 4-8

Detected Concentrations Table for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Notes:
1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for freshwater sediment (USEPA, August 2006).
2 - Screening criteria for sediment are based on USEPA Regional Screening Levels (RSLs) for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment, the screening criteria presented in the table for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.
3 - Concentrations exceeding the ESV are shaded black with white font. Concentrations exceeding the adjusted RSL for residential soil are shaded blue with black font. Concentrations exceeding both the ESV and the RSL are shaded red with white font.
4 - Value for 2-methylnaphthalene used as a surrogate for 1-methylnaphthalene.
5 - The value for acenapthene is used as a surrogate for acenaphthylene.
6 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
7 - Value for Total PCBs used as a surrogate for Aroclor-1248, Aroclor-1254 and Aroclor-1260.
8 - One tenth the noncarcinogenic value is less than the carcinogenic value; the noncarcinogenic value is presented.
9 - The value is for high risk PCBs.
10 - The value is for trivalent chromium.
11 - The value is for mercuric chloride.
12 - NOAA Quick Reference Tables (Buchman, 2008); value is for marine sediment.
13 - Value is for marine sediment.

Definitions:
B = Blank contamination
C = Carcinogenic
J = Estimated
K = Biased high
L = Biased low
N = Non-carcinogenic
NA = Not applicable or not available
R = Rejected
SD = Sediment
SB = Subsurface sediment
U = Non-detected

Table 4-9

Occurrence and Distribution of Chemicals - Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV	Adjusted Regional Screening Level (RSL) For Residential Soil[5]	# Detects Greater Than Adjusted RSL For Residential Soil
Semivolatile Organics (ug/kg)												
ACENAPHTHENE	10/51	2.2 J	130 J	SD-76	0.47	870	27.7	160	6.7	9	3400000 N	0
ACENAPHTHYLENE	11/51	2.4 J	58	SD-98	0.56	870	22.1	164	5.87	9	3400000 N[6]	0
ANTHRACENE	14/51	0.9 J	110 K	SD-76	1.5	870	33.9	164	46.9	3	17000000 N	0
BAP EQUIVALENT-HALFND	15/51	9.8	810	SD-50	0.49	870	255	217	NA	0	150 C	8
BAP EQUIVALENT-POS	15/51	0.090	319	SD-98	0.49	870	117	176	NA	0	150 C	5
BENZO(A)ANTHRACENE	12/51	7.2 J	190	SD-98	0.61	870	83.4	179	74.8	5	1500 C	0
BENZO(A)PYRENE	12/51	5 J	170	SD-98	0.49	870	78.6	178	88.8	4	150 C	3
BENZO(B)FLUORANTHENE	13/51	8.5 J	310	SD-98	0.76	870	135	187	130 [12]	7	1500 C	0
BENZO(G,H,I)PERYLENE	11/51	22	170	SD-98, SD-105	0.48	870	97.6	180	67 [12]	9	1700000 N[7]	0
BENZO(K)FLUORANTHENE	3/51	10.25 J	200 J	SD-50	0.98	870	86.4	158	70 [12]	1	15000 C	0
CHRYSENE	15/51	7.3 J	220 J	SD-50	0.58	870	102	172	108	6	150000 C	0
DIBENZO(A,H)ANTHRACENE	7/51	32	83	SD-98	0.54	870	59.0	168	6.22	7	150 C	0
FLUORANTHENE	18/51	3.1 J	430	SD-98	1.6	870	157	191	113	10	2300000 N	0
FLUORENE	13/51	1.2 J	180 J	SD-76	2	870	31.4	163	21.2	7	2300000 N	0
INDENO(1,2,3-CD)PYRENE	12/51	26	160	SD-98	0.5	870	101	183	17	12	1500 C	0
NAPHTHALENE	11/51	4.7 J	83	SD-105	0.42	870	28.0	165	34.6	3	36000 C	0
PHENANTHRENE	19/51	2.4 J	700	SD-76	4.4	870	110	183	86.7	8	1700000 N[7]	0
PYRENE	16/51	3.5 J	480 J	SD-50	1.5	870	191	202	153	9	1700000 N	0
TOTAL PAHS	20/51	2.4	2544	SD-98	0	0	894	351	1610	4	NA	0
PCBs (ug/kg)												
AROCLOR-1260	6/51	11 J	120	SD-105	1.7	44	44.3	13.8	40 [8]	2	2200 C	0
TOTAL AROCLOR	6/51	11	120	SD-105	0	0	44.3	5.2	40	2	2200 C[9]	0
Metals (mg/kg)												
ANTIMONY	16/51	0.16 J	23.9 L	SD-76	0.027	0.27	1.8	0.63	0.63 [12]	2	31 N	0
ARSENIC	50/51	0.55	35.9	SD-88	0.75	0.75	5.3	5.2	7.24	10	3.9 C	28
BARIUM	31/31	4.4	54.1	SD-76	--	--	22.2	22.2	130 [12]	0	15000 N	0
BERYLLIUM	51/51	0.17	5.6	SD-67	--	--	1.7	1.7	NA	0	160 N	0
CADMIUM	35/51	0.017 J	33.6	SD-105	0.0069	0.14	3.5	2.4	0.68	17	70 N	0
CHROMIUM	51/51	6 J	597 K	SD-105	--	--	59.7	59.7	43.4	16	120000 N[10]	0
COBALT	31/31	0.76	70.8 J	SD-68	--	--	12.2	12.2	10 [12]	14	23 N	2
COPPER	51/51	1.6	84.1	SD-105	--	--	18.9	18.9	18.7	17	3100 N	0
LEAD	51/51	1.5	163	SD-105	--	--	18.9	18.9	30.2	10	400	0
MERCURY	35/51	0.0079	1.5	SD-105	0.0068	0.057	0.13	0.10	0.13	9	23 N[11]	0
MOLYBDENUM	22/31	0.052	2.4 J	SD-64	0.051	1	1.0	0.73	NA	0	390 N	0
NICKEL	51/51	2.7	103 L	SD-88	--	--	21.7	21.7	15.9	31	1500 N	0
SELENIUM	40/51	0.42 L	2.1	SD-105	0.37	0.86	1.0	0.80	1 [12]	11	390 N	0
SILVER	30/51	0.021 J	9.1	SD-76	0.072	0.17	1.5	0.91	0.73	13	390 N	0
THALLIUM	20/51	0.064 J	20.3	SD-88	0.2	0.46	1.2	0.54	NA	0	NA	0
VANADIUM	31/31	6.4 J	48.1	SD-58	--	--	30.0	30.0	57 [12]	0	390 N	0
ZINC	51/51	3.8	4370	SD-88	--	--	159	159	121	9	23000 N	0
Miscellaneous Parameters (%)												
PERCENT SOLIDS	23/23	38	84	SD-48, SD-75	--	--	64.9	64.9	NA	0	NA	0
Miscellaneous Parameters (mg/kg)												
TOTAL ORGANIC CARBON	8/8	1400	30000	SD-44	--	--	11393	11393	NA	0	NA	0
AVS/SEM (umoles/g)												
ACID VOLATILE SULFIDE	2/7	0.33 J	5.7	SD-99	0.26	0.38	3.0	0.97	NA	0	NA	0
CADMIUM	7/7	0.0006 J	0.035	SD-87	--	--	0.013	0.013	NA	0	NA	0
CHROMIUM	7/7	0.0057 J	0.52	SD-87	--	--	0.24	0.24	NA	0	NA	0
COPPER	7/7	0.013 J	0.26	SD-87	--	--	0.093	0.093	NA	0	NA	0
LEAD	7/7	0.0071 J	0.2	SD-87	--	--	0.067	0.067	NA	0	NA	0
NICKEL	7/7	0.024 J	0.13	SD-87	--	--	0.052	0.052	NA	0	NA	0
SILVER	5/7	0.001 J	0.0055	SD-90	0.00022	0.00032	0.0029	0.0021	NA	0	NA	0
ZINC	7/7	0.24 J	1.2	SD-87	--	--	0.57	0.57	NA	0	NA	0

Notes:

1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection.

2 - Average of positive analytical results only.

3 - Average of all analytical results are calculated using half of the detection limit for nondetects.

4 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for freshwater sediment (USEPA, August 2006) and marine sediment (USEPA, July 2006). Lower of the freshwater and marine screening levels is presented.

5 - Screening criteria for sediment are based on USEPA Regional Screening Levels (RSLs) for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment, the screening criteria presented in the table for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.
6 - The value for acenapthene is used as a surrogate for acenaphthylene.
7 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
8 - Value for Total PCBs used as a surrogate for Aroclor-1260.
9 - The value is for high risk PCBs.
10 - The value is for trivalent chromium.
11 - The value is for mercuric chloride.
12 - NOAA Quick Reference Tables (Buchman, 2008).

Definitions:
C = Carcinogenic
J = Estimated
K = Biased high
L = Biased low
N = Non-carcinogenic
NA = Not applicable or not available

Associated Samples:

SD-100-04	SD-49-04	SD-64-04	SD-85-04
SD-101-04	SD-50-04	SD-65-04	SD-86-04
SD-102-04	SD-51-04	SD-66-04	SD-87-04
SD-102-04-D	SD-53-04	SD-67-04	SD-88-04
SD-104-04	SD-54-04	SD-68-04	SD-89-04
SD-105-04	SD-56-04	SD-70-04	SD-90-04
SD-106-04	SD-56-04-D	SD-71-04	SD-93-04
SD-43-04	SD-57-04	SD-73-04	SD-94-04
SD-44-04	SD-58-04	SD-75-04	SD-95-04
SD-45-04	SD-59-04	SD-76-04	SD-96-04
SD-46-04	SD-60-04	SD-77-04	SD-97-04
SD-47-04	SD-61-04	SD-77-04-D	SD-98-04
SD-47-04-D	SD-62-04	SD-79-02	SD-99-04
SD-48-04	SD-63-04	SD-83-04	

TABLE 4-10

CONCENTRATIONS OF ORGANIC COMPOUNDS DETECTED IN SOIL AND SEDIMENT REPORTED IN LITERATURE
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Location	Aroclor-1260	PCBs	PAHs	DDT	DDD	DDE	Chlordane	Acenapth-ene	Acenaphth-ylene	Anthra-cene	Fluorene	2-Methyl-naphthalene	Naptha-lene	Phen-anthrene	Benzo(a)-anthran-cene	Benzo(a)-pyrene
Mid-Atlantic			0-240,620 (7223)					0-5120 (113)	0-803 (24)	0-6010 (186)	0-2320 (89)	0-489 (73)	0-1120 (103)	0-12800 (534)	0-29100 (627)	0-6010 (307)
Schuykill River, PA		<100-2400		<10-100			0-70									
Chesapeake/ Delaware Bays		1.4-679	125-34,843	1-43			0.2-17									
Upper Chesapeake Bay		1-450	7-530	4.9-21.7			0.6-8.1									
Middle Chesapeake Bay		1-100	4-83	0.2-6.2			0.1-10									
Lower Chesapeake Bay		7-96	30-111	0.2-4.8			0.2-2.4									
Baltimore Harbor		4-80,000														
Patapsco River		32.5-152						41.6-391	11.8-673	29.6-481	16.4-195	35.9-679	80.8-1374	85.8-1156	53.3-631	60.6-929
Bear Creek		8.2-326						6.4-79.3	14.6-235	9.7-359	3.7-139	32.1-409	30.8-1922	23.5-673	12.2-949	16.1-1284
Curtis Creek		188-551						58.2-128	81.2-237	184-290	85.4-166	224-522	217-742	487-798	297-498	404-599
Inner Harbor		51.5-2148						34.4-3742	18.7-1788	105-710	38.5-272	94.9-1507	123-884	358-2153	153-2015	137-2479
Back River		177-303						32.6-39.6	57.7-80.0	85.7-139	46.7-60.9	70.4-193	75.0-182	295-626	112-635	122-863
Sparrow Point Shipyard in Baltimore Harbor/ Patapsco River		22.6-202		7.9-8.1	9	8.7		42-340	110-220	200-600	85-400		50-790	24-1600	39-1100	46-950
Washington DC		68-2203	400-2900	7-160			5-153									

TABLE 4-10

CONCENTRATIONS OF ORGANIC COMPOUNDS DETECTED IN SOIL AND SEDIMENT REPORTED IN LITERATURE
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Location	Benzo(b)-fluoranthene	Benzo(g,h,i) perylene	Benzo(k)-fluoranthene	Chyrsene	Dibenzo-(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene	Pyrene	Comments	Source
Mid-Atlantic				0-18,400 (549)	0-5740 (114)	0-42,200 (1164)		0-31,800 (994)	None.	Paul et al. (2002)
Schuykill River, PA									None.	Lyman et al. (1987)[1]
Chesapeake/ Delaware Bays									None.	Gottholm et al. (1994)
Upper Chesapeake Bay									None.	NOAA (1991)[1]
Middle Chesapeake Bay									None.	NOAA (1991)[1]
Lower Chesapeake Bay									None.	NOAA (1991)[1]
Baltimore Harbor									None.	Lyman et al. (1987)[1]
Patapsco River	62.4-1136		64.8-895	50.4-712 [3]	3.3-74.2	95.7-1306		79.0-1232	High levels of contaminants in Baltimore Harbor/ Patapsco River	McGee et al. (1999)[2]
Bear Creek	20.2-1605		14.0-1041	14.6-971 [3]	1.9-167	20.0-1528		20.6-1327		
Curtis Creek	467-705		339-522	347-623 [3]	38.7-56.5	598-1237		617-1118		
Inner Harbor	116-2963		102-2096	143-2022 [3]	9.9-261	355-4527		395-4323		
Back River	180.6-1031		130-789	132-885 [3]	17.4-83.6	257-1659		254-1548		
Sparrow Point Shipyard in Baltimore Harbor/ Patapsco River	51-960	38-570	21-370	35-1100	110-150	64-2600	42-730	56-1500	High level of contaminants in Baltimore Harbor/ Patapsco River Basin. Dredging of sediments anticipated at site.	Kodish (2007)
Washington DC									Potomac, Anacostia rivers, etc	Wade, et al. (1994)

Notes:
Units: µg/kg
Blank cell: No value available
ND: Not detected
Mean values are presented in parentheses.

Footnotes:
1 - Values obtained from Wade et al (1994).
2 - Sectioned into separate areas by reviewer based on sampling location map.
3 - Chrysene + Triphenylene

Acronyms:
COPC = Chemical of Potential Concern
NOAA = National Oceanic and Atmospheric Administration

References:

Gottholm, B.W., M.R. Harmon, D.D. Turgeon, and S. Frew. 1994. Assessment of Chemical Contaminants in the Chesapeake and Delaware Bays. NOAA National Status and Trends Program.

Kodish, S. 2007. Comparison between Sparrows Point Shipyard's Contaminated Sediment and NOAA Sediment Screening Values. Environmental Integrity Project.

Lyman, W.J., et al. 1987. An overview of sediment quality in the United States, final report. EPA-905/9-88-002. USEPA, Office of Water Regulations and Standards, Washington D.C.

McGee, B.L., et al. 1999. Assessment of sediment contamination, actue toxicity, and population viability of the estuarine amphipod *Letocheirus plumolosus* in Baltimore Harbor, Maryland, USA. Environmental Toxicology and Chemistry 18(10): 2151-2160.

NOAA (National Oceanic and Atmospheric Administration). 1991. National Status and Trends Program. Second summary of data on chemical contaminats in sediments from the National Status and Trends Program. NOAA Tech. Mem. NOS OMA 59, US Department of Commerce, National Ocean Service, Rockville, Maryland

Paul, J.F., et al. 2002. Landscape metrics and estuarine sediment contamination in the Mid-Atlantic and Southern New England Regions. J. Environ. Qual. 31:836-845.

Wade, et al. 1994. Tidal River Sediments in the Washington, D.C. Area. II. Distribution and Sources of Organic Contaminants. Estuaries 17(2): 321-333.

TABLE 4-11

CONCENTRATIONS OF INORGANIC COMPOUNDS IN SOIL AND SEDIMENT REPORTED IN LITERATURE
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Location	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Comments	Source
Mid-Atlantic		0.7-36.2 (9.8)	0.0-6.6 (0.8)	2.4-348 (71.6)	1.1-680 (66.2)	0.0-323 (60.7)		0.0-2.0 (0.3)	0.0-136 (24.9)		0.0-9.7 (0.8)			5.0-797 (169.2)	None.	Paul et al. (2002)
Schuykill River, PA			ND	10-880	10-3,000	20-19,000		<0.01-0.9						30-1,400	None.	Lyman et al. (1987)[1]
Chesapeake/ Delaware Bays			0.2-3	53-561	18-269	28-190		0.04-1.3			0.1-2			80-689	None.	Gottholm et al. (1994)
Upper Chesapeake Bay			0.25-0.96	108-280	56-79	18-80		0.2-0.5						93-380	None.	NOAA (1991)[1]
Middle Chesapeake Bay			0.09-0.40	77-647	20-75	8.5-27		0.1-0.4						57-115	None.	NOAA (1991)[1]
Lower Chesapeake Bay			0.09-0.60	90-237	15-30	11-23		0.1-0.2						42-86	None.	NOAA (1991)[1]
Baltimore Harbor			<1-650	6-5,750	60-2,930	130-13,890		0.1-10						350-6,040	None.	Lyman et al. (1987)[1]
Patapsco River			0.2-0.4	12.2-524.2	9.5-174.9	5.1-260.4	1154-3381	0.009-0.5	16.8-85.0					78.9-1015.7	High levels of contaminants in Baltimore Harbor/ Patapsco River	McGee et al. (1999)[2]
Bear Creek			5.3-17.6	34.3-1831.1	8.6-331.3	1.0-204.9	310-1210	0.04-0.6	3.2-85.9					40.0-2105.4		
Curtis Creek			0.5-1.7	226.5-414.0	192.1-311.2	127.2-258	488-1934		59.1-80.1	0.2-2.3				505.7-678.8		
Inner Harbor			0.9-3.5	129-891.7	77.8-396	42.5-348.6	412-1195	0.02-1.3	15.2-85.9					254.4-722.7		
Back River			0.3-5.3	238.1-405.0	140-229.5	98-236.7	654-2131	263.5-965.6	63.1-157.7					393.2-899.7		
Sparrow Point Shipyard in Baltimore Harbor/ Patapsco River	7.3E+5 - 9.6E+5	4.7E+6 – 5.7E+7	1.5E+6 – 1.6E+6	3.2E+7 – 3.3E+8	1.6E+7 – 2.0E+8	1.8E+7 – 2.0E+8		3.9E+4 – 3.2E+5	1.1E+7 – 4.4E+7	4.0E+5 – 6.2E+6				5.8E+7 – 6.7E+8	High level of contaminants in Baltimore Harbor/ Patapsco River Basin. Dredging of sediments anticipated at site.	Kodish (2007)
68th Street Dump Gunpowder-Patapsco River Basin			ND	9.2-190	7.0-190	30-590		0.55-0.69	5.7-110					20-650	Herring run and tributaries; NOAA habitats of concern; recreation fisheries	NOAA (2002)
Potomac Estuary			0.2-1.3	39-62	29-43	15-73		0.07-0.3						134-270	None.	MDE (unpublished)[1]
Washington DC			0.45-3.2	51-155	33-126	32-409		0.2-1.0						137-512	Potomac, Anacostia rivers, etc	Velinsky (1994)

TABLE 4-11

CONCENTRATIONS OF INORGANIC COMPOUNDS IN SOIL AND SEDIMENT REPORTED IN LITERATURE
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Notes:
Units: mg/kg
Blank cell: No value available
ND: Not detected
Mean values are presented in parentheses.

Footnotes:
1 - Values obtained from Velinsky (1994).
2 - Sectioned into separate areas by reviewer based on sampling location map.

Acronyms:
COPC = Chemical of Potential Concern
MDE = Maryland Department of the Environment
NOAA = National Oceanic and Atmospheric Administration

References:

Gottholm, B.W., M.R. Harmon, D.D. Turgeon, and S. Frew. 1994. Assessment of Chemical Contaminants in the Chesapeake and Delaware Bays. NOAA National Status and Trends Program.

Kodish, S. 2007. Comparison between Sparrows Point Shipyard's Contaminated Sediment and NOAA Sediment Screening Values. Environmental Integrity Project.

Lyman, W.J., et al. 1987. An overview of sediment quality in the United States, final report. EPA-905/9-88-002. USEPA, Office of Water Regulations and Standards, Washington D.C.

McGee, B.L., et al. 1999. Assessment of sediment contamination, actue toxicity, and population viability of the estuarine amphipod *Letocheirus plumolosus* in Baltimore Harbor, Maryland, USA. Environmental Toxicology and Chemistry 18(10): 2151-2160.

NOAA (National Oceanic and Atmospheric Administration). 1991. National Status and Trends Program. Second summary of data on chemical contaminats in sediments from the National Status and Trends Program. NOAA Tech. Mem. NOS OMA 59, US Department of Commerce, National Ocean Service, Rockville, Maryland

NOAA. 2002. 68th Street Dump/Industrial Enterprsies. http://response.restoration.noaa.gov/book_shelf/276_68thDump.pdf

Paul, J.F., et al. 2002. Landscape metrics and estuarine sediment contamination in the Mid-Atlantic and Southern New England Regions. J. Environ. Qual. 31:836-845.

Velinsky, D.J. 1994. Tidal River Sediments in the Washington, D.C. Area. I. Distribution and Sources of Trace Metals. Estuaries 17(2): 305-320.

Table 4-12

Detected Concentrations Table for Ex-Situ Pore Water, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION CORRESPONDING SEDIMENT LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX TOP DEPTH BOTTOM DEPTH	Ecological Screening Value (ESV)[1][2]	Adjusted USEPA Regional Screening Level (RSL) for Tap Water[3][4]	USEPA Maximum Contaminant Level (MCL)[4][5]	PW-01 SD-85 PW-01_0-6 20100907 NORMAL PW NORMAL NA 0 6	PW-02 SD-87 PW-02_0-6 20100902 NORMAL PW NORMAL NA 0 6	PW-03 SD-88 PW-03_0-6 20100907 NORMAL PW NORMAL NA 0 6	PW-04 SD-89 PW-04_0-6 20100908 NORMAL PW NORMAL NA 0 6	PW-05 SD-90 PW-05_0-6 20100909 NORMAL PW NORMAL NA 0 6	PW-06 SD-99 PW-06_0-6 20100903 NORMAL PW NORMAL NA 0 6	PW-07 SD-101 PW-07_0-6 20100903 NORMAL PW NORMAL NA 0 6
POLYCYCLIC AROMATIC HYDROCARBONS (UG/L)[10]										
ACENAPHTHENE	5.8	2,200 N	NA	NA	NA	0.11 J	0.036 UJ	0.17 J	NA	NA
ANTHRACENE	0.012	11,000 N	NA	NA	NA	**0.052 J**	0.038 UJ	0.038 UJ	NA	NA
BENZO(A)ANTHRACENE	0.018	0.29 C	NA	NA	NA	0.037 UJ	0.037 UJ	0.037 UJ	NA	NA
BENZO(A)PYRENE	0.015	0.029 C	0.2	NA	NA	0.034 UJ	0.034 UJ	0.034 UJ	NA	NA
BENZO(B)FLUORANTHENE	0.6774 [11]	0.29 C	NA	NA	NA	0.039 UJ	0.039 UJ	0.039 UJ	NA	NA
BENZO(G,H,I)PERYLENE	0.4391 [11]	1,100 N[6]	NA	NA	NA	0.038 UJ	0.038 UJ	0.038 UJ	NA	NA
BENZO(K)FLUORANTHENE	0.6415 [11]	2.9 C	NA	NA	NA	0.14 UJ	0.14 UJ	0.14 UJ	NA	NA
CHRYSENE	2.042 [11]	29 C	NA	NA	NA	0.035 UJ	0.035 UJ	0.035 UJ	NA	NA
FLUORANTHENE	0.04	1,500 N	NA	NA	NA	**0.91 J**	0.04 UJ	**0.97 J**	NA	NA
FLUORENE	2.5	1,500 N	NA	NA	NA	0.054 UJ	0.13 J	0.054 UJ	NA	NA
INDENO(1,2,3-CD)PYRENE	0.275 [11]	0.29 C	NA	NA	NA	0.05 UJ	0.05 UJ	0.05 UJ	NA	NA
NAPHTHALENE	1.1	1.4 C	NA	NA	NA	0.035 UJ	0.074 J	0.035 UJ	NA	NA
PHENANTHRENE	0.4	1,100 N[6]	NA	NA	NA	**0.55 J**	**0.44 J**	**0.47 J**	NA	NA
PYRENE	0.025	1,100 N	NA	NA	NA	**0.16 J**	0.039 UJ	**0.27 J**	NA	NA
PCBS (UG/L)[10]										
AROCLOR-1260	0.000074 [7]	0.34 C	0.5	NA	NA	**0.49 J**	**0.18 J**	**0.61 J**	NA	NA
DISSOLVED METALS (UG/L)[10]										
ANTIMONY	30	15 N	6	0.74 B	4.6	2.2	0.47 B	1.9 J	2	0.29 B
ARSENIC	5	0.45 C	10	1.2 K	**10.9**	**23.4**	**6.2**	**12.6**	**14.8**	**6.7**
CADMIUM	0.12	18 N	5	**10**	**0.13 J**	**0.23 J**	**0.13 J**	0.11 U	0.11 U	0.11 U
CHROMIUM	57.5 [8]	55,000 N[9]	100	6.3	13.7	11.9	10	13	8.5	10.3
COPPER	3.1	1,500 N	1300	**4.7**	1.3 J	1.2 J	0.98 J	1.2 J	2.2	1.1 J
LEAD	2.5	NA	15	1.2 J	1.6 J	0.54 J	0.1 B	1 J	0.7 J	0.21 B
NICKEL	8.2	730 N	NA	6.8	1.2	0.97 B	1.7	1	1.1	0.7 B
SELENIUM	1	180 N	50	2.6 B	**4.8 J**	**4.9 J**	**5.1 J**	**4.6 J**	**4.4 J**	**4.9 J**
ZINC	81	11,000 N	NA	38.9	3.9 J	4.5 J	4.7 J	3.8 J	6.5	2.4 J
MISCELLANEOUS PARAMETERS (MG/L)[10]										
DISSOLVED ORGANIC CARBON	NA	NA	NA	12.5	9.6	8.3	12.2	8.3	6.2	14.3
HARDNESS	NA	NA	NA	540	715	619	724	579	643	669
MISCELLANEOUS PARAMETERS (S.U.)[10]										
PH	NA	NA	NA	7.5	8.1	7.8	7.3	7.8	8.1	7.8

Notes:
1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
2 - Concentrations exceeding the ESV are shaded black with white font.
3 - Screening criteria for pore water are based on USEPA Regional Screening Levels (RSLs) for tap water (November, 2010). To account for the anticipated reduced exposure to pore water, the screening criteria presented in the table for pore water are 10 times those typically used for tap water (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the pore water are set at 10 times the RSL for tap water. The screening criteria for non-carcinogens in the pore water are set equal to the RSL for tap water.
4 - Presented for informational purposes only.
5 - 2009 Edition of the Drinking Water Standards and Health Advisories (USEPA, October 2009).
6 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
7 - The value for total PCBs is used as a surrogate for Aroclor-1260.
8 - Value is for total chromium.
9 - The value is for trivalent chromium.
10 - The chemicals listed are those detected at least once in the pore water samples collected at the three depth intervals (0-6", 6-18", 18-30").
11 - USEPA Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures (USEPA, November 2003).

Definitions:
B = Blank contamination
J = Estimated
K = Biased high
NA = Not Applicable or Not Available
PW = Pore water
U = Non-detected

Table 4-13

Occurrence and Distribution of Chemicals - Ex-Situ Pore Water, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]
PAHs (ug/L)										
ACENAPHTHENE	2/3	0.11 J	0.17 J	PW-05	0.036	0.036	0.14	0.099	5.8	0
ANTHRACENE	1/3	0.052 J	0.052 J	PW-03	0.038	0.038	0.052	0.030	0.012	1
FLUORANTHENE	2/3	0.91 J	0.97 J	PW-05	0.04	0.04	0.94	0.63	0.04	2
FLUORENE	1/3	0.13 J	0.13 J	PW-04	0.054	0.054	0.13	0.061	2.5	0
NAPHTHALENE	1/3	0.074 J	0.074 J	PW-04	0.035	0.035	0.074	0.036	1.1	0
PHENANTHRENE	3/3	0.44 J	0.55 J	PW-03	--	--	0.49	0.49	0.4	3
PYRENE	2/3	0.16 J	0.27 J	PW-05	0.039	0.039	0.22	0.15	0.025	2
PCBs (ug/L)										
AROCLOR-1260	3/3	0.18 J	0.61 J	PW-05	--	--	0.43	0.43	0.000074[5]	3
Filtered Metals (ug/L)										
ANTIMONY	4/7	1.9 J	4.6	PW-02	0.29	0.74	2.7	1.6	30	0
ARSENIC	7/7	1.2 K	23.4	PW-03	--	--	10.8	10.8	5	6
CADMIUM	4/7	0.13 J	10	PW-01	0.11	0.11	2.6	1.5	0.12	4
CHROMIUM	7/7	6.3	13.7	PW-02	--	--	10.5	10.5	57.5[6]	0
COPPER	7/7	0.98 J	4.7	PW-01	--	--	1.8	1.8	3.1	1
LEAD	5/7	0.54 J	1.6 J	PW-02	0.1	0.21	1.0	0.74	2.5	0
NICKEL	5/7	1	6.8	PW-01	0.7	0.97	2.4	1.8	8.2	0
SELENIUM	6/7	4.4 J	5.1 J	PW-04	2.6	2.6	4.8	4.3	1	6
ZINC	7/7	2.4 J	38.9	PW-01	--	--	9.2	9.2	81	0
Miscellaneous Parameters (mg/L)										
DISSOLVED ORGANIC CARBON	7/7	6.2	14.3	PW-07	--	--	10.2	10.2	NA	0
HARDNESS	7/7	540	724	PW-04	--	--	641	641	NA	0
Miscellaneous Parameters (S.U.)										
PH	7/7	7.3	8.1	PW-02, PW-06	--	--	7.8	7.8	NA	0

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection and exceedances.
2 - Average of positive analytical results only.
3 - Average of all analytical results are calculated using half of the detection limit for nondetects.
4 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
5 - Value for Total PCBs used as a surrogate for Aroclor-1260.
6 - Value is for total chromium.

Definitions:
J = Estimated
K = Biased high
NA = Not applicable or not available

Associated Samples:
PW-01_0-6
PW-02_0-6
PW-03_0-6
PW-04_0-6
PW-05_0-6
PW-06_0-6
PW-07_0-6

Table 4-14

Detected Concentrations Table for Ex-Situ Pore Water, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][2]	Adjusted USEPA Regional Screening Level (RSL) for Tap Water[3][4]	USEPA Maximum Contaminant Level (MCL)[4][5]	PW-01	PW-02	PW-03	PW-04	PW-05	PW-06	PW-07
CORRESPONDING SEDIMENT LOCATION				SD-85	SD-87	SD-88	SD-89	SD-90	SD-99	SD-101
SAMPLE ID				PW-01_6-18	PW-02_6-18	PW-03_6-18	PW-04_6-18	PW-05_6-18	PW-06_6-18	PW-07_6-18
SAMPLE DATE				20100907	20100902	20100907	20100908	20100909	20100903	20100903
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				PW	PW	PW	PW	PW	PW	PW
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				NA	NA	NA	NA	NA	NA	NA
TOP DEPTH				6	6	6	6	6	6	6
BOTTOM DEPTH				18	18	18	18	18	18	18
POLYCYCLIC AROMATIC HYDROCARBONS (UG/L)[10]										
ACENAPHTHENE	5.8	2,200 N	NA	NA	NA	0.036 UJ	0.11 J	0.44 J	NA	NA
ANTHRACENE	0.012	11,000 N	NA	NA	NA	0.038 UJ	0.038 UJ	**0.17 J**	NA	NA
BENZO(A)ANTHRACENE	0.018	0.29 C	NA	NA	NA	0.037 UJ	0.037 UJ	**0.48 J**	NA	NA
BENZO(A)PYRENE	0.015	0.029 C	0.2	NA	NA	0.034 UJ	0.034 UJ	**0.23 J**	NA	NA
BENZO(B)FLUORANTHENE	0.6774 [11]	0.29 C	NA	NA	NA	0.039 UJ	0.039 UJ	**2.6 J**	NA	NA
BENZO(G,H,I)PERYLENE	0.4391 [11]	1,100 N[6]	NA	NA	NA	0.038 UJ	0.038 UJ	**0.82 J**	NA	NA
BENZO(K)FLUORANTHENE	0.6415 [11]	2.9 C	NA	NA	NA	0.14 UJ	0.14 UJ	**0.98 J**	NA	NA
CHRYSENE	2.042 [11]	29 C	NA	NA	NA	0.035 UJ	0.035 UJ	0.39 J	NA	NA
FLUORANTHENE	0.04	1,500 N	NA	NA	NA	**0.85 J**	0.04 UJ	**2.1 J**	NA	NA
FLUORENE	2.5	1,500 N	NA	NA	NA	0.11 J	0.16 J	0.24 J	NA	NA
INDENO(1,2,3-CD)PYRENE	0.275 [11]	0.29 C	NA	NA	NA	0.05 UJ	0.05 UJ	**0.98 J**	NA	NA
NAPHTHALENE	1.1	1.4 C	NA	NA	NA	0.035 UJ	0.035 UJ	0.035 UJ	NA	NA
PHENANTHRENE	0.4	1,100 N[6]	NA	NA	NA	0.34 J	**0.61 J**	**0.8 J**	NA	NA
PYRENE	0.025	1,100 N	NA	NA	NA	0.039 UJ	0.039 UJ	**1.4 J**	NA	NA
PCBS (UG/L)[10]										
AROCLOR-1260	0.000074 [7]	0.34 C	0.5	NA	NA	**0.13 J**	**0.1 J**	**0.55 J**	NA	NA
DISSOLVED METALS (UG/L)[10]										
ANTIMONY	30	15 N	6	3.6	13.1	1.2 B	0.41 B	3.7	2.3	0.34 B
ARSENIC	5	0.45 C	10	2.7	**11.3**	**10.2**	**5.3**	**9.5**	**18.8**	3.4
CADMIUM	0.12	18 N	5	**23**	**0.14 J**	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
CHROMIUM	57.5 [8]	55,000 N[9]	100	16.1	14.8	13.7	13.6	12.5	7.8	13.4
COPPER	3.1	1,500 N	1300	**8.3**	1.7 J	1.3 J	0.75 J	0.78 J	2	0.81 J
LEAD	2.5	NA	15	**4.5**	0.63 J	0.26 J	0.098 B	0.65 J	0.48 J	0.27 J
NICKEL	8.2	730 N	NA	2.9	2.3	1	1.3	0.96 B	1.5	0.59 B
SELENIUM	1	180 N	50	2.2 B	**4.9 J**	**5.4 J**	**5.4 J**	**4.4 J**	**5.2 J**	**5.8 J**
ZINC	81	11,000 N	NA	47.5	4.7 J	3.7 J	2.6 J	3.5 J	4.3 J	1.7 J
MISCELLANEOUS PARAMETERS (MG/L)[10]										
DISSOLVED ORGANIC CARBON	NA	NA	NA	13.1	8.6	10.5	15.8	9.4	8.5	9.7
HARDNESS	NA	NA	NA	328	788	627	767	524	610	686
MISCELLANEOUS PARAMETERS (S.U.)[10]										
PH	NA	NA	NA	7.8	8.1	7.4	7.1	7.6	7.9	7.7

Notes:
1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
2 - Concentrations exceeding the ESV are shaded black with white font.
3 - Screening criteria for pore water are based on USEPA Regional Screening Levels (RSLs) for tap water (November, 2010). To account for the anticipated reduced exposure to pore water, the screening criteria presented in the table for pore water are 10 times those typically used for tap water (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the pore water are set at 10 times the RSL for tap water. The screening criteria for non-carcinogens in the pore water are set equal to the RSL for tap water.
4 - Presented for informational purposes only.
5 - 2009 Edition of the Drinking Water Standards and Health Advisories (USEPA, October 2009).
6 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
7 - The value for total PCBs is used as a surrogate for Aroclor-1260.
8 - Value is for total chromium.
9 - The value is for trivalent chromium.
10 - The chemicals listed are those detected at least once in the pore water samples collected at the three depth intervals (0-6", 6-18", 18-30").
11 - USEPA Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures (USEPA, November 2003).

Definitions:
B = Blank contamination
J = Estimated
NA = Not Applicable or Not Available
PW = Pore water
U = Non-detected

Table 4-15

Occurrence and Distribution of Chemicals - Ex-Situ Pore Water, 6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]
PAHs (ug/L)										
ACENAPHTHENE	2/3	0.11 J	0.44 J	PW-05	0.036	0.036	0.28	0.19	5.8	0
ANTHRACENE	1/3	0.17 J	0.17 J	PW-05	0.038	0.038	0.17	0.069	0.012	1
BENZO(A)ANTHRACENE	1/3	0.48 J	0.48 J	PW-05	0.037	0.037	0.48	0.17	0.018	1
BENZO(A)PYRENE	1/3	0.23 J	0.23 J	PW-05	0.034	0.034	0.23	0.088	0.015	1
BENZO(B)FLUORANTHENE	1/3	2.6 J	2.6 J	PW-05	0.039	0.039	2.6	0.88	0.6774[5]	1
BENZO(G,H,I)PERYLENE	1/3	0.82 J	0.82 J	PW-05	0.038	0.038	0.82	0.29	0.4391[5]	1
BENZO(K)FLUORANTHENE	1/3	0.98 J	0.98 J	PW-05	0.14	0.14	0.98	0.37	0.6415[5]	1
CHRYSENE	1/3	0.39 J	0.39 J	PW-05	0.035	0.035	0.39	0.14	2.042[5]	0
FLUORANTHENE	2/3	0.85 J	2.1 J	PW-05	0.04	0.04	1.5	0.99	0.04	2
FLUORENE	3/3	0.11 J	0.24 J	PW-05	--	--	0.17	0.17	2.5	0
INDENO(1,2,3-CD)PYRENE	1/3	0.98 J	0.98 J	PW-05	0.05	0.05	0.98	0.34	0.275[5]	1
PHENANTHRENE	3/3	0.34 J	0.8 J	PW-05	--	--	0.58	0.58	0.4	2
PYRENE	1/3	1.4 J	1.4 J	PW-05	0.039	0.039	1.4	0.48	0.025	1
PCBs (ug/L)										
AROCLOR-1260	3/3	0.1 J	0.55 J	PW-05	--	--	0.26	0.26	0.000074[6]	3
Filtered Metals (ug/L)										
ANTIMONY	4/7	2.3	13.1	PW-02	0.34	1.2	5.7	3.4	30	0
ARSENIC	7/7	2.7	18.8	PW-06	--	--	8.7	8.7	5	5
CADMIUM	2/7	0.14 J	23	PW-01	0.11	0.11	11.6	3.3	0.12	2
CHROMIUM	7/7	7.8	16.1	PW-01	--	--	13.1	13.1	57.5[7]	0
COPPER	7/7	0.75 J	8.3	PW-01	--	--	2.2	2.2	3.1	1
LEAD	6/7	0.26 J	4.5	PW-01	0.098	0.098	1.1	0.98	2.5	1
NICKEL	5/7	1	2.9	PW-01	0.59	0.96	1.8	1.4	8.2	0
SELENIUM	6/7	4.4 J	5.8 J	PW-07	2.2	2.2	5.2	4.6	1	6
ZINC	7/7	1.7 J	47.5	PW-01	--	--	9.7	9.7	81	0
Miscellaneous Parameters (mg/L)										
DISSOLVED ORGANIC CARBON	7/7	8.5	15.8	PW-04	--	--	10.8	10.8	NA	0
HARDNESS	7/7	328	788	PW-02	--	--	619	619	NA	0
Miscellaneous Parameters (S.U.)										
PH	7/7	7.1	8.1	PW-02	--	--	7.7	7.7	NA	0

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection and exceedances.
2 - Average of positive analytical results only.
3 - Average of all analytical results are calculated using half of the detection limit for nondetects.
4 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
5 - USEPA Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures (USEPA, November 2003).
6 - Value for Total PCBs used as a surrogate for Aroclor-1260.
7 - Value is for total chromium.

Definitions:
J = Estimated
NA = Not applicable or not available

Associated Samples:
PW-01_6-18
PW-02_6-18
PW-03_6-18
PW-04_6-18
PW-05_6-18
PW-06_6-18
PW-07_6-18

Table 4-16

Detected Concentrations Table for Ex-Situ Pore Water, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	Ecological Screening Value (ESV)[1][2]	Adjusted USEPA Regional Screening Level (RSL) for Tap Water[3][4]	USEPA Maximum Contaminant Level (MCL)[4][5]	PW-01	PW-02	PW-03	PW-04	PW-05	PW-06	PW-07
SEDIMENT LOCATION				SD-85	SD-87	SD-88	SD-89	SD-90	SD-99	SD-101
CORRESPONDING SEDIMENT LOCATION				SD-85	SD-87	SD-88	SD-89	SD-90	SD-99	SD-101
SAMPLE ID				PW-01_18-30	PW-02_18-30	PW-03_18-30	PW-04_18-30	PW-05_18-30	PW-06_18-30	PW-07_18-30
SAMPLE DATE				20100907	20100902	20100907	20100908	20100909	20100903	20100903
SAMPLE CODE				NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX				PW	PW	PW	PW	PW	PW	PW
SAMPLE TYPE				NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX				NA	NA	NA	NA	NA	NA	NA
TOP DEPTH				18	18	18	18	18	18	18
BOTTOM DEPTH				30	30	30	30	30	30	30
POLYCYCLIC AROMATIC HYDROCARBONS (UG/L)[10]										
ACENAPHTHENE	5.8	2,200 N	NA	NA	NA	0.12 J	0.11 J	0.093 J	NA	NA
ANTHRACENE	0.012	11,000 N	NA	NA	NA	**0.041 J**	**0.038 J**	0.038 UJ	NA	NA
BENZO(A)ANTHRACENE	0.018	0.29 C	NA	NA	NA	0.037 UJ	0.037 UJ	0.037 UJ	NA	NA
BENZO(A)PYRENE	0.015	0.029 C	0.2	NA	NA	0.034 UJ	0.034 UJ	0.034 UJ	NA	NA
BENZO(B)FLUORANTHENE	0.6774 [11]	0.29 C	NA	NA	NA	0.039 UJ	0.039 UJ	0.039 UJ	NA	NA
BENZO(G,H,I)PERYLENE	0.4391 [11]	1,100 N[6]	NA	NA	NA	0.038 UJ	0.038 UJ	0.038 UJ	NA	NA
BENZO(K)FLUORANTHENE	0.6415 [11]	2.9 C	NA	NA	NA	0.14 UJ	0.14 UJ	0.14 UJ	NA	NA
CHRYSENE	2.042 [11]	29 C	NA	NA	NA	0.035 UJ	0.035 UJ	0.035 UJ	NA	NA
FLUORANTHENE	0.04	1,500 N	NA	NA	NA	**0.84 J**	**0.91 J**	0.04 UJ	NA	NA
FLUORENE	2.5	1,500 N	NA	NA	NA	0.12 J	0.054 UJ	0.054 UJ	NA	NA
INDENO(1,2,3-CD)PYRENE	0.275 [11]	0.29 C	NA	NA	NA	0.05 UJ	0.05 UJ	0.05 UJ	NA	NA
NAPHTHALENE	1.1	1.4 C	NA	NA	NA	0.035 UJ	0.035 UJ	0.035 UJ	NA	NA
PHENANTHRENE	0.4	1,100 N[6]	NA	NA	NA	0.39 J	**0.43 J**	**0.58 J**	NA	NA
PYRENE	0.025	1,100 N	NA	NA	NA	**0.1 J**	**0.2 J**	0.039 UJ	NA	NA
PCBS (UG/L)[10]										
AROCLOR-1260	0.000074 [7]	0.34 C	0.5	NA	NA	0.054 UJ	0.054 UJ	0.054 UJ	NA	NA
DISSOLVED METALS (UG/L)[10]										
ANTIMONY	30	15 N	6	7.6	5.8	0.9 B	0.84 B	1 B	0.86 B	1.5 B
ARSENIC	5	0.45 C	10	**7.4**	5	**9.6**	**6.3**	**9.8**	**12.1**	**6.4**
CADMIUM	0.12	18 N	5	**1.4**	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
CHROMIUM	57.5 [8]	55,000 N[9]	100	18.7	17.5	9.8	15.5	9.3	14.6	13.6
COPPER	3.1	1,500 N	1300	1.4 J	0.77 J	**4.8**	0.82 J	2.7	2.1	1.6 J
LEAD	2.5	NA	15	2.2	0.25 J	0.35 J	0.24 B	0.56 J	0.33 J	0.19 B
NICKEL	8.2	730 N	NA	2.2	2.2	1.8	1.4	1.3	4.4	1.1
SELENIUM	1	180 N	50	1.3 B	**6.5 J**	**5.1 J**	**6 J**	**4.3 J**	**5 J**	**5.7 J**
ZINC	81	11,000 N	NA	8.7	1.9 J	21.4	3.2 J	4.3 J	2.9 J	2.4 J
MISCELLANEOUS PARAMETERS (MG/L)[10]										
DISSOLVED ORGANIC CARBON	NA	NA	NA	10.7	11.4	14.9	20.9	11.4	11.2	11.5
HARDNESS	NA	NA	NA	260	880	578	747	441	617	724
MISCELLANEOUS PARAMETERS (S.U.)[10]										
PH	NA	NA	NA	7.7	7.8	7.2	7.1	7.2	7.7	7.7

Notes:
1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
2 - Concentrations exceeding the ESV are shaded black with white font.
3 - Screening criteria for pore water are based on USEPA Regional Screening Levels (RSLs) for tap water (November, 2010). To account for the anticipated reduced exposure to pore water, the screening criteria presented in the table for pore water are 10 times those typically used for tap water (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the pore water are set at 10 times the RSL for tap water. The screening criteria for non-carcinogens in the pore water are set equal to the RSL for tap water.
4 - Presented for informational purposes only.
5 - 2009 Edition of the Drinking Water Standards and Health Advisories (USEPA, October 2009).
6 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
7 - The value for total PCBs is used as a surrogate for Aroclor-1260.
8 - Value is for total chromium.
9 - The value is for trivalent chromium.
10 - The chemicals listed are those detected at least once in the pore water samples collected at the three depth intervals (0-6", 6-18", 18-30").
11 - USEPA Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures (USEPA, November 2003).

Definitions:
B = Blank contamination
J = Estimated
K = Biased high
NA = Not Applicable or Not Available
PW = Pore water
U = Non-detected

Table 4-17

Occurrence and Distribution of Chemicals - Ex-Situ Pore Water, 18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]
PAHs (ug/L)										
ACENAPHTHENE	3/3	0.093 J	0.12 J	PW-03	--	--	0.11	0.11	5.8	0
ANTHRACENE	2/3	0.038 J	0.041 J	PW-03	0.038	0.038	0.040	0.033	0.012	2
FLUORANTHENE	2/3	0.84 J	0.91 J	PW-04	0.04	0.04	0.88	0.59	0.04	2
FLUORENE	1/3	0.12 J	0.12 J	PW-03	0.054	0.054	0.12	0.058	2.5	0
PHENANTHRENE	3/3	0.39 J	0.58 J	PW-05	--	--	0.47	0.47	0.4	2
PYRENE	2/3	0.1 J	0.2 J	PW-04	0.039	0.039	0.15	0.11	0.025	2
Filtered Metals (ug/L)										
ANTIMONY	2/7	5.8	7.6	PW-01	0.84	1.5	6.7	2.3	30	0
ARSENIC	7/7	5	12.1	PW-06	--	--	8.1	8.1	5	6
CADMIUM	1/7	1.4	1.4	PW-01	0.11	0.11	1.4	0.25	0.12	1
CHROMIUM	7/7	9.3	18.7	PW-01	--	--	14.1	14.1	57.5[5]	0
COPPER	7/7	0.77 J	4.8	PW-03	--	--	2.0	2.0	3.1	1
LEAD	5/7	0.25 J	2.2	PW-01	0.19	0.24	0.74	0.56	2.5	0
NICKEL	7/7	1.1	4.4	PW-06	--	--	2.1	2.1	8.2	0
SELENIUM	6/7	4.3 J	6.5 J	PW-02	1.3	1.3	5.4	4.8	1	6
ZINC	7/7	1.9 J	21.4	PW-03	--	--	6.4	6.4	81	0
Miscellaneous Parameters (mg/L)										
DISSOLVED ORGANIC CARBON	7/7	10.7	20.9	PW-04	--	--	13.1	13.1	NA	0
HARDNESS	7/7	260	880	PW-02	--	--	607	607	NA	0
Miscellaneous Parameters (S.U.)										
PH	7/7	7.1	7.8	PW-02	--	--	7.5	7.5	NA	0

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection and exceedances.
2 - Average of positive analytical results only.
3 - Average of all analytical results are calculated using half of the detection limit for nondetects.
4 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
5 - Value is for total chromium.

Definitions:
J = Estimated
NA = Not applicable or not available

Associated Samples:
PW-01_18-30
PW-02_18-30
PW-03_18-30
PW-04_18-30
PW-05_18-30
PW-06_18-30
PW-07_18-30

Table 4-18

Pore Water and Sediment Results (0-6 inches)
Lockheed Martin, Middle River Complex
Middle River, Maryland

	Units		PW-01		PW-02		PW-03		PW-04	
Parameter	**Porewater**	**Sediment**	**PW-01_0-6**	**SD-85-SS**	**PW-02_0-6**	**SD-87-SS**	**PW-03_0-6**	**SD-88-SS**	**PW-04_0-6**	**SD-89-SS**
ACENAPHTHENE	UG/L	UG/KG		22 J		85 J	0.11 J	120	0.036 UJ	38 J
ACENAPHTHYLENE	UG/L	UG/KG		140		120 J	0.038 UJ	210	0.038 UJ	110 J
ANTHRACENE	UG/L	UG/KG		170		300	0.052 J	320	0.038 UJ	160 J
BENZO(A)ANTHRACENE	UG/L	UG/KG		390		1200	0.037 UJ	890	0.037 UJ	390 J
BENZO(A)PYRENE	UG/L	UG/KG		450		1300	0.034 UJ	920	0.034 UJ	400 J
BENZO(B)FLUORANTHENE	UG/L	UG/KG		540		2100	0.039 UJ	1700	0.039 UJ	760 J
BENZO(G,H,I)PERYLENE	UG/L	UG/KG		550		1400	0.038 UJ	880	0.038 UJ	550 J
BENZO(K)FLUORANTHENE	UG/L	UG/KG		190		45 U	0.14 UJ	22 U	0.14 UJ	23 UJ
CHRYSENE	UG/L	UG/KG		520		1400	0.035 UJ	1100	0.035 UJ	460 J
DIBENZO(A,H)ANTHRACENE	UG/L	UG/KG		280		630	0.039 UJ	370	0.039 UJ	13 UJ
FLUORANTHENE	UG/L	UG/KG		570		1700	0.91 J	1800	0.04 UJ	750 J
FLUORENE	UG/L	UG/KG		43 J		67 J	0.054 UJ	100 J	0.13 J	62 J
INDENO(1,2,3-CD)PYRENE	UG/L	UG/KG		500		1300	0.05 UJ	800	0.05 UJ	500 J
NAPHTHALENE	UG/L	UG/KG		29 J		62 J	0.035 UJ	140	0.074 J	95 J
PHENANTHRENE	UG/L	UG/KG		290		830	0.55 J	630	0.44 J	270 J
PYRENE	UG/L	UG/KG		770		2000	0.16 J	1500	0.039 UJ	670 J
TOTAL PAHS		UG/KG		5454		14494		11480		5215
AROCLOR-1260	UG/L	UG/KG		35		380	0.49 J	6600	0.18 J	1800 J
TOTAL AROCLOR		UG/KG		35		380		6600		1800
ANTIMONY	UG/L	MG/KG	0.74 B	1.1 L	4.6	1 L	2.2	0.75 J	0.47 B	0.9 J
ARSENIC	UG/L	MG/KG	1.2 K	3.4 L	10.9	6.2	23.4	7.8 L	6.2	9.8 J
BERYLLIUM	UG/L	MG/KG	0.057 B	0.77	0.069 B	1.3	0.037 U	1.8 L	0.037 U	2.1 J
CADMIUM	UG/L	MG/KG	10	8.5 L	0.13 J	32.9	0.23 J	19.3 J	0.13 J	11.9 J
CHROMIUM	UG/L	MG/KG	6.3	55.3	13.7	277	11.9	336 L	10	251 J
COPPER	UG/L	MG/KG	4.7	16.9 L	1.3 J	108	1.2 J	94.2 L	0.98 J	118 J
LEAD	UG/L	MG/KG	1.2 J	53.1	1.6 J	142 K	0.54 J	170	0.1 B	147 J
MERCURY	UG/L	MG/KG	0.038 UL	0.081	0.038 UL	0.3	0.038 UL	1.1	0.038 UL	0.76 J
NICKEL	UG/L	MG/KG	6.8	16.6 L	1.2	32.8	0.97 B	40.3 L	1.7	42.9 J
SELENIUM	UG/L	MG/KG	2.6 B	0.47 L	4.8 J	1.2	4.9 J	1.9 L	5.1 J	2 J
SILVER	UG/L	MG/KG	0.036 U	0.16	0.036 U	1.4	0.036 U	7.2 L	0.036 U	5.6 J
THALLIUM	UG/L	MG/KG	0.15 B	0.059 J	0.033 B	0.2	0.015 U	0.29 K	0.015 U	0.32 J
ZINC	UG/L	MG/KG	38.9	127 L	3.9 J	524	4.5 J	404 L	4.7 J	415 J
DISSOLVED ORGANIC CARBON	MG/L	NA	12.5		9.6		8.3		12.2	
HARDNESS	MG/L	NA	540		715		619		724	
PH	S.U.	NA	7.5		8.1		7.8		7.3	
TOTAL ORGANIC CARBON	NA	MG/KG		9890		58100		31600		28600

Table 4-18

Pore Water and Sediment Results (0-6 inches)
Lockheed Martin, Middle River Complex
Middle River, Maryland

	Units		PW-05		PW-06		PW-07	
Parameter	**Porewater**	**Sediment**	**PW-05_0-6**	**SD-90-SS**	**PW-06_0-6**	**SD-99-SS**	**PW-07_0-6**	**SD-101-SS**
ACENAPHTHENE	UG/L	UG/KG	0.17 J	62 J		8.3 U		18 J
ACENAPHTHYLENE	UG/L	UG/KG	0.038 UJ	120 J		9.9 U		53 J
ANTHRACENE	UG/L	UG/KG	0.038 UJ	190 J		8.5 U		87 J
BENZO(A)ANTHRACENE	UG/L	UG/KG	0.037 UJ	810 J		11 U		220 J
BENZO(A)PYRENE	UG/L	UG/KG	0.034 UJ	1100 J		8.7 U		200 J
BENZO(B)FLUORANTHENE	UG/L	UG/KG	0.039 UJ	2000 J		14 U		420 J
BENZO(G,H,I)PERYLENE	UG/L	UG/KG	0.038 UJ	1100 J		8.6 U		400 J
BENZO(K)FLUORANTHENE	UG/L	UG/KG	0.14 UJ	12 UJ		18 U		28 UJ
CHRYSENE	UG/L	UG/KG	0.035 UJ	1200 J		10 U		220 J
DIBENZO(A,H)ANTHRACENE	UG/L	UG/KG	0.039 UJ	270 J		9.6 U		15 UJ
FLUORANTHENE	UG/L	UG/KG	0.97 J	2500 J		9.3 U		340 J
FLUORENE	UG/L	UG/KG	0.054 UJ	82 J		11 U		37 J
INDENO(1,2,3-CD)PYRENE	UG/L	UG/KG	0.05 UJ	850 J		8.9 U		410 J
NAPHTHALENE	UG/L	UG/KG	0.035 UJ	88 J		7.5 U		58 J
PHENANTHRENE	UG/L	UG/KG	0.47 J	650 J		14 U		150 J
PYRENE	UG/L	UG/KG	0.27 J	1600 J		8.8 U		350 J
TOTAL PAHS		UG/KG		12622		0 U		2963
AROCLOR-1260	UG/L	UG/KG	0.61 J	690 J		14 J		190 J
TOTAL AROCLOR		UG/KG		690		14		190
ANTIMONY	UG/L	MG/KG	1.9 J	1.4 J	2	0.099 B	0.29 B	0.61 J
ARSENIC	UG/L	MG/KG	12.6	8.9 J	14.8	4.7	6.7	10 J
BERYLLIUM	UG/L	MG/KG	0.06 B	1.8 J	0.048 B	1.7	0.037 U	1.7 J
CADMIUM	UG/L	MG/KG	0.11 U	5.2 J	0.11 U	0.61 L	0.11 U	4.6 J
CHROMIUM	UG/L	MG/KG	13	110 J	8.5	29.6	10.3	133 J
COPPER	UG/L	MG/KG	1.2 J	116 J	2.2	21 L	1.1 J	156 J
LEAD	UG/L	MG/KG	1 J	111 J	0.7 J	14.3	0.21 B	120 J
MERCURY	UG/L	MG/KG	0.038 UL	0.43 J	0.038 UL	0.039 J	0.038 UL	0.45 J
NICKEL	UG/L	MG/KG	1	36.4 J	1.1	21.2 L	0.7 B	37.7 J
SELENIUM	UG/L	MG/KG	4.6 J	1.8 J	4.4 J	0.99 L	4.9 J	1.8 J
SILVER	UG/L	MG/KG	0.036 U	2.8 J	0.036 U	0.091 J	0.036 U	1.6 J
THALLIUM	UG/L	MG/KG	0.015 U	0.24 J	0.015 U	0.19 K	0.015 U	0.24 J
ZINC	UG/L	MG/KG	3.8 J	382 J	6.5	69.7	2.4 J	350 J
DISSOLVED ORGANIC CARBON	MG/L	NA	8.3		6.2		14.3	
HARDNESS	MG/L	NA	579		643		669	
PH	S.U.	NA	7.8		8.1		7.8	
TOTAL ORGANIC CARBON	NA	MG/KG		28000 J		31300		50300 J

Blank cell - Not analyzed/Not applicable
SD - Sediment
PW - Porewater

Qualifiers:
B - Blank contamination
J - Estimated
K - Biased high
L - Biased low
U - Not detected

Table 4-19

Pore Water and Sediment Results (>6-18 inches)
Lockheed Martin, Middle River Complex
Middle River, Maryland

	Units		PW-01		PW-02		PW-03		PW-04	
Parameter	**Porewater**	**Sediment**	**PW-01_6-18**	**SD-85-01**	**PW-02_6-18**	**SD-87-01**	**PW-03_6-18**	**SD-88-01**	**PW-04_6-18**	**SD-89-01**
ACENAPHTHENE	UG/L	UG/KG		1.2 J		410	0.036 UJ	76 J	0.11 J	56 J
ACENAPHTHYLENE	UG/L	UG/KG		1.1 U		140 J	0.038 UJ	220	0.038 UJ	140
ANTHRACENE	UG/L	UG/KG		0.98 U		660	0.038 UJ	320	0.038 UJ	200
BENZO(A)ANTHRACENE	UG/L	UG/KG		1.3 U		2300	0.037 UJ	760	0.037 UJ	480
BENZO(A)PYRENE	UG/L	UG/KG		1 U		2000	0.034 UJ	880	0.034 UJ	520
BENZO(B)FLUORANTHENE	UG/L	UG/KG		1.6 U		3200	0.039 UJ	1600	0.039 UJ	880
BENZO(G,H,I)PERYLENE	UG/L	UG/KG		0.99 U		1600	0.038 UJ	910	0.038 UJ	610
BENZO(K)FLUORANTHENE	UG/L	UG/KG		2 U		31 U	0.14 UJ	22 U	0.14 UJ	22 U
CHRYSENE	UG/L	UG/KG		1.2 U		2000	0.035 UJ	930	0.035 UJ	510
DIBENZO(A,H)ANTHRACENE	UG/L	UG/KG		1.1 U		540	0.039 UJ	370	0.039 UJ	290
FLUORANTHENE	UG/L	UG/KG		1.9 J		3800	0.85 J	1600	0.04 UJ	850
FLUORENE	UG/L	UG/KG		1.3 U		240	0.11 J	100 J	0.16 J	59 J
INDENO(1,2,3-CD)PYRENE	UG/L	UG/KG		1 U		1400	0.05 UJ	770	0.05 UJ	540
NAPHTHALENE	UG/L	UG/KG		0.86 U		89 J	0.035 UJ	180	0.035 UJ	98 J
PHENANTHRENE	UG/L	UG/KG		3.4 J		2300	0.34 J	600	0.61 J	350
PYRENE	UG/L	UG/KG		1.5 J		3500	0.039 UJ	1400	0.039 UJ	830
TOTAL PAHS		UG/KG		8		24179		10716		6413
AROCLOR-1248	UG/L	UG/KG		1.2 U		550	0.091 UJ	2.5 U	0.091 UJ	2.5 U
AROCLOR-1260	UG/L	UG/KG		1.8 U		800 J	0.13 J	1800	0.1 J	1500
TOTAL AROCLOR		UG/KG		0 U		1350		1800		1500
ANTIMONY	UG/L	MG/KG	3.6	0.11 B	13.1	1.3 L	1.2 B	0.69 J	0.41 B	0.95 L
ARSENIC	UG/L	MG/KG	2.7	2.5 L	11.3	4.2	10.2	8.5 L	5.3	8.6
BERYLLIUM	UG/L	MG/KG	0.04 B	1	0.044 B	1	0.037 U	1.8 L	0.037 U	2.2
CADMIUM	UG/L	MG/KG	23	0.14 L	0.14 J	64.7	0.11 U	15.7 J	0.11 U	17.8 L
CHROMIUM	UG/L	MG/KG	16.1	13.8	14.8	541	13.7	277 L	13.6	336
COPPER	UG/L	MG/KG	8.3	9.5 L	1.7 J	88.7	1.3 J	95.2 L	0.75 J	107 L
LEAD	UG/L	MG/KG	4.5	7.2	0.63 J	205 K	0.26 J	189	0.098 B	187
MERCURY	UG/L	MG/KG	0.038 UL	0.022 J	0.038 UL	0.37	0.038 UL	1	0.038 UL	0.96
NICKEL	UG/L	MG/KG	2.9	13.2 L	2.3	31.5	1	42.1 L	1.3	46.5 L
SELENIUM	UG/L	MG/KG	2.2 B	0.53 L	4.9 J	0.88	5.4 J	1.8 L	5.4 J	2 L
SILVER	UG/L	MG/KG	0.078 B	0.042 J	0.036 U	2.7	0.036 U	6.8 L	0.036 U	7.1
THALLIUM	UG/L	MG/KG	0.081 B	0.13	0.018 B	0.16	0.015 U	0.27 K	0.015 U	0.35
ZINC	UG/L	MG/KG	47.5	34.5 L	4.7 J	497	3.7 J	392 L	2.6 J	441
DISSOLVED ORGANIC CARBON	MG/L		13.1		8.6		10.5		15.8	
HARDNESS	MG/L		328		788		627		767	
PH	S.U.		7.8		8.1		7.4		7.1	
TOTAL ORGANIC CARBON		MG/KG		25500		28800		32500		27300

Table 4-19

Pore Water and Sediment Results (>6-18 inches)
Lockheed Martin, Middle River Complex
Middle River, Maryland

	Units		PW-05		PW-06		PW-07	
Parameter	**Porewater**	**Sediment**	**PW-05_6-18**	**SD-90-01**	**PW-06_6-18**	**SD-99-01**	**PW-07_6-18**	**SD-101-01**
ACENAPHTHENE	UG/L	UG/KG	0.44 J	190		7.9 U		19 J
ACENAPHTHYLENE	UG/L	UG/KG	0.038 UJ	280		9.4 U		31 J
ANTHRACENE	UG/L	UG/KG	0.17 J	530		8 U		57 J
BENZO(A)ANTHRACENE	UG/L	UG/KG	0.48 J	2100		10 U		170
BENZO(A)PYRENE	UG/L	UG/KG	0.23 J	2300		8.2 U		180
BENZO(B)FLUORANTHENE	UG/L	UG/KG	2.6 J	3600		13 U		310
BENZO(G,H,I)PERYLENE	UG/L	UG/KG	0.82 J	1900		8.1 U		230
BENZO(K)FLUORANTHENE	UG/L	UG/KG	0.98 J	9 U		17 U		20 U
CHRYSENE	UG/L	UG/KG	0.39 J	2500		9.7 U		190
DIBENZO(A,H)ANTHRACENE	UG/L	UG/KG	0.039 UJ	510		9.1 U		130
FLUORANTHENE	UG/L	UG/KG	2.1 J	5500		8.7 U		260
FLUORENE	UG/L	UG/KG	0.24 J	200		11 U		17 J
INDENO(1,2,3-CD)PYRENE	UG/L	UG/KG	0.98 J	1500		8.4 U		220
NAPHTHALENE	UG/L	UG/KG	0.035 UJ	120		7 U		44 J
PHENANTHRENE	UG/L	UG/KG	0.8 J	1800		13 U		120
PYRENE	UG/L	UG/KG	1.4 J	3400		8.3 U		310
TOTAL PAHS		UG/KG		26430		0 U		2288
AROCLOR-1248	UG/L	UG/KG	0.091 UJ	2.1 U		1.9 U		2.3 U
AROCLOR-1260	UG/L	UG/KG	0.55 J	1000 J		2.8 U		240
TOTAL AROCLOR		UG/KG		1000		0 U		240
ANTIMONY	UG/L	MG/KG	3.7	1.4 J	2.3	0.076 B	0.34 B	0.59 L
ARSENIC	UG/L	MG/KG	9.5	7.6	18.8	5.4	3.4	8.7
BERYLLIUM	UG/L	MG/KG	0.049 B	1.6	0.071 B	1.7	0.037 U	1.8
CADMIUM	UG/L	MG/KG	0.11 U	12.5	0.11 U	0.4 L	0.11 U	12.6
CHROMIUM	UG/L	MG/KG	12.5	212	7.8	27.7	13.4	247
COPPER	UG/L	MG/KG	0.78 J	130	2	20.1 L	0.81 J	98.8
LEAD	UG/L	MG/KG	0.65 J	257 J	0.48 J	12.5	0.27 J	158 K
MERCURY	UG/L	MG/KG	0.038 UL	2	0.038 UL	0.035 J	0.038 UL	0.6
NICKEL	UG/L	MG/KG	0.96 B	41.8	1.5	20.5 L	0.59 B	39.8
SELENIUM	UG/L	MG/KG	4.4 J	1.8	5.2 J	1.2 L	5.8 J	1.7
SILVER	UG/L	MG/KG	0.055 B	8.9	0.036 U	0.068 J	0.036 U	3.1
THALLIUM	UG/L	MG/KG	0.015 U	0.26 J	0.015 U	0.17 K	0.015 U	0.27
ZINC	UG/L	MG/KG	3.5 J	386	4.3 J	67.4	1.7 J	371
DISSOLVED ORGANIC CARBON	MG/L		9.4		8.5		9.7	
HARDNESS	MG/L		524		610		686	
PH	S.U.		7.6		7.9		7.7	
TOTAL ORGANIC CARBON		MG/KG		35900		34900		26000

Blank cell - Not analyzed/Not applicable
SD - Sediment
PW - Porewater

Qualifiers:
B - Blank contamination
J - Estimated
K - Biased high
L - Biased low
U - Not detected

Table 4-20

Pore Water and Sediment Results (>18-30 inches)
Lockheed Martin, Middle River Complex
Middle River, Maryland

	Units		PW-01		PW-02		PW-03		PW-04	
Parameter	**Porewater**	**Sediment**	**PW-01_18-30**	**SD-85-02**	**PW-02_18-30**	**SD-87-02**	**PW-03_18-30**	**SD-88-02**	**PW-04_18-30**	**SD-89-02**
ACENAPHTHENE	UG/L	UG/KG		1.2 U		230	0.12 J	210	0.11 J	99 J
ACENAPHTHYLENE	UG/L	UG/KG		1.4 U		320	0.038 UJ	260	0.038 UJ	240
ANTHRACENE	UG/L	UG/KG		1.2 U		740	0.041 J	670	0.038 J	330
BENZO(A)ANTHRACENE	UG/L	UG/KG		1.5 U		2500	0.037 UJ	2200	0.037 UJ	810
BENZO(A)PYRENE	UG/L	UG/KG		1.2 U		2900	0.034 UJ	2100	0.034 UJ	940
BENZO(B)FLUORANTHENE	UG/L	UG/KG		1.9 U		4600	0.039 UJ	3700	0.039 UJ	1300
BENZO(G,H,I)PERYLENE	UG/L	UG/KG		1.2 U		2300	0.038 UJ	1500	0.038 UJ	910
BENZO(K)FLUORANTHENE	UG/L	UG/KG		2.5 U		35 U	0.14 UJ	19 U	0.14 UJ	20 U
CHRYSENE	UG/L	UG/KG		1.5 U		3100	0.035 UJ	2200	0.035 UJ	930
DIBENZO(A,H)ANTHRACENE	UG/L	UG/KG		1.4 U		860	0.039 UJ	510	0.039 UJ	250
FLUORANTHENE	UG/L	UG/KG		1.3 U		4600	0.84 J	5100	0.91 J	1800
FLUORENE	UG/L	UG/KG		1.6 U		180	0.12 J	260	0.054 UJ	130
INDENO(1,2,3-CD)PYRENE	UG/L	UG/KG		1.3 U		2100	0.05 UJ	1300	0.05 UJ	840
NAPHTHALENE	UG/L	UG/KG		1.1 U		130 J	0.035 UJ	230	0.035 UJ	210
PHENANTHRENE	UG/L	UG/KG		3.8 J		1500	0.39 J	1800	0.43 J	700
PYRENE	UG/L	UG/KG		1.2 U		4900	0.1 J	3700	0.2 J	1500
TOTAL PAHS		UG/KG		3.8		30960		25740		10989
AROCLOR-1260	UG/L	UG/KG		2.2 U		770 J	0.054 UJ	220	0.054 UJ	1300
TOTAL AROCLOR		UG/KG		0 U		770		220		1300
ANTIMONY	UG/L	MG/KG	7.6	0.05 B	5.8	2.4 L	0.9 B	2.2 J	0.84 B	1.3 L
ARSENIC	UG/L	MG/KG	7.4	2 L	5	5.3	9.6	8.3 L	6.3	10.2
BERYLLIUM	UG/L	MG/KG	0.037 U	1.3	0.037 U	1.5	0.037 B	2.1 L	0.043 B	2.3
CADMIUM	UG/L	MG/KG	1.4	0.19 L	0.11 U	207	0.11 U	35.5 J	0.11 U	30.2 L
CHROMIUM	UG/L	MG/KG	18.7	12.8	17.5	1530	9.8	727 L	15.5	569
COPPER	UG/L	MG/KG	1.4 J	9.7 L	0.77 J	112	4.8	72.2 L	0.82 J	121 L
LEAD	UG/L	MG/KG	2.2	4.9	0.25 J	288 K	0.35 J	158	0.24 B	226
MERCURY	UG/L	MG/KG	0.038 UL	0.02 J	0.038 UL	0.76	0.038 UL	2	0.038 UL	2.5
NICKEL	UG/L	MG/KG	2.2	11.2 L	2.2	43.8	1.8	38.8 L	1.4	54.6 L
SELENIUM	UG/L	MG/KG	1.3 B	0.55 L	6.5 J	1.3	5.1 J	2 L	6 J	2.4 L
SILVER	UG/L	MG/KG	0.041 B	0.038 J	0.036 U	8.5	0.036 U	13.6 L	0.036 U	23
THALLIUM	UG/L	MG/KG	0.043 B	0.093	0.019 B	0.23	0.015 U	0.29	0.015 U	0.36
ZINC	UG/L	MG/KG	8.7	35.4 L	1.9 J	762	21.4	572 L	3.2 J	492
DISSOLVED ORGANIC CARBON	MG/L		10.7		11.4		14.9		20.9	
HARDNESS	MG/L		260		880		578		747	
PH	S.U.		7.7		7.8		7.2		7.1	
TOTAL ORGANIC CARBON		MG/KG		25500		28700		35900		37100

Table 4-20

Pore Water and Sediment Results (>18-30 inches)
Lockheed Martin, Middle River Complex
Middle River, Maryland

	Units		PW-05		PW-06		PW-07	
Parameter	**Porewater**	**Sediment**	**PW-05_18-30**	**SD-90-02**	**PW-06_18-30**	**SD-99-02**	**PW-07_18-30**	**SD-101-02**
ACENAPHTHENE	UG/L	UG/KG	0.093 J	410		8.4 U		29 J
ACENAPHTHYLENE	UG/L	UG/KG	0.038 UJ	460		10 U		50
ANTHRACENE	UG/L	UG/KG	0.038 UJ	1300		8.5 U		110
BENZO(A)ANTHRACENE	UG/L	UG/KG	0.037 UJ	5000 J		11 U		320
BENZO(A)PYRENE	UG/L	UG/KG	0.034 UJ	5100 J		8.7 U		340
BENZO(B)FLUORANTHENE	UG/L	UG/KG	0.039 UJ	7300 J		14 U		580
BENZO(G,H,I)PERYLENE	UG/L	UG/KG	0.038 UJ	3100 J		8.7 U		310
BENZO(K)FLUORANTHENE	UG/L	UG/KG	0.14 UJ	8 J		18 U		9.7 U
CHRYSENE	UG/L	UG/KG	0.035 UJ	5400 J		10 U		350
DIBENZO(A,H)ANTHRACENE	UG/L	UG/KG	0.039 UJ	1000 J		9.7 U		120
FLUORANTHENE	UG/L	UG/KG	0.04 UJ	13000		9.3 U		520
FLUORENE	UG/L	UG/KG	0.054 UJ	560		11 U		58
INDENO(1,2,3-CD)PYRENE	UG/L	UG/KG	0.05 UJ	2900 J		9 U		300
NAPHTHALENE	UG/L	UG/KG	0.035 UJ	230		7.5 U		120
PHENANTHRENE	UG/L	UG/KG	0.58 J	4600		14 U		300
PYRENE	UG/L	UG/KG	0.039 UJ	7300 J		8.8 U		610
TOTAL PAHS		UG/KG		57668		0 U		4117
AROCLOR-1260	UG/L	UG/KG	0.054 UJ	400		3.1 U		62
TOTAL AROCLOR		UG/KG		400		0 U		62
ANTIMONY	UG/L	MG/KG	1 B	3 J	0.86 B	0.082 B	1.5 B	0.86 L
ARSENIC	UG/L	MG/KG	9.8	6.5	12.1	6.1	6.4	8.7
BERYLLIUM	UG/L	MG/KG	0.037 U	1.8	0.046 B	1.8	0.049 B	2.1
CADMIUM	UG/L	MG/KG	0.11 U	38.7	0.11 U	0.4 L	0.11 U	44.7
CHROMIUM	UG/L	MG/KG	9.3	690	14.6	29.6	13.6	719
COPPER	UG/L	MG/KG	2.7	82.7	2.1	19.7 L	1.6 J	83.3
LEAD	UG/L	MG/KG	0.56 J	195 J	0.33 J	12.8	0.19 B	169 K
MERCURY	UG/L	MG/KG	0.038 UL	4.7	0.038 UL	0.037 J	0.038 UL	1.6
NICKEL	UG/L	MG/KG	1.3	46.1	4.4	22.3 L	1.1	46.6
SELENIUM	UG/L	MG/KG	4.3 J	1.9	5 J	1.2 L	5.7 J	2.2
SILVER	UG/L	MG/KG	0.071 B	29.3	0.036 U	0.066 J	0.036 U	12.8
THALLIUM	UG/L	MG/KG	0.015 U	0.32 J	0.015 U	0.18 K	0.039 B	0.31
ZINC	UG/L	MG/KG	4.3 J	524	2.9 J	74.8	2.4 J	479
DISSOLVED ORGANIC CARBON	MG/L		11.4		11.2		11.5	
HARDNESS	MG/L		441		617		724	
PH	S.U.		7.2		7.7		7.7	
TOTAL ORGANIC CARBON		MG/KG		35900		34900		28400

Blank cell - Not analyzed/Not applicable
SD - Sediment
PW - Porewater

Qualifiers:
B - Blank contamination
J - Estimated
K - Biased high
L - Biased low
U - Not detected

Table 4-21

Detected Concentrations Table for In-Situ Pore Water, Cow Pen Creek
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX	Ecological Screening Value (ESV)[1][2]	Adjusted USEPA Regional Screening Level (RSL) for Tap Water[3][4]	USEPA Maximum Contaminant Level (MCL)[4][5]	CPC-SW/PW-1 CPC-PW-VOC-1 20100902 NORMAL PW NORMAL NA	CPC-SW/PW-2 CPC-PW-VOC-2 20100929 NORMAL PW NORMAL NA	CPC-SW/PW-3 CPC-PW-VOC-3 20100929 NORMAL PW NORMAL NA
VOLATILES (UG/L)[7]						
1,1-DICHLOROETHANE	47	24 C	NA	0.15 U	0.38 U	0.25 J
2-BUTANONE	14000	7100 N	NA	3.3 J	120 J	3 J
4-METHYL-2-PENTANONE	170	2000 N	NA	0.32 U	0.8 U	0.32 U
ACETONE	1500	22000 N	NA	26 J	140 B	17 B
CARBON DISULFIDE	0.92	1000 N	NA	**0.95 J**	0.32 U	0.13 U
CIS-1,2-DICHLOROETHENE	590 [5]	73 N	70	0.17 U	0.42 U	0.24 J
METHYLENE CHLORIDE	98.1	48 C	5	0.33 U	0.82 U	0.33 U
TETRACHLOROETHENE	45	1.1 C	5	0.29 U	0.72 U	0.29 U
TOLUENE	2	2300 N	1000	0.13 U	0.32 U	0.13 U
TRICHLOROETHENE	21	20 C	5	0.17 U	0.42 U	0.17 U
VINYL CHLORIDE	930	0.16 C	2	0.22 U	0.55 U	0.55 J

Notes:
1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
2 - Concentrations exceeding the ESV are shaded black with white font.
3 - Screening criteria for pore water are based on USEPA Regional Screening Levels (RSLs) for tap water (November, 2010). To account for the anticipated reduced exposure to pore water, the screening criteria presented in the table for pore water are 10 times those typically used for tap water (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the pore water are set at 10 times the RSL for tap water. The screening criteria for non-carcinogens in the pore water are set equal to the RSL for tap water.
4 - Presented for informational purposes only.
5 - 2009 Edition of the Drinking Water Standards and Health Advisories (USEPA, October 2009).
6 - The value for 1,2-dichloroethene is used as a surrogate for cis-1,2-dichloroethene.
7 - The chemicals listed are those detected at least once in the in-situ pore water samples collected from Cow Pen Creek or Dark Head Cove.

Definitions:
J = Estimated
NA = Not Applicable or Not Available
PW = Pore water
U = Non-detected

Table 4-22

Occurrence and Distribution of Chemicals - In-Situ Pore Water, Cow Pen Creek
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]
Volatile Organics (ug/L)										
1,1-DICHLOROETHANE	1/3	0.25 J	0.25 J	CPC-SW/PW-3	0.15	0.38	0.25	0.17	47	0
2-BUTANONE	3/3	3 J	120 J	CPC-SW/PW-2	--	--	42.1	42.1	14000	0
ACETONE	1/3	26 J	26 J	CPC-SW/PW-1	17	140	26.0	34.8	1500	0
CARBON DISULFIDE	1/3	0.95 J	0.95 J	CPC-SW/PW-1	0.13	0.32	0.95	0.39	0.92	1
CIS-1,2-DICHLOROETHENE	1/3	0.24 J	0.24 J	CPC-SW/PW-3	0.17	0.42	0.24	0.18	590[5]	0
VINYL CHLORIDE	1/3	0.55 J	0.55 J	CPC-SW/PW-3	0.22	0.55	0.55	0.31	930	0

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection and exceedances.
2 - Average of positive analytical results only.
3 - Average of all analytical results are calculated using half of the detection limit for nondetects.
4 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
5 - The value for 1,2-dichloroethene is used as a surrogate for cis-1,2-dichloroethene.

Definitions:
J = Estimated
NA = Not applicable or not available

Associated Samples:
CPC-PW-VOC-1
CPC-PW-VOC-2
CPC-PW-VOC-3

Table 4-23

Detected Concentrations Table for In-Situ Pore Water, Dark Head Cove
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX	Ecological Screening Value (ESV)[1][2]	Adjusted USEPA Regional Screening Level (RSL) for Tap Water[3][4]	USEPA Maximum Contaminant Level (MCL)[4][5]	DHC-SW/PW-1 DHC-PW-VOC-1 20100901 NORMAL PW NORMAL NA	DHC-SW/PW-2 DHC-PW-VOC-2 20100901 NORMAL PW NORMAL NA	DHC-SW/PW-3 DHC-PW-VOC-3 20100902 NORMAL PW NORMAL NA	DHC-SW/PW-4 DHC-PW-VOC-4 20100902 NORMAL PW NORMAL NA	DHC-SW/PW-5 DHC-PW-VOC-5 20100902 NORMAL PW NORMAL NA
VOLATILES (UG/L)								
1,1-DICHLOROETHANE	47	24 C	NA	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
2-BUTANONE	14000	7100 N	NA	1.6 J	7.5	4 J	2 J	6.1
4-METHYL-2-PENTANONE	170	2000 N	NA	0.32 U	0.56 J	0.32 U	0.32 U	0.32 U
ACETONE	1500	22000 N	NA	4 J	27 J	15 J	11 J	15 J
CARBON DISULFIDE	0.92	1000 N	NA	0.13 U	0.53 J	0.89 J	0.4 J	0.13 U
CIS-1,2-DICHLOROETHENE	590 [5]	73 N	70	0.29 J	0.17 U	0.17 U	0.34 J	0.17 U
METHYLENE CHLORIDE	98.1	48 C	5	0.33 U	1.7	0.33 U	0.33 U	0.33 U
TETRACHLOROETHENE	45	1.1 C	5	0.29 U	0.43 J	0.29 U	0.29 U	0.29 U
TOLUENE	2	2300 N	1000	0.13 U	0.68 J	0.13 U	0.13 U	0.13 U
TRICHLOROETHENE	21	20 C	5	0.88 J	0.17 U	0.17 U	0.17 U	0.17 U
VINYL CHLORIDE	930	0.16 C	2	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U

Notes:
1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
2 - Concentrations exceeding the ESV are shaded black with white font (there were no exceedances).
3 - Screening criteria for pore water are based on USEPA Regional Screening Levels (RSLs) for tap water (November, 2010). To account for the anticipated reduced exposure to pore water, the screening criteria presented in the table for pore water are 10 times those typically used for tap water (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the water are set at 10 times the RSL for tap water. The screening criteria for non-carcinogens in the pore water are set equal to the RSL for tap water.
4 - Presented for informational purposes only.
5 - 2009 Edition of the Drinking Water Standards and Health Advisories (USEPA, October 2009).
6 - The value for 1,2-dichloroethene is used as a surrogate for cis-1,2-dichloroethene.
7 - The chemicals listed are those detected at least once in the in-situ pore water samples collected from Cow Pen Creek or Dark Head Cove.

Definitions:
J = Estimated
NA = Not Applicable or Not Available
PW = Pore water
U = Non-detected

Table 4-24

Occurrence and Distribution of Chemicals - In-Situ Pore Water, Dark Head Cove
Lockheed Martin, Middle River Complex
Middle River, Maryland

Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Minimum Non-detect	Maximum Non-detect	Average of Positive Results[2]	Overall Average[3]	Ecological Screening Value (ESV)[4]	# Detects Greater Than ESV[1]
Volatile Organics (ug/L)										
2-BUTANONE	5/5	1.6 J	7.5	DHC-SW/PW-2	--	--	4.2	4.2	14000	0
4-METHYL-2-PENTANONE	1/5	0.56 J	0.56 J	DHC-SW/PW-2	0.32	0.32	0.56	0.24	170	0
ACETONE	5/5	4 J	27 J	DHC-SW/PW-2	--	--	14.4	14.4	1500	0
CARBON DISULFIDE	3/5	0.4 J	0.89 J	DHC-SW/PW-3	0.13	0.13	0.61	0.39	0.92	0
CIS-1,2-DICHLOROETHENE	2/5	0.29 J	0.34 J	DHC-SW/PW-4	0.17	0.17	0.32	0.18	590[5]	0
METHYLENE CHLORIDE	1/5	1.7	1.7	DHC-SW/PW-2	0.33	0.33	1.7	0.47	98.1	0
TETRACHLOROETHENE	1/5	0.43 J	0.43 J	DHC-SW/PW-2	0.29	0.29	0.43	0.20	45	0
TOLUENE	1/5	0.68 J	0.68 J	DHC-SW/PW-2	0.13	0.13	0.68	0.19	2	0
TRICHLOROETHENE	1/5	0.88 J	0.88 J	DHC-SW/PW-1	0.17	0.17	0.88	0.24	21	0

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection and exceedances.
2 - Average of positive analytical results only.
3 - Average of all analytical results are calculated using half of the detection limit for nondetects.
4 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
5 - The value for 1,2-dichloroethene is used as a surrogate for cis-1,2-dichloroethene.

Definitions:
J = Estimated
NA = Not applicable or not available

Associated Samples:
DHC-PW-VOC-1
DHC-PW-VOC-2
DHC-PW-VOC-3
DHC-PW-VOC-4
DHC-PW-VOC-5

Table 4-25

Detected Concentrations Table for Surface Water
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX	**Ecological Screening Value (ESV)[1][2]**	**Adjusted USEPA Regional Screening Level (RSL) for Tap Water[3][4]**	**USEPA Maximum Contaminant Level (MCL)[4][5]**	**CPC-SW/PW-1 CPC-SW-VOC-1 20100902 NORMAL SW NORMAL NA**	**CPC-SW/PW-2 CPC-SW-VOC-2 20100929 NORMAL SW NORMAL NA**	**CPC-SW/PW-3 CPC-SW-VOC-3 20100929 NORMAL SW NORMAL NA**
VOLATILES (UG/L)						
2-BUTANONE	14000	7100 N	NA	0.65 J	0.57 U	0.57 U
ACETONE	1500	22000 N	NA	1.1 U	6.4 B	8.6 B
METALS (UG/L)						
ANTIMONY	30	15 N	6	NA	NA	NA
ARSENIC	5	0.45 C	10	NA	NA	NA
BARIUM	4	7,300 N	2000	NA	NA	NA
CHROMIUM	57.5 [6]	55,000 N[7]	100	NA	NA	NA
COBALT	1 [8]	11 N	NA	NA	NA	NA
COPPER	3.1	1,500 N	1300	NA	NA	NA
IRON	50 [8]	26,000 N	NA	NA	NA	NA
LEAD	2.5	NA	15	NA	NA	NA
MANGANESE	100 [8]	880	NA	NA	NA	NA
MOLYBDENUM	23 [8]	180 N	NA	NA	NA	NA
NICKEL	8.2	730 N	NA	NA	NA	NA
VANADIUM	20	180 N	NA	NA	NA	NA
ZINC	81	11,000 N	NA	NA	NA	NA

Table 4-25

Detected Concentrations Table for Surface Water
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX	Ecological Screening Value (ESV)[1][2]	Adjusted USEPA Regional Screening Level (RSL) for Tap Water[3][4]	USEPA Maximum Contaminant Level (MCL)[4][5]	DHC-SW/PW-1 DHC-SW-VOC-1 20100901 NORMAL SW NORMAL NA	DHC-SW/PW-2 DHC-SW-VOC-2 20100901 NORMAL SW NORMAL NA	DHC-SW/PW-3 DHC-SW-VOC-3 20100902 NORMAL SW NORMAL NA
VOLATILES (UG/L)						
2-BUTANONE	14000	7100 N	NA	0.57 U	0.57 U	0.57 U
ACETONE	1500	22000 N	NA	2.3 J	4.8 J	11 J
METALS (UG/L)						
ANTIMONY	30	15 N	6	NA	NA	NA
ARSENIC	5	0.45 C	10	NA	NA	NA
BARIUM	4	7,300 N	2000	NA	NA	NA
CHROMIUM	57.5 [6]	55,000 N[7]	100	NA	NA	NA
COBALT	1 [8]	11 N	NA	NA	NA	NA
COPPER	3.1	1,500 N	1300	NA	NA	NA
IRON	50 [8]	26,000 N	NA	NA	NA	NA
LEAD	2.5	NA	15	NA	NA	NA
MANGANESE	100 [8]	880	NA	NA	NA	NA
MOLYBDENUM	23 [8]	180 N	NA	NA	NA	NA
NICKEL	8.2	730 N	NA	NA	NA	NA
VANADIUM	20	180 N	NA	NA	NA	NA
ZINC	81	11,000 N	NA	NA	NA	NA

Table 4-25

Detected Concentrations Table for Surface Water
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX	**Ecological Screening Value (ESV)[1][2]**	**Adjusted USEPA Regional Screening Level (RSL) for Tap Water[3][4]**	**USEPA Maximum Contaminant Level (MCL)[4][5]**	**DHC-SW/PW-4 DHC-SW-VOC-4 20100902 NORMAL SW NORMAL NA**	**DHC-SW/PW-5 DHC-SW-VOC-5 20100902 NORMAL SW NORMAL NA**	**DHC-SW-6 DHC-SW-VOC-6 20100903 NORMAL SW NORMAL NA**
VOLATILES (UG/L)						
2-BUTANONE	14000	7100 N	NA	0.57 U	0.57 U	0.57 U
ACETONE	1500	22000 N	NA	12 J	5.8 J	1.1 U
METALS (UG/L)						
ANTIMONY	30	15 N	6	NA	NA	NA
ARSENIC	5	0.45 C	10	NA	NA	NA
BARIUM	4	7,300 N	2000	NA	NA	NA
CHROMIUM	57.5 [6]	55,000 N[7]	100	NA	NA	NA
COBALT	1 [8]	11 N	NA	NA	NA	NA
COPPER	3.1	1,500 N	1300	NA	NA	NA
IRON	50 [8]	26,000 N	NA	NA	NA	NA
LEAD	2.5	NA	15	NA	NA	NA
MANGANESE	100 [8]	880	NA	NA	NA	NA
MOLYBDENUM	23 [8]	180 N	NA	NA	NA	NA
NICKEL	8.2	730 N	NA	NA	NA	NA
VANADIUM	20	180 N	NA	NA	NA	NA
ZINC	81	11,000 N	NA	NA	NA	NA

Table 4-25

Detected Concentrations Table for Surface Water
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX	Ecological Screening Value (ESV)[1][2]	Adjusted USEPA Regional Screening Level (RSL) for Tap Water[3][4]	USEPA Maximum Contaminant Level (MCL)[4][5]	DHC-SW-7 DHC-SW-VOC-7 20100903 ORIG SW NORMAL NA	DHC-SW-7 DHC-SW-VOC-7-D 20100903 DUP SW NORMAL NA	MRC-SW/SD-1 MRC-SW-1 20101014 NORMAL STORMWATER RUN-OFF NORMAL NA
VOLATILES (UG/L)						
2-BUTANONE	14000	7100 N	NA	0.57 U	0.57 U	NA
ACETONE	1500	22000 N	NA	5.1 J	7.8 J	NA
METALS (UG/L)						
ANTIMONY	30	15 N	6	NA	NA	2
ARSENIC	5	0.45 C	10	NA	NA	2.6 J
BARIUM	4	7,300 N	2000	NA	NA	**28.3**
CHROMIUM	57.5 [6]	55,000 N[7]	100	NA	NA	6.7
COBALT	1 [8]	11 N	NA	NA	NA	0.4 J
COPPER	3.1	1,500 N	1300	NA	NA	**23.2**
IRON	50 [8]	26,000 N	NA	NA	NA	**603**
LEAD	2.5	NA	15	NA	NA	**4**
MANGANESE	100 [8]	880	NA	NA	NA	23.6
MOLYBDENUM	23 [8]	180 N	NA	NA	NA	2.8
NICKEL	8.2	730 N	NA	NA	NA	2.4 K
VANADIUM	20	180 N	NA	NA	NA	3.7 J
ZINC	81	11,000 N	NA	NA	NA	47.8

Table 4-25

Detected Concentrations Table for Surface Water
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE SUBMATRIX	**Ecological Screening Value (ESV)[1][2]**	**Adjusted USEPA Regional Screening Level (RSL) for Tap Water[3][4]**	**USEPA Maximum Contaminant Level (MCL)[4][5]**	**MSA-SW-1 MSA-SW-1 20101014 NORMAL STORMWATER RUN-OFF NORMAL NA**
VOLATILES (UG/L)				
2-BUTANONE	14000	7100 N	NA	NA
ACETONE	1500	22000 N	NA	NA
METALS (UG/L)				
ANTIMONY	30	15 N	6	1 J
ARSENIC	5	0.45 C	10	1.2 J
BARIUM	4	7,300 N	2000	**40.7**
CHROMIUM	57.5 [6]	55,000 N[7]	100	4
COBALT	1 [8]	11 N	NA	0.55 J
COPPER	3.1	1,500 N	1300	**8.8**
IRON	50 [8]	26,000 N	NA	**676**
LEAD	2.5	NA	15	**3**
MANGANESE	100 [8]	880	NA	41
MOLYBDENUM	23 [8]	180 N	NA	2.5
NICKEL	8.2	730 N	NA	2.8 K
VANADIUM	20	180 N	NA	3.1 J
ZINC	81	11,000 N	NA	42.6

Table 4-25

Detected Concentrations Table for Surface Water
Lockheed Martin, Middle River Complex
Middle River, Maryland

Notes:

1 - USEPA Region 3 Biological Technical Assistance Group (BTAG) screening levels for surface water (USEPA, August 2006). Lower of the freshwater and marine screening levels is presented.
2 - Concentrations exceeding the ESV are shaded black with white font.
3 - Screening criteria for surface water are based on USEPA Regional Screening Levels (RSLs) for tap water (November, 2010). To account for the anticipated reduced exposure to surface water, the screening criteria presented in the table for surface water are 10 times those typically used for tap water (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the surface water are set at 10 times the RSL for tap water. The screening criteria for non-carcinogens in the surface water are set equal to the RSL for tap water.
4 - Presented for informational purposes only.
5 - 2009 Edition of the Drinking Water Standards and Health Advisories (USEPA, October 2009).
6 - The value is for total chromium.
7 - The value is for trivalent chromium.
8 - NOAA Quick Reference Tables (Buchman, 2008).

Definitions:
B = Blank contamination
J = Estimated
K = Biased high
L = Biased low
NA = Not Applicable or Not Available
R = Rejected
SW = Surface water
U = Non-detected

TABLE 4-26

SUMMARY OF FISH TISSUE SAMPLES COLLECTED AND ANALYZED
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Sample Location	Sample ID	Fish Type	Length (inches)	Laboratory Analysis	
				PCBs[1]	Metals[2]
Reference Samples					
Bowleys Quarters	BQ1-FS-CC1	Channel Catfish	17.5	X	X
	BQ1-FS-WC1	White Catfish	15.6	X	X
Marshy Point	MP-FS-CC1	Channel Catfish	20.3	X	X
	MP-FS-CC2	Channel Catfish	16.1	X	X
	MP-FS-WC1[3]	White Catfish	10.7	X	X
			11.8		
			14.6		
Middle River	MR-FS-CC1	Channel Catfish	10.6	X	X
	MR-FS-CC2	Channel Catfish	12.0	X	X
Site Samples					
Cow Pen Creek	CPC2-FS-CC1	Channel Catfish	16.9	X	X
Dark Head Cove	DHC2-FS-CC1 [3]	Channel Catfish	11.6	X	X
			12.1		
			15.3		
	DHC3-FS-CC1	Channel Catfish	20.0	X	X
	DHC4-FS-CC1	Channel Catfish	11.4	X	X
	DHC4-FS-CC2	Channel Catfish	12.5	X	X
	DHC4-FS-CC3	Channel Catfish	21.1	X	X
	DHC5-FS-CC1	Channel Catfish	10.5	X	X
	DHC5-FS-CC2	Channel Catfish	11.1	X	X

Notes:
All samples also analyzed for percent lipids.

Footnotes:
1 Analyzed for Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, and Aroclor-1268 using SW-846 Method 8082.
2 Analyzed for antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc using SW-846 Method 6010B and SW-846 Method 7471 for mercury.
3 Sample is a composite of three individual fish specimens.

Abbreviations:
PCB Polychlorinated Biphenyls

TABLE 4-27

DETECTED FISH TISSUE CONCENTRATIONS FOR SITE AND REFERENCE AREAS
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

AREA:	Fish Tissue TRV[1] (wet weight)		Aquatic Organism CTL[2] (wet weight)		Bowleys Quarters		Marshy Point			Middle River	
SAMPLE LOCATION:					BQ1-FS		MP-FS			MR-FS	
SAMPLE ID:	10th percentile	LOAEL	Freshwater	Marine	BQ1-FS-CC1	BQ1-FS-WC1	MP-FS-CC1	MP-FS-CC2	MP-FS-WC1	MR-FS-CC1	MR-FS-CC2
SITE OR REFERENCE					Reference	Reference	Reference	Reference	Reference	Reference	Reference
LENGTH OF FISH (inches):					17.5	15.6	20.3	16.1	12.3	10.6	12
SAMPLE DATE:					20101008	20100827	20101008	20100827	20101008	20101007	20101007
METALS (MG/KG)											
ANTIMONY	NA	9	NA	NA	0.14 U	0.14 U	0.15 U	0.15 U	0.16 U	0.15 U	0.27 J
CHROMIUM	NA	44.1	NA	NA	0.11 J	0.19 J	0.11 J	0.092 J	0.13 J	0.13 J	2
COPPER	3.1	NA	NA	NA	0.6 J	0.82 J	0.42 J	1.5 J	1.5 J	1.1 J	1.7 J
LEAD	NA	4	0.12	0.4	0.12 U	0.12 U	0.13 U	0.13 U	**0.16** J	0.13 U	**0.17** J
MERCURY	0.44	NA	0.088[4]	0.18[4]	0.038	0.041 J	0.034	0.044 J	0.029 J	0.055	0.041
SELENIUM	NA	NA	0.024	0.34	**0.52** K	**0.57** K	**0.49** K	**0.57** K	**0.36** J	**0.39** J	**0.54** K
ZINC	NA	36	NA	NA	7.4	7.6	6.1	7.2	6.5	6	7.4
MISCELLANEOUS PARAMETERS (%)											
LIPIDS	NA	NA	NA	NA	1.5	0.93	3.2	1.9	0.4	0.25	0.17
PCBS (UG/KG)											
AROCLOR-1262	930	NA	430	930	40 J	25 J	110 J	140 J	8.1 J	18 J	75 J
AROCLOR-1268	930	NA	430	930	20 J	14 J	62 J	77 J	4.3 J	7.6 J	14 J
TOTAL PCBs[3]	930	NA	430	930	60	39	172	217	12.4	25.6	89

Notes:
Cells are shaded if the detected value exceeds the TRV or CTL.

Footnotes:
1 - 10th percentile value protective of 90% of test species;
LOAEL shown if 10th percentile not avaialble (Windward Environmental, 2009).
2 - Oregon Department of Environmental Quality (ODEQ, 2007)
3 - Sum of positive detections
4 - Value for mercuric chloride.

Data Qualifier Definitions:
J = Estimated
K = Biased high
U = Non-detected

Abbreviations:
CTL - Critical tissue level
LOAEL - Lowest observed adverse effect level
TRV - Toxicity reference value
NA - Not available or not applicable

AREA:	Fish Tissue TRV[1] (wet weight)		Aquatic Organism CTL[2] (wet weight)		Cow Pen Creek	Dark Head Cove	Dark Head Cove	Dark Head Cove			Dark Head Cove	
SAMPLE LOCATION:					CPC-2	DHC-2-FS-CC1	DHC-3	DHC-4			DHC-5	
SAMPLE ID:	10th percentile	LOAEL	Freshwater	Marine	CPC-2-FS-CC1	DHC-2-FS-CC1	DHC-3-FS-CC1	DHC-4-FS-CC1	DHC-4-FS-CC2	DHC-4-FS-CC3	DHC-5-FS-CC1	DHC-5-FS-CC2
SITE OR REFERENCE					Site	Site	Site	Site	Site	Site	Site	Site
LENGTH OF FISH (inches):					16.9	13	20	11.4	12.5	21.1	10.5	11.2
SAMPLE DATE:					20100826	20100825	20100826	20100910	20100910	20100825	20100910	20100910
METALS (MG/KG)												
ANTIMONY	NA	9	NA	NA	0.16 U	0.23 J	0.16 U	0.13 U	0.16 U	0.15 U	0.16 U	0.16 U
CHROMIUM	NA	44.1	NA	NA	0.09 J	0.13 J	0.14 J	0.11 J	0.15 J	0.11 J	0.13 J	0.41 J
COPPER	3.1	NA	NA	NA	0.69 J	0.67 J	0.51 J	1.6 J	0.87 J	0.96 J	1 J	2 J
LEAD	NA	4	0.12	0.4	0.14 U	0.14 U	0.14 U	0.12 U	0.14 U	0.13 U	**0.19** J	**0.17** J
MERCURY	0.44	NA	0.088[4]	0.18[4]	0.036 J	0.046 J	**0.12** J	0.044 J	0.027 J	0.045 J	0.047 J	0.03 J
SELENIUM	NA	NA	0.024	0.34	**0.68** K	**0.57** K	**0.5** K	**0.3** J	**0.3** J	**0.47** K	**0.4** J	**0.43** J
ZINC	NA	36	NA	NA	7.5	7	8.1	6	6	8.2	9.8	9.7
MISCELLANEOUS PARAMETERS (%)												
LIPIDS	NA	NA	NA	NA	0.74	0.32	2	0.6	0.27	3.8	0.55	1
PCBS (UG/KG)												
AROCLOR-1262	930	NA	430	930	20 J	47 J	**1500**	53 J	100	200	400 J	310 J
AROCLOR-1268	930	NA	430	930	12 J	19 J	130 J	19 J	14 J	36 J	78 J	58 J
TOTAL PCBs[3]	930	NA	430	930	32	66	**1630**	72	114	236	**478**	368

Notes:
Cells are shaded if the detected value exceeds the TRV or CTL.

Footnotes:
1 - 10th percentile value protective of 90% of test species;
LOAEL shown if 10th percentile not avaialble (Windward Environmental, 2009)
2 - Oregon Department of Environmental Quality (ODEQ, 2007)
3 - Sum of positive detections
4 - Value for mercuric chloride.

Data Qualifier Definitions:
J = Estimated
K = Biased high
U = Non-detected

Abbreviations:
CTL - Critical tissue level
LOAEL - Lowest observed adverse effect level
TRV - Toxicity reference value
NA - Not available or not applicable

TABLE 4-28

SUMMARY STATISTICS FOR FISH TISSUE DATA
LOCKHEED MARTIN - MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Site Data						All Reference Data						Reference Data - No shoreline Development						Reference Data - Shoreline Development					
	Frequency of Detection	Minimum Detection	Maximum Detection	Sample with Maximum Detection	Average of Positive Results	Standard Deviation	Frequency of Detection	Minimum Detection	Maximum Detection	Sample with Maximum Detection	Average of Positive Results	Standard Deviation	Frequency of Detection	Minimum Detection	Maximum Detection	Sample with Maximum Detection	Average of Positive Results	Standard Deviation	Frequency of Detection	Minimum Detection	Maximum Detection	Sample with Maximum Detection	Average of Positive Results	Standard Deviation
PCBs (ug/kg)																								
AROCLOR-1262	8/8	20 J	1500	DHC-3-FS-CC1	329	492	7/7	8.1 J	140 J	MP-FS-CC2	59.4	50.3	3/3	8.1 J	140 J	MP-FS-CC2	86.0	69.1	4/4	18 J	75 J	MR-FS-CC2	39.5	25.4
AROCLOR-1268	8/8	12 J	130 J	DHC-3-FS-CC1	45.8	41.3	7/7	4.3 J	77 J	MP-FS-CC2	28.4	28.8	3/3	4.3 J	77 J	MP-FS-CC2	47.8	38.4	4/4	7.6 J	20 J	BQ1-FS-CC1	13.9	5.1
TOTAL PCBs[(1)]	8/8	32	1630	DHC-3-FS-CC1	375	532	7/7	12.4	217	MP-FS-CC2	87.9	78.0	3/3	12.4	217	MP-FS-CC2	134	108	4/4	25.6	89	MR-FS-CC2	53.4	27.6
Inorganics (mg/kg)																								
ANTIMONY	1/8	0.23 J	0.23 J	DHC-2-FS-CC1	0.23	0.05	1/7	0.27 J	0.27 J	MR-FS-CC2	0.27	0.07	0/3	-- --	-- --	--	--	--	1/4	0.27 J	0.27 J	MR-FS-CC2	0.27	0.10
CHROMIUM	8/8	0.09 J	0.41 J	DHC-5-FS-CC2	0.16	0.10	7/7	0.092 J	2	MR-FS-CC2	0.39	0.71	3/3	0.092 J	0.13 J	MP-FS-WC1	0.11	0.02	4/4	0.11 J	2	MR-FS-CC2	0.61	0.93
COPPER	8/8	0.51 J	2 J	DHC-5-FS-CC2	1.0	0.51	7/7	0.42 J	1.7 J	MR-FS-CC2	1.1	0.50	3/3	0.42 J	1.5 J	MP-FS-CC2/ MP-FS-WC1	1.1	0.62	4/4	0.6 J	1.7 J	MR-FS-CC2	1.1	0.48
LEAD	2/8	0.17 J	0.19 J	DHC-5-FS-CC1	0.18	0.05	2/7	0.16 J	0.17 J	MR-FS-CC2	0.17	0.05	1/3	0.16 J	0.16 J	MP-FS-WC1	0.16	0.05	1/4	0.17 J	0.17 J	MR-FS-CC2	0.17	0.05
MERCURY	8/8	0.027 J	0.12 J	DHC-3-FS-CC1	0.05	0.03	7/7	0.029 J	0.055	MR-FS-CC1	0.04	0.01	3/3	0.029 J	0.044 J	MP-FS-CC2	0.04	0.01	4/4	0.038	0.055	MR-FS-CC1	0.04	0.01
SELENIUM	8/8	0.3 J	0.68 K	CPC-2-FS-CC1	0.46	0.13	7/7	0.36 J	0.57 K	BQ1-FS-WC1/ MP-FS-CC2	0.49	0.08	3/3	0.36 J	0.57 K	MP-FS-CC2	0.47	0.11	4/4	0.39 J	0.57 K	BQ1-FS-WC1	0.51	0.08
ZINC	8/8	6	9.8	DHC-5-FS-CC1	7.8	1.5	7/7	6	7.6	BQ1-FS-WC1	6.9	0.67	3/3	6.1	7.2	MP-FS-CC2	6.6	0.56	4/4	6	7.6	BQ1-FS-WC1	7.1	0.74
Miscellaneous (%)																								
LIPIDS	8/8	0.27	3.8	DHC-4-FS-CC3	1.2	1.2	7/7	0.17	3.2	MP-FS-CC1	1.2	1.1	3/3	0.4	3.2	MP-FS-CC1	1.8	1.4	4/4	0.17	1.5	BQ1-FS-CC1	0.71	0.63

Associated Samples:
CPC-2-FS-CC1
DHC-2-FS-CC1
DHC-3-FS-CC1
DHC-4-FS-CC1
DHC-4-FS-CC2
DHC-4-FS-CC3
DHC-5-FS-CC1
DHC-5-FS-CC2

Associated Samples:
BQ1-FS-CC1
BQ1-FS-WC1
MP-FS-CC1
MP-FS-CC2
MP-FS-WC1
MR-FS-CC1
MR-FS-CC2

Associated Samples:
MP-FS-CC1
MP-FS-CC2
MP-FS-WC1

Associated Samples:
BQ1-FS-CC1
BQ1-FS-WC1
MR-FS-CC1
MR-FS-CC2

Footnotes:
1 Not a separate analytical measurement; summation of individual detected Aroclors.

Abbreviations:
J Estimated value
K Biased high
PCB Polychlorinated Biphenyls

TABLE 4-29

TOTAL PCB CONGENER CONCENTRATIONS IN FISH TISSUE SAMPLES IN THE BALTIMORE REGION [1]
SUM OF PCB CONGENER CONCENTRATIONS (µg/kg wet weight)
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Surface Water Body																	
	Patapsco River			Back River			Middle River			Gunpowder River			Mid Bay: Middle River to Patapsco			Jones Falls		
Species	Values	Mean	Range	Values	Mean	Range	Values	Mean	Range	Values	Mean	Range	Values	Mean	Range	Values	Mean	Range
1) American Eel	NA	---	---	695, 766, 630, 540, 863, 488, 644, 633	657.4	488 - 863	400, 259	329.5	259 - 400	NA	---	---	NA	---	---	NA	---	---
2) Atlantic Menhaden	NA	---	---	338, 560, 409	435.7	338 - 560	NA	---	---	NA	---	---	NA	---	---	NA	---	---
3) Atlantic Silversides	577, 468	522.5	468 - 577	NA	---	---	NA	---	---	NA	---	---	NA	---	---	NA	---	---
4) Blue Crab	25.5, 23.4, 20.7, 28.0, 106, 26.7, 77.6	44.0	20.7 - 106	NA	---	---	4.69	---	---	NA	---	---	3.09, 5.46, 17.0	8.5	3.09 - 17.0	NA	---	---
5) Blue Crab Hepa	455, 1302, 715, 1012, 1280	952.8	455 - 1302	NA	---	---	703	---	---	NA	---	---	305, 578, 731	538.0	305 - 731	NA	---	---
6) Blueback Herring	119	---	---	NA	---	---	NA	---	---	NA	---	---	NA	---	---	NA	---	---
7) Bluefish	NA	---	---	NA	---	---	NA	---	---	NA	---	---	175, 310	242.5	175 - 310	NA	---	---
8) Brown Bullhead Catfish	223, 524, 112, 125	246.0	112 - 524	NA	---	---	111	---	---	NA	---	---	NA	---	---	NA	---	---
9) Brown Trout	NA	---	---	NA	---	---	NA	---	---	NA	---	---	NA	---	---	29	---	---
10) Carp	NA	---	---	1370, 711, 854, 1250, 1350	1107.0	711 - 1370	NA	---	---	NA	---	---	NA	---	---	NA	---	---
11) Channel Catfish	1280, 1770, 33.6	1028	33.6 - 1770	624, 407, 367, 915, 854, 880, 274, 408, 362, 1160, 818, 593	638.5	274 - 1160	565, 1005	785.0	565 - 1005	276, 253	264.5	253 - 276	NA	---	---	NA	---	---
12) Oyster	11.4, 3.56, 4.13	6.4	3.56 - 11.4	NA	---	---	NA	---	---	NA	---	---	NA	---	---	NA	---	---
13) Rock Bass	NA	---	---	NA	---	---	NA	---	---	NA	---	---	NA	---	---	12.5	---	---
14) Striped Bass	NA	---	---	NA	---	---	NA	---	---	NA	---	---	183, 199, 27.3, 271, 87.7, 145, 248, 115, 126, 87.2	148.9	27.3 - 271	NA	---	---
15) Striped Killfish	872	---	---	NA	---	---	NA	---	---	NA	---	---	NA	---	---	NA	---	---
16) White Bullhead Catfish	993	---	---	NA	---	---	NA	---	---	NA	---	---	NA	---	---	NA	---	---
17) White Perch	716, 471, 553, 550, 488, 878, 985, 1030, 670, 638, 332, 585, 351, 539, 567, 372, 622, 365, 1630, 610, 393, 588, 629	633.1	332 - 1630	183, 328, 246, 251, 546, 260, 420, 232, 389	317.2	232 - 546	569, 268, 406, 191	358.5	191 - 569	102, 328, 176, 190	199.0	102 - 328	286, 184, 321, 347, 368, 291	299.5	184 - 368	NA	---	---
18) White Sucker	92.3, 77.9	85.1	77.9 - 92.3	NA	---	---	NA	---	---	NA	---	---	NA	---	---	10.4, 39.5	25.0	10.4 - 39.5
19) Yellow Perch	NA	---	---	NA	---	---	449	---	---	148, 316, 125, 152, 73.4	166.9	73.4 - 316	NA	---	---	NA	---	---

Footnotes:
1 Analytical data for fillet tissue samples for Maryland stations monitored between 2001 and 2008. Data submitted to Tetra Tech via email from the MDE Science Services Administration in July 2009. The information has not been published to date.

Abbreviations:
NA No data
PCBs Polychlorinated biphenyls

TABLE 4-30

STATE OF MARYLAND CURRENT FISH ADVISORIES AFFECTING THE MIDDLE RIVER AREA
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Fish Species	Contaminant driving risk	USEPA Screening Level[1] (ppm)	Maryland Consumption Recommendations		USEPA Consumption Limits and Associated Fish Tissue Concentrations[4]		Location of Fish Advisory[6]
			(meals/yr)[2]	(meals/month)[3]	(meals/month)	Tissue Concentration[5] (ppm)	
American Eel	PCBs	0.02 C	13	1.1	1	>0.023-0.047	Middle River
Brown Bullhead	PCBs	0.02 C	38	3.2	3	>0.012-0.016	Middle River
Striped Bass	PCBs	0.02 C	9-25[7]	0.75-2.1[7]	0.5-2	>0.047-0.023	Chesapeake bay and tributaries
Small mouth bass	Methylmercury	0.4 N	48	4	4	>0.12-0.23	State wide
Large mouth bass	Methylmercury	0.4 N	48	4	4	>0.12-0.23	State wide
Yellow perch	PCBs	0.02 C	9	0.75	0.5	>0.047-0.094	Middle River
White perch	PCBs	0.02 C	12	1	1	>0.023-0.047	Middle River
Channel catfish	PCBs	0.02 C	0	0	<0.5	>0.094	Middle River, Patapsco River/Baltimore Harbor
Blue crab "mustard"	PCBs	0.02 C	0	0	<0.5	>0.094	Middle River, Mid Bay (Middle to Patapsco River), Patapsco River/Baltimore Harbor

1 - Based on fish consumption rate of 17.5 g/day, 70 kg body weight, 70-yr lifetime (USEPA, November 2000).
2 - Based on an 8 oz meal for the general population (MDE, May 2007). Maryland consumption recommendations include the following assumptions: 76 kg body weight, 30-yr exposure duration averaged over 30 yrs for carcinogens and 70 yrs for noncarcinogens (MDE, March 2009).
3 - Converted by reviewer using 12 months/year
4 - USEPA, November 2000.
5 - Concentrations based on consumption of 8 oz meals, e.g. the 3-meal-per-month level represents the concentrations associated with 3 to 3.9 meals
6 - Location used for Maryland Consumption Recommendations listed; however, other waterbodies have fish advisories for these species with different consumption recommendations. See Recommended Maximum Meals Each Year for Maryland Waters (MDE, May 2007).
7 - Seasonally based recommendation

C = Carcinogen (based on a 10^{-5} risk level)
N = Noncarcinogen
MDE = Maryland Department of the Environment
PCB = Polychlorinated biphenyl
USEPA = United States Environmental Protection Agency

MDE. May 2007. Recommended Maximum Meals Each Year for Maryland Waters. Available at: http://www.mde.state.md.us/programs/Marylander/CitizensInfoCenterHome/Documents/www.mde.state.md.us/assets/document/Fish_Advisory_Table_2007.pdf

MDE. March 2009. Technical Support Document for establishing Fish and Shellfish Consumption Advisories in Maryland. Science Services Administration.

USEPA. November 2000. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. Volume 1 and 2. Third Edition. Office of Water. Document No. EPA 823-B-00-008. Available at: http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/guidance.cfm

TABLE 4-31

TOTAL PCB CONCENTRATIONS IN FISH TISSUE FROM SITE COMPARED TO REGION
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Species	Surface Water Body									
	Site Data[1]				Back River[2]			Middle River[2]		
	Values	Mean[3]	Mean[4]	Range	Values	Mean	Range	Values	Mean	Range
Channel Catfish	32, 66, 1630, 72, 114, 236, 478, 368	375	195	32-1630	624, 407, 367, 915, 854, 880, 274, 408, 362, 1160, 818, 593	638.5	274 - 1160	565, 1005	785	565 - 1005

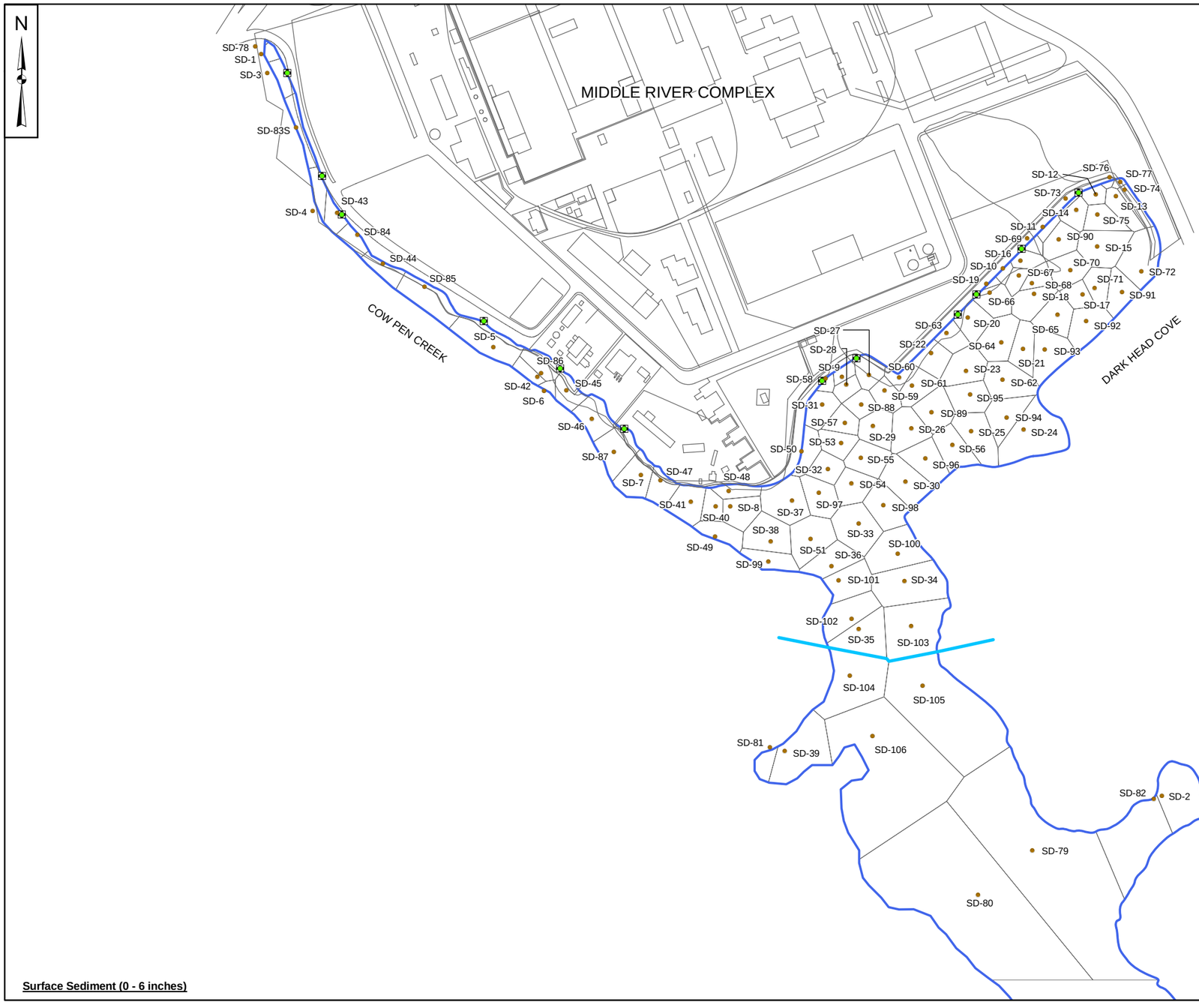
Footnotes:

1 Data presented in µg/kg wet weight for fillet samples of total PCB concentrations determined from PCB Aroclor concentrations.

2 Data presented in µg/kg wet weight for fillet samples of total PCB concentrations determined from PCB congener concentrations for fillet tissue samples for Maryland stations monitored between 2001 and 2008. Data submitted to Tetra Tech via email from the MDE Science Services Administration in July 2009. The information has not been published to date.

3 Including maximum concentration.

4 Excluding maximum concentration.



Surface Sediment (0 - 6 inches)

TETRA TECH

Figure 4 - 1
Thiessen Polygons for Primary Metals of Concern in Sediments (0 - 6 inches)
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sample Location
- Stormwater Outfall Locations
- Buildings/Roads
- "Cutoff" Boundary for Weighted Average Calculation
- Middle River

530 265 0 530
Feet

Drawn By: J. ENGLISH 02/04/11
Checked By: L. SINAGOGA 02/04/11
Approved By:

Contract Number: 112IC02903

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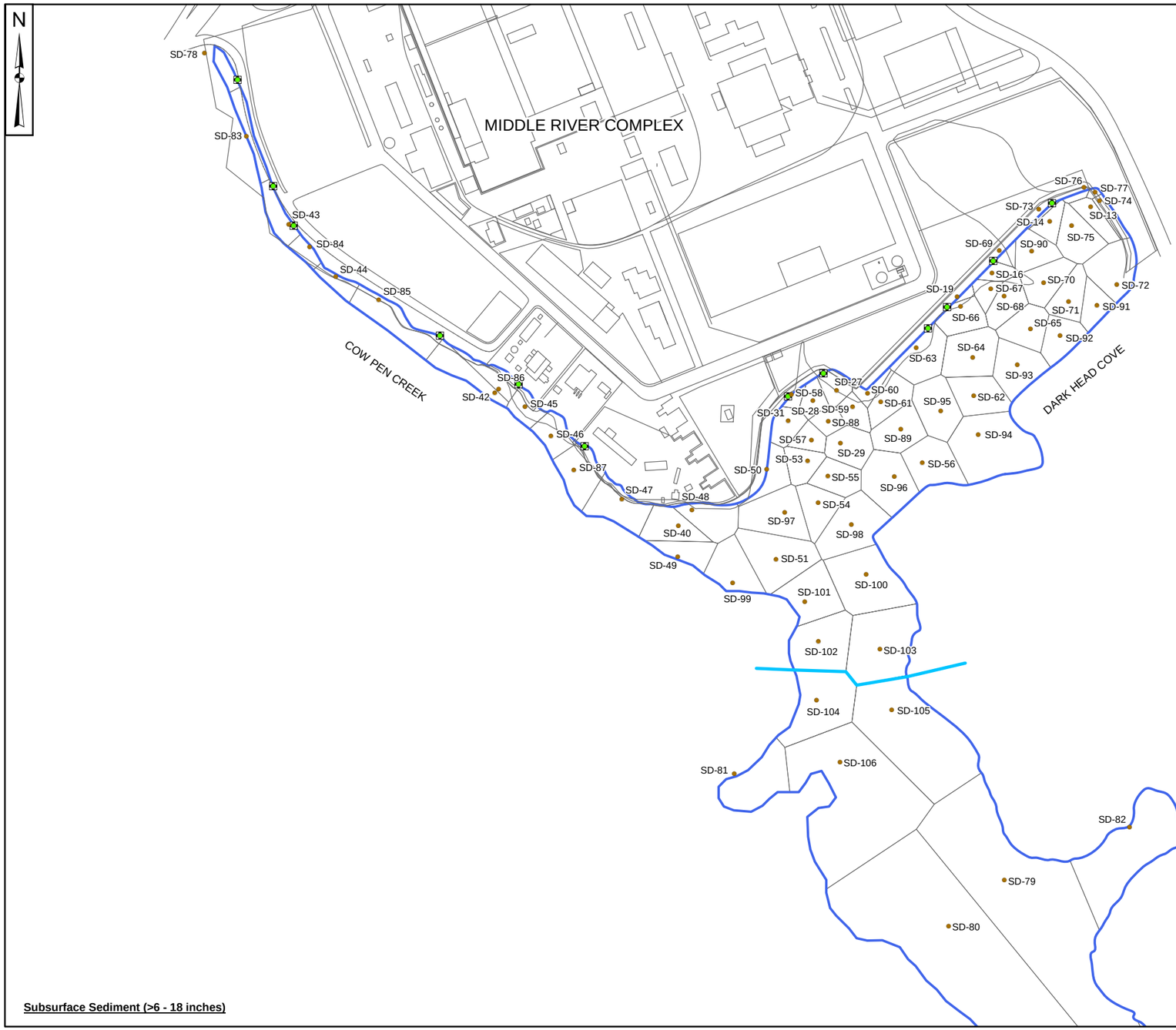

Subsurface Sediment (>6 - 18 inches)

TETRA TECH

Figure 4 - 2
Thiessen Polygons for Primary Metals of Concern in Sediments (6 - 18 inches)
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sample Location
- Stormwater Outfall Locations
- Buildings/Roads
- "Cutoff" Boundary for Weighted Average Calculation
- Middle River

530 265 0 530
Feet

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Checked By: L. SINAGOGA 02/03/11
Approved By:

Contract Number: 112IC03214

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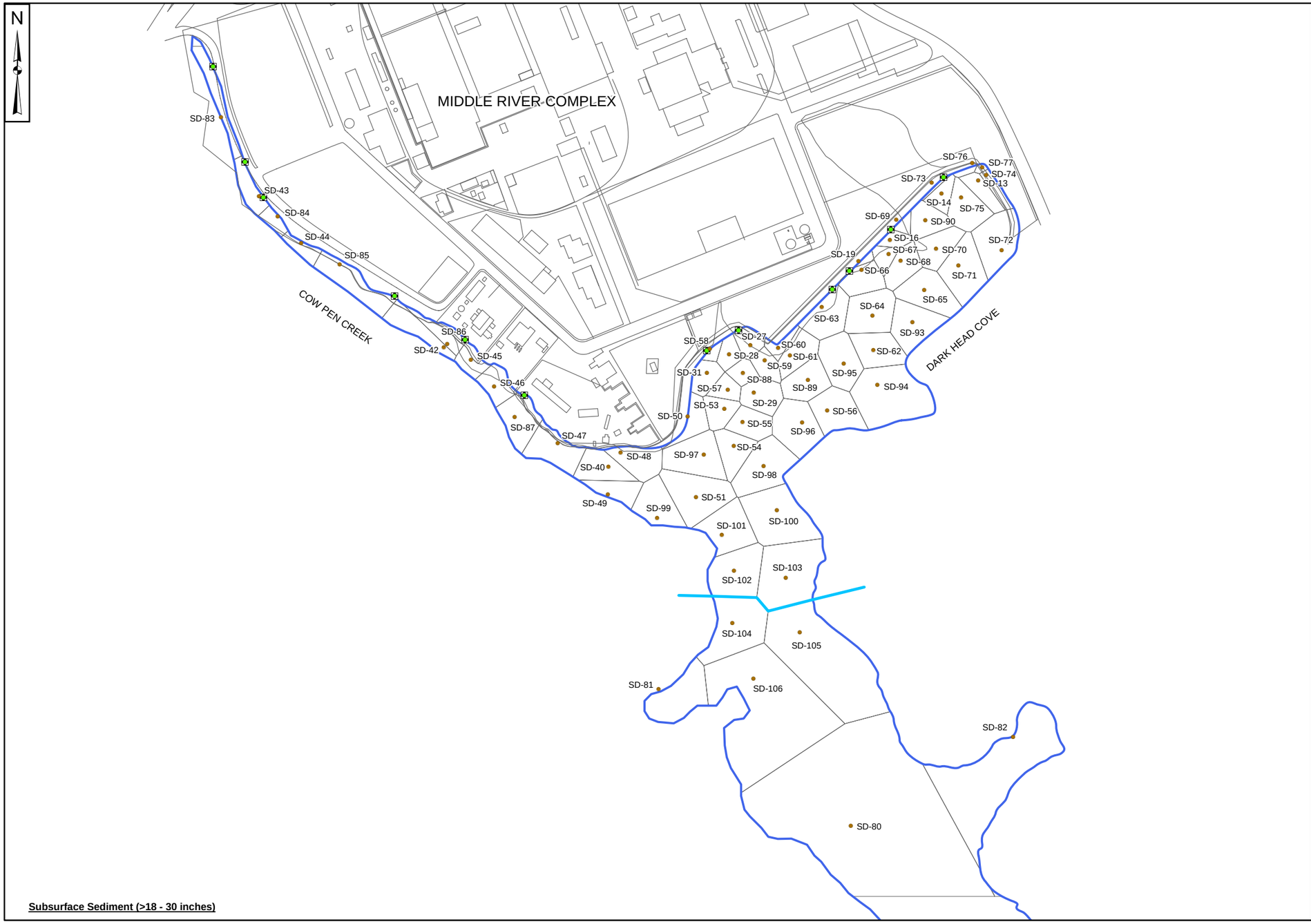

Subsurface Sediment (>18 - 30 inches)

TETRA TECH

Figure 4 - 3
Thiessen Polygons for Primary Metals of Concern in Sediments (18 - 30 inches)
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sample Location
- Stormwater Outfall Locations
- Buildings/Roads
- "Cutoff" Boundary for Weighted Average Calculation
- Middle River

530 265 0 530
Feet

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Checked By: L. SINAGOGA 02/03/11
Approved By:

Contract Number: 112IC03214

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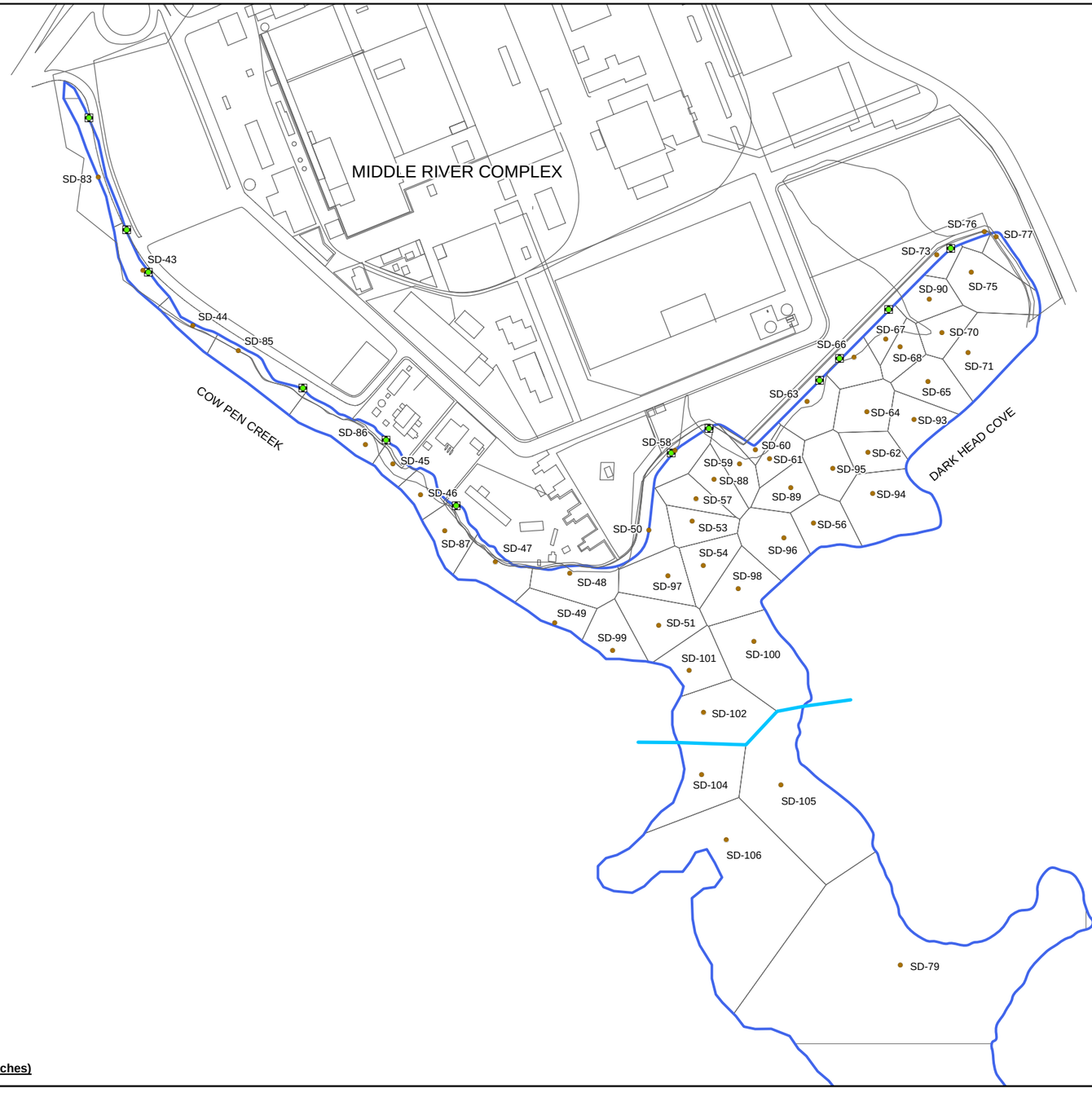

Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 4
Thiessen Polygons for Primary Metals of Concern in Sediments (30 - 52 inches)
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sample Location
- Stormwater Outfall Locations
- Buildings/Roads
- "Cutoff" Boundary for Weighted Average Calculation
- Middle River

530 265 0 530
Feet

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Checked By: L. SINAGOGA 02/03/11
Approved By:

Contract Number: 112IC03214

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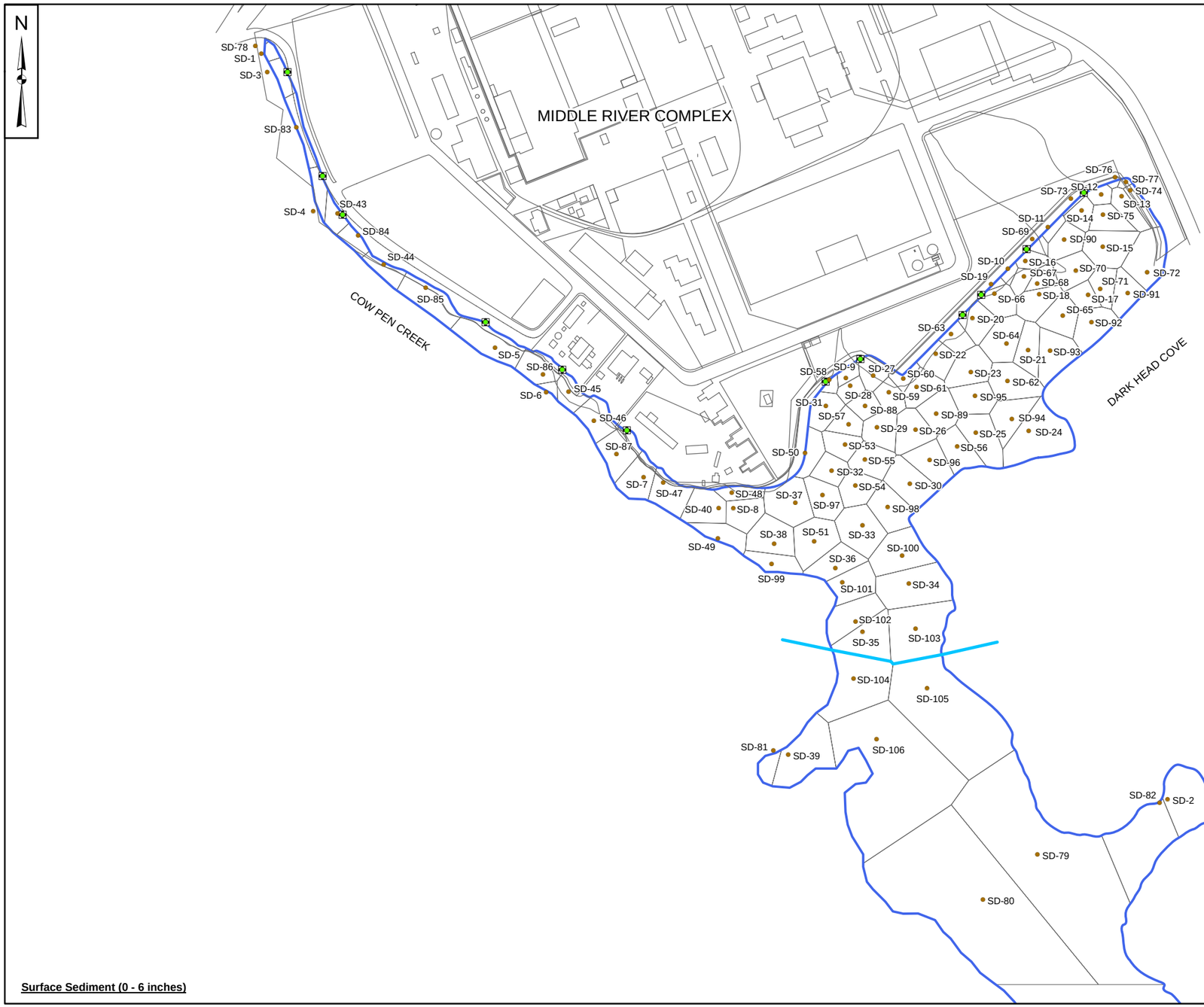

Surface Sediment (0 - 6 inches)

TETRA TECH

Figure 4 - 5
Thiessen Polygons for
Polycyclic Aromatic Hydrocarbons
and Polychlorinated Biphenyl
Compounds of Concern in Sediments
(0 - 6 inches)
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sample Location
- Stormwater Outfall Locations
- Buildings/Roads
- "Cutoff" Boundary for Weighted Average Calculation
- Middle River

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Checked By: L. SINAGOGA 02/03/11
Approved By:

Contract Number: 112IC03214

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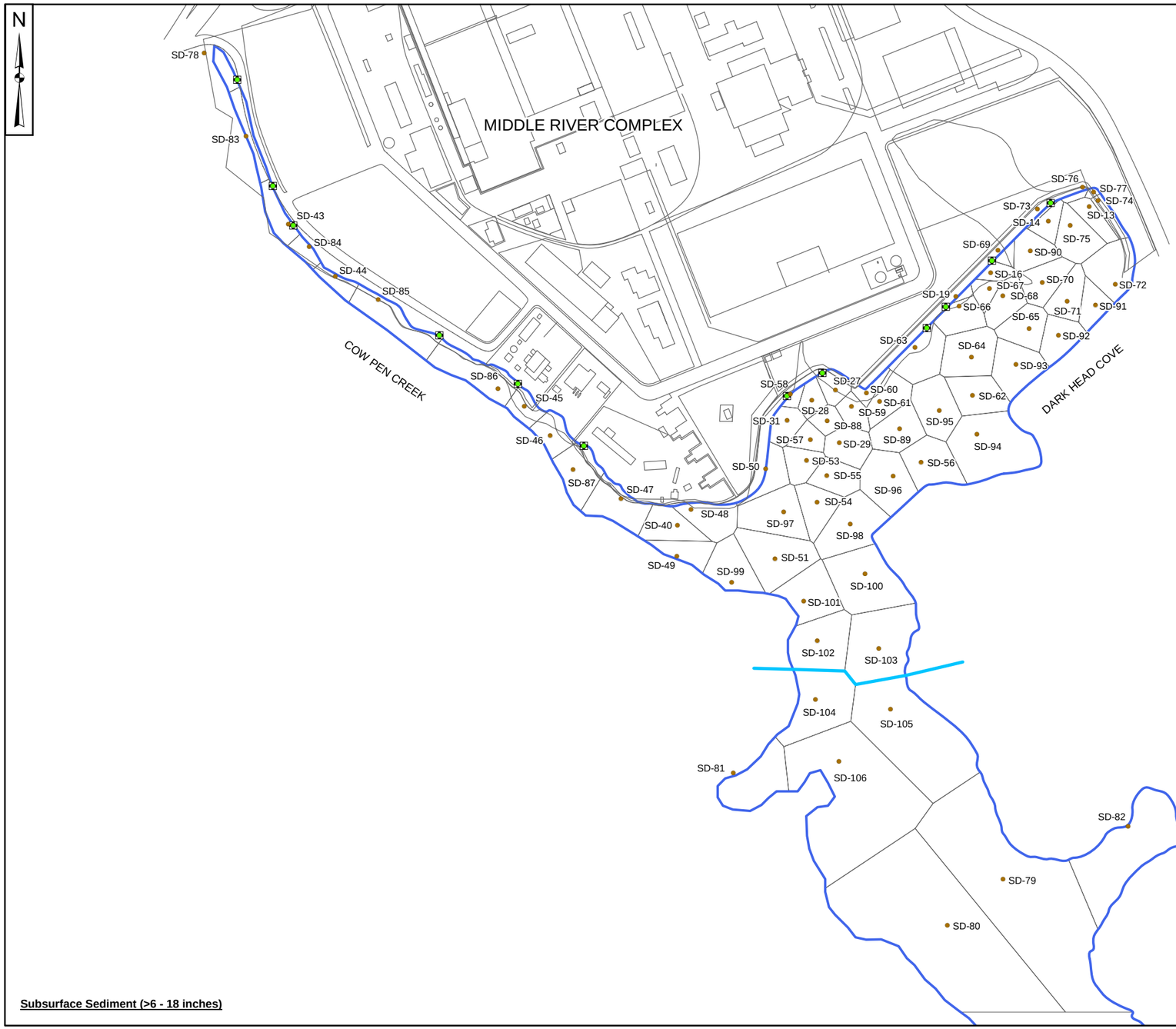

Subsurface Sediment (>6 - 18 inches)

TETRA TECH

Figure 4 - 6
Thiessen Polygons for Polycyclic Aromatic Hydrocarbons and Polychlorinated Biphenyl Compounds of Concern in Sediments (6 - 18 inches)
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sample Location
- Stormwater Outfall Locations
- Buildings/Roads
- "Cutoff" Boundary for Weighted Average Calculation
- Middle River

530 265 0 530
Feet

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Checked By: L. SINAGOGA 02/03/11
Approved By:

Contract Number: 112IC03214

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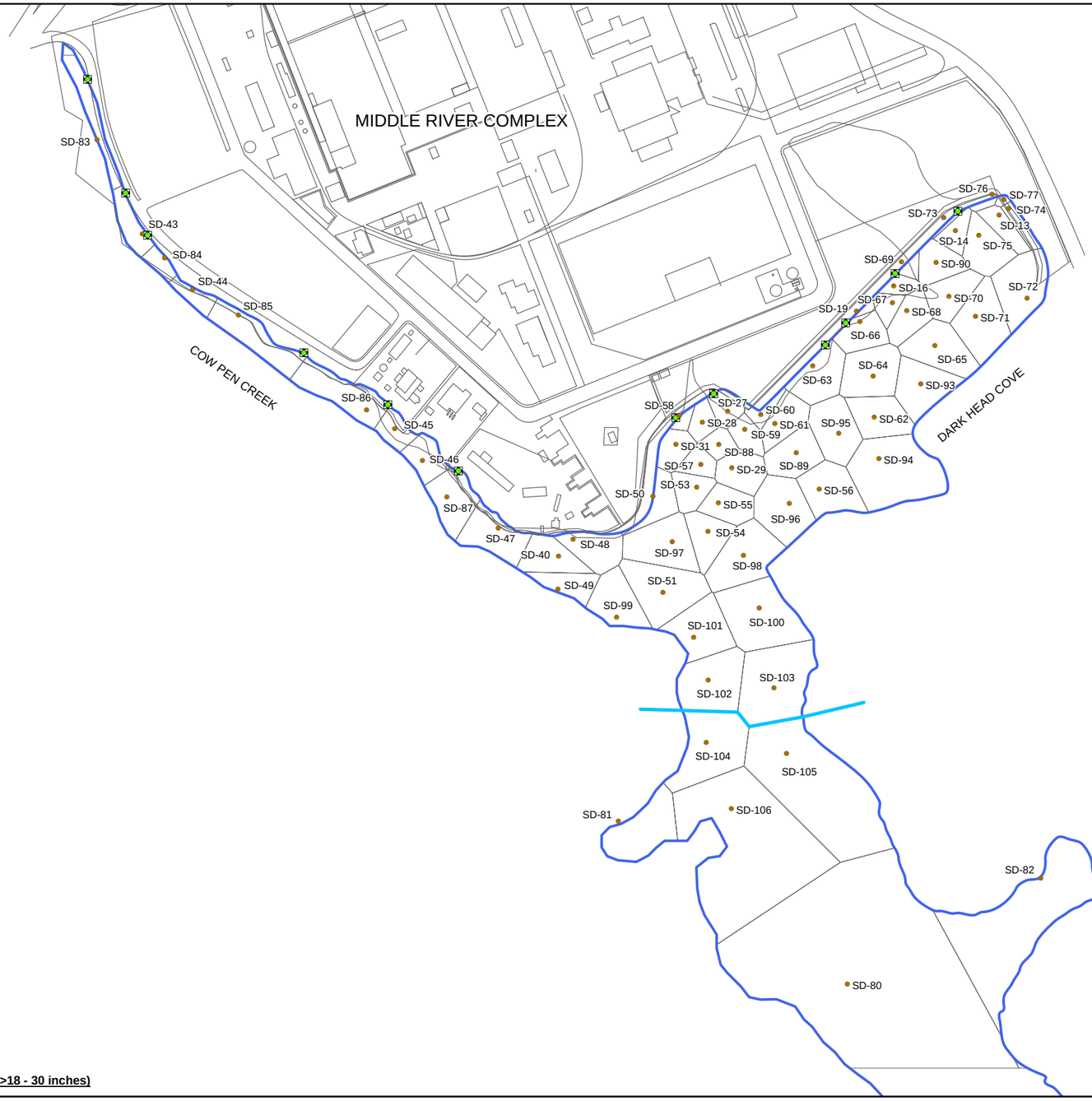

Subsurface Sediment (>18 - 30 inches)

TETRA TECH

Figure 4 - 7
Thiessen Polygons for Polycyclic Aromatic Hydrocarbons and Polychlorinated Biphenyl Compounds of Concern in Sediments (18 - 30 inches)
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sample Location
- Stormwater Outfall Locations
- Buildings/Roads
- "Cutoff" Boundary for Weighted Average Calculation
- Middle River

530 265 0 530
Feet

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Checked By: L. SINAGOGA 02/03/11
Approved By:

Contract Number: 112IC03214

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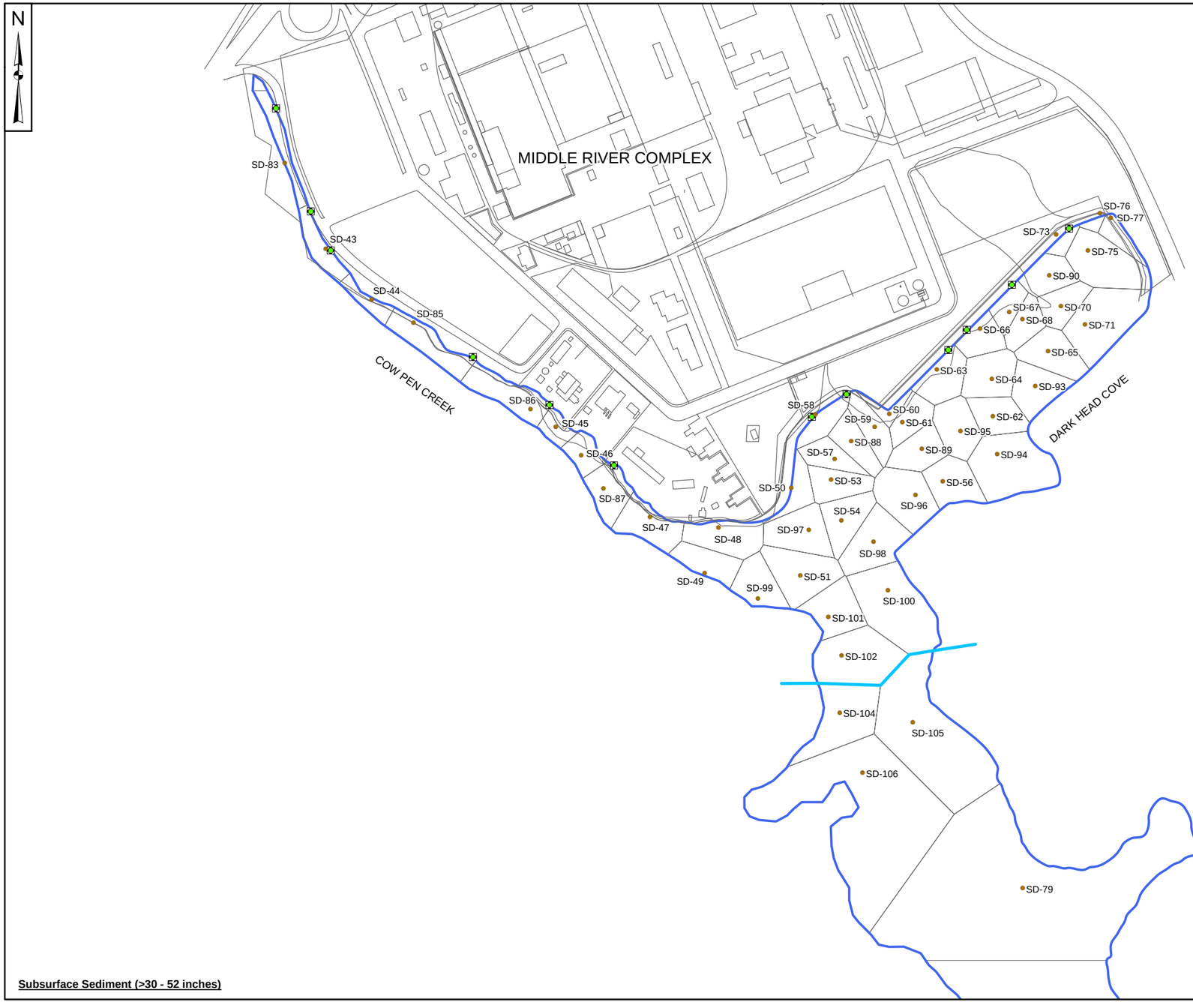

Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 8
Thiessen Polygons for Polycyclic Aromatic Hydrocarbons and Polychlorinated Biphenyl Compounds of Concern in Sediments (30 - 52 inches)
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sample Location
- Stormwater Outfall Locations
- Buildings/Roads
- "Cutoff" Boundary for Weighted Average Calculation
- Middle River

530 265 0 530
Feet

Drawn By: J. ENGLISH 02/03/11
Checked By: L. SINAGOGA 02/03/11
Approved By:

Contract Number: 112IC03214

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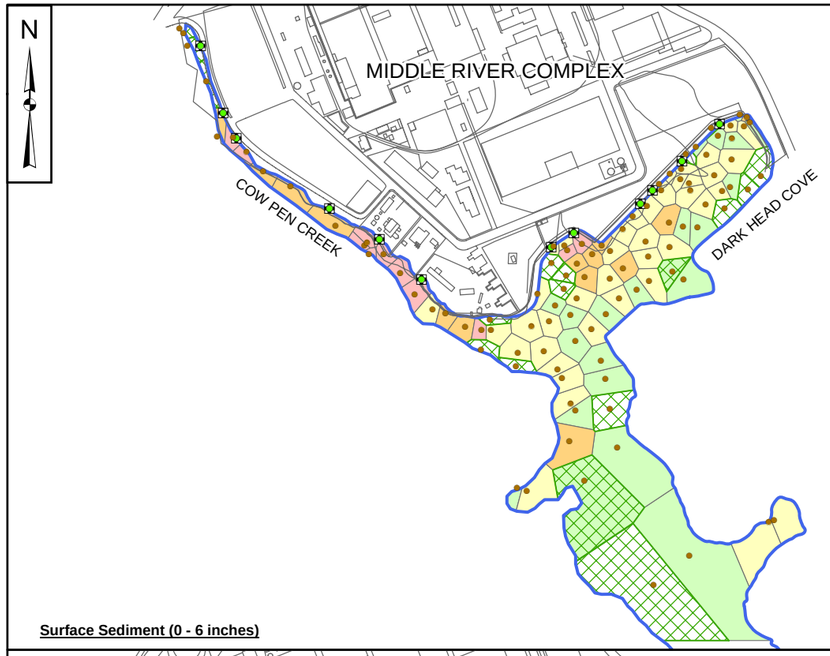
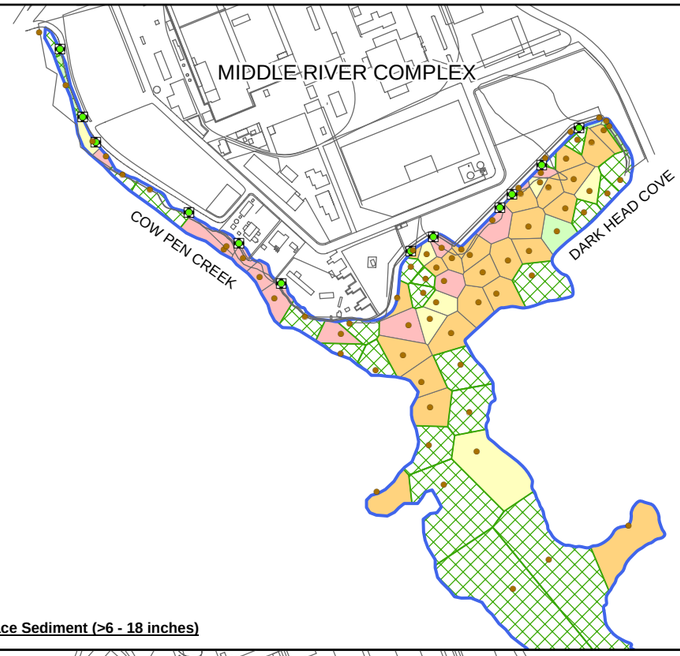
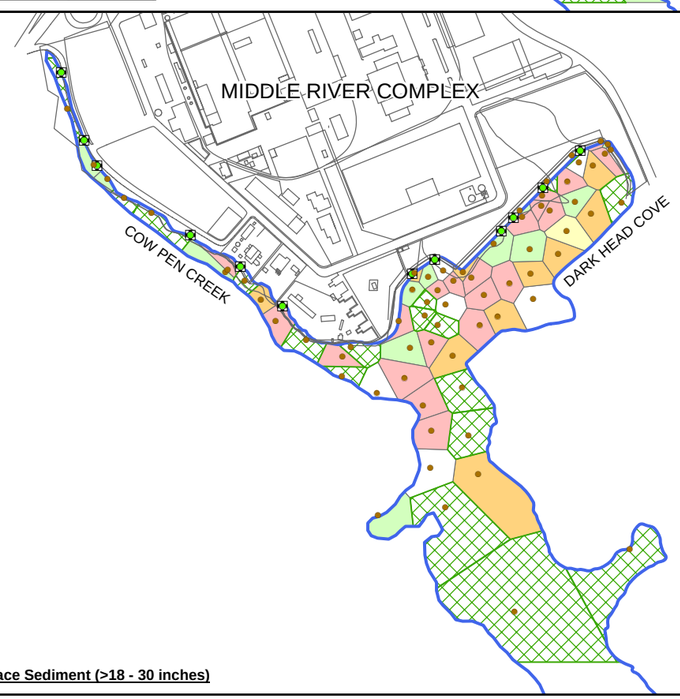


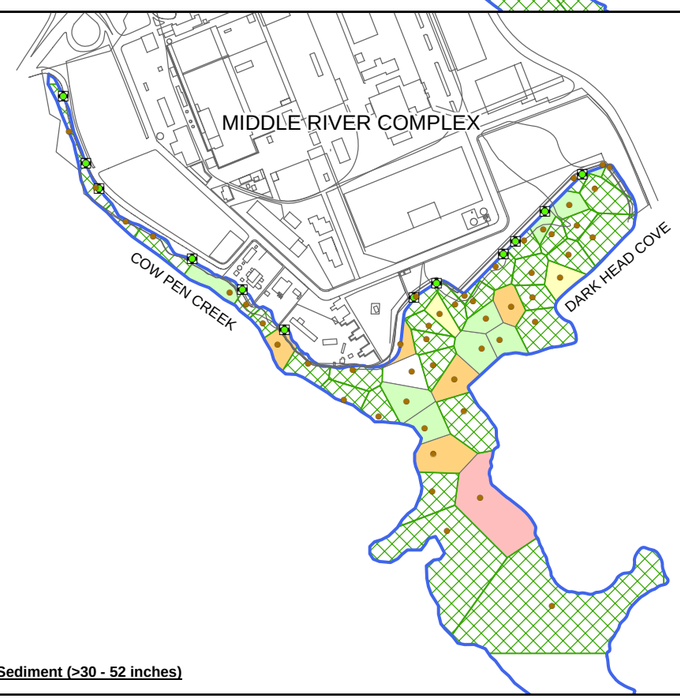
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 9
Thiessen Polygons for
Ecological Risk Assessment of
Cadmium in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Cadmium Sample Location
- Stormwater Outfall Locations

Cadmium Thiessen Polygons (mg/kg)

- Less than Background
- < or = 0.68
- > 0.68 - 4.21
- > 4.21 - 8.42
- > 8.42 - 21
- > 21
- Buildings/Roads
- Middle River

TEL = 0.68
PEL = 4.21
2X PEL = 8.42
5X PEL = 21

Background Concentration
SD 0-6" = 0.95 mg/kg
SD 6-18" = 0.91 mg/kg
SD 18-30" = 0.36 mg/kg
SD 30-52" = 0.34 mg/kg

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 01/17/11
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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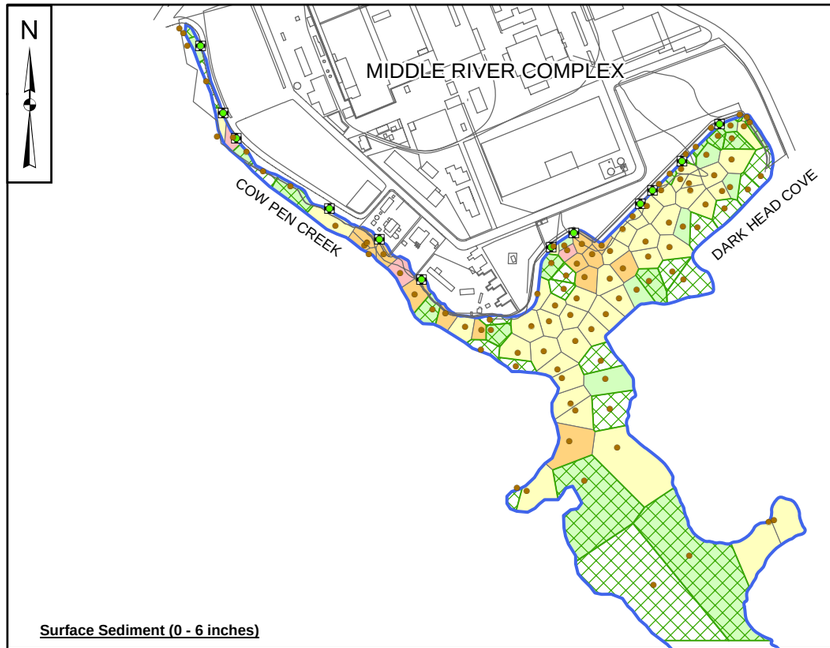
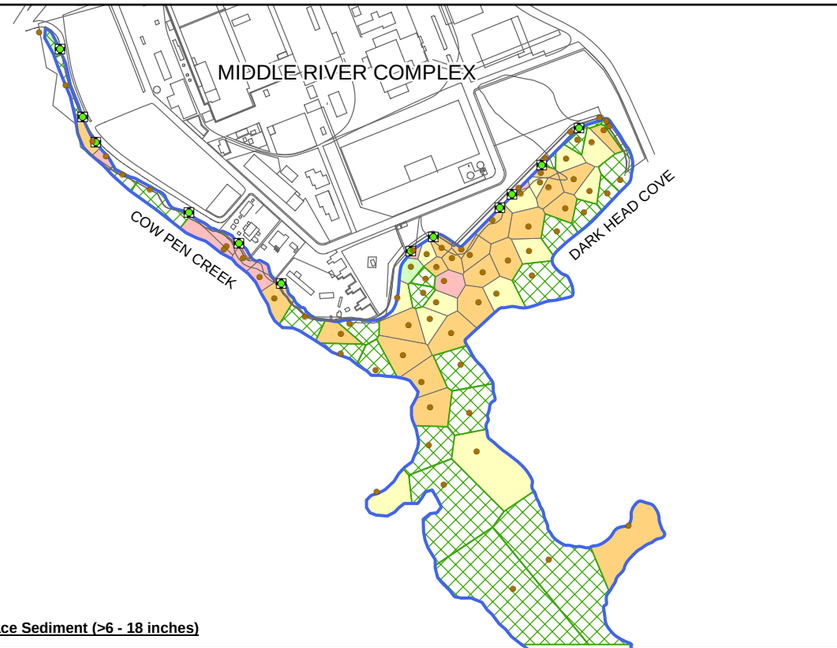
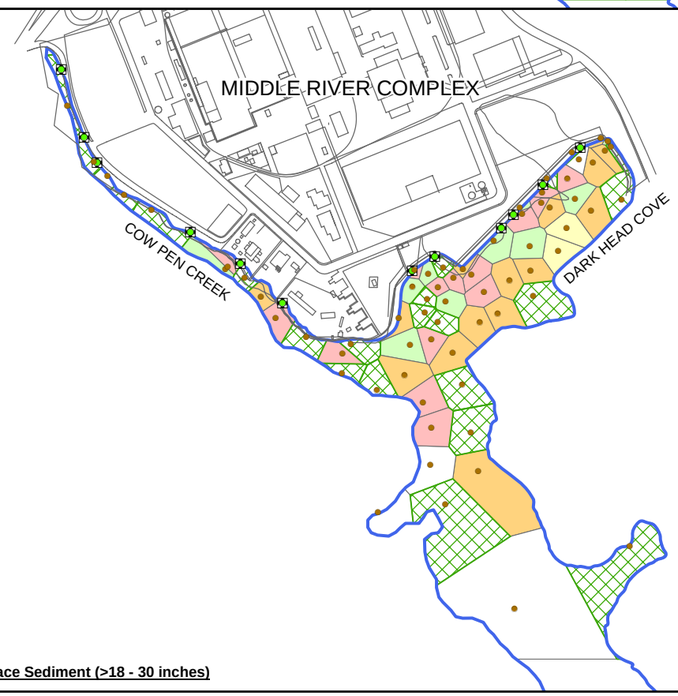


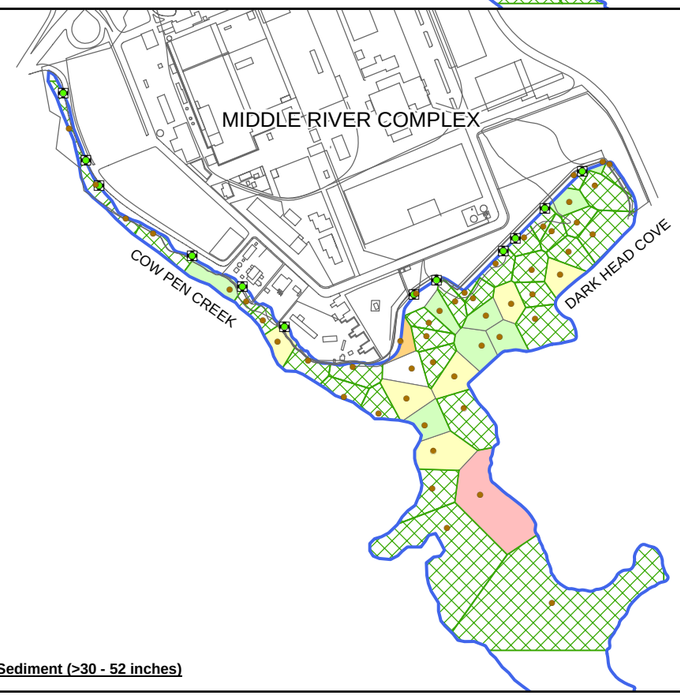
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 10
Thiessen Polygons for Ecological Risk Assessment of Chromium in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Chromium Sample Location
- Stormwater Outfall Locations

Chromium Thiessen Polygons (mg/kg)

- Less than Background
- < or = 43.4
- > 43.4 - 111
- > 111 - 222
- > 222 - 555
- > 555
- Buildings/Roads
- Middle River

TEC = 43.4
PEC = 111
2X PEC = 222
5X PEC = 555

Background Concentration
SD 0-6" = 90.9 mg/kg
SD 6-18" = 66.8 mg/kg
SD 18-30" = 33.2 mg/kg
SD 30-52" = 32.9 mg/kg

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 12/17/10
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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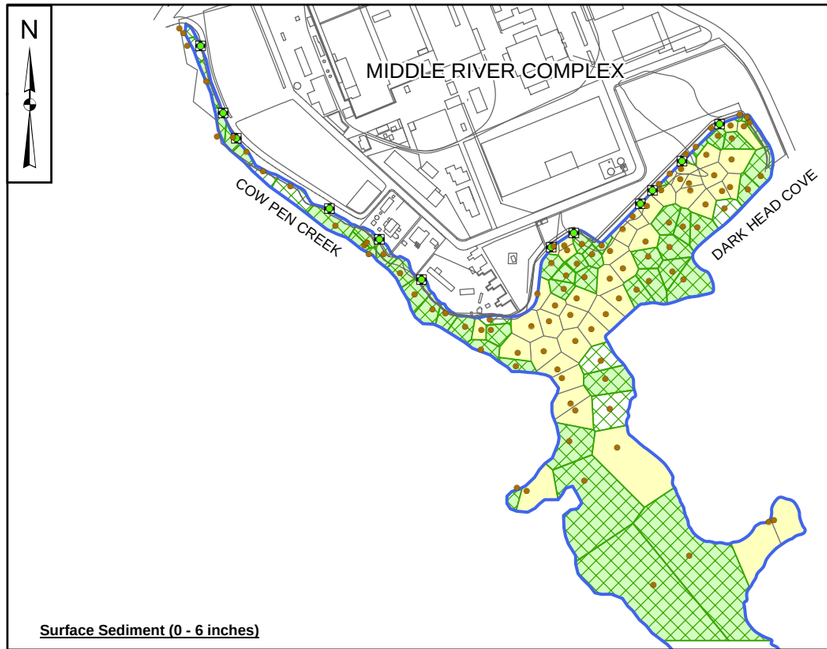
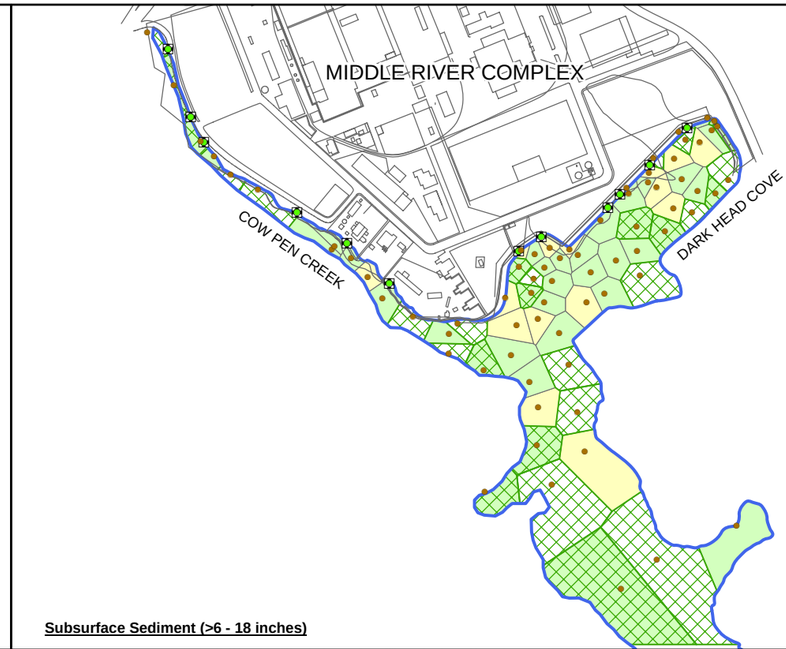
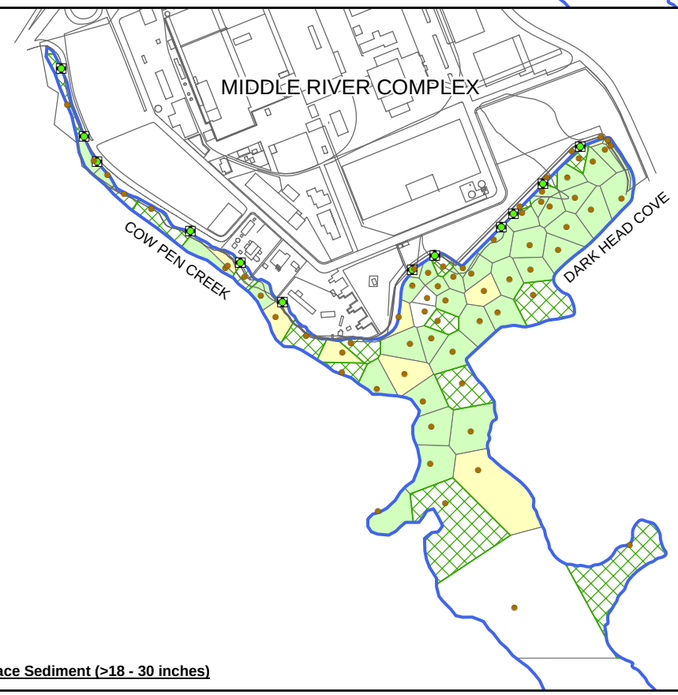


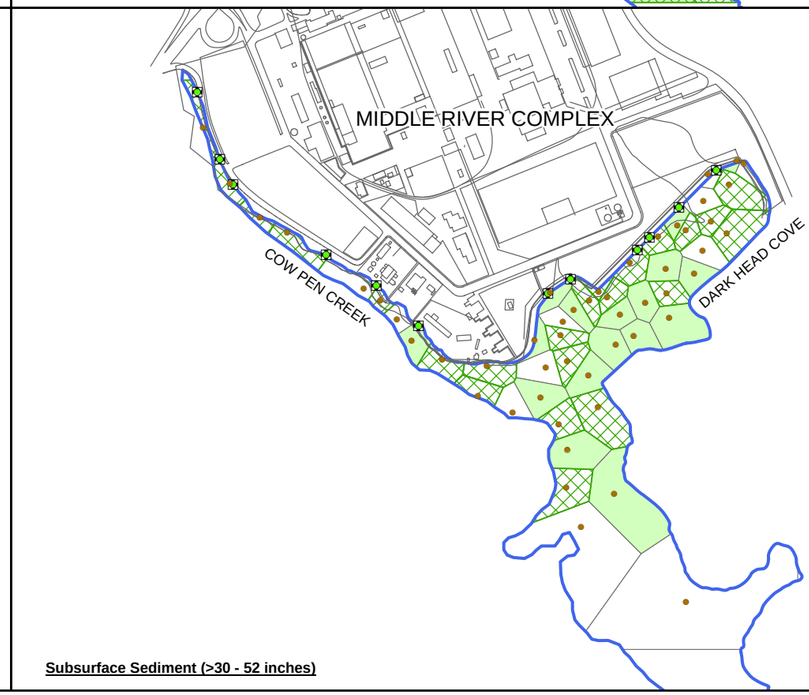
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 11
Thiessen Polygons for
Ecological Risk Assessment of
Copper in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Copper Sample Location
- Stormwater Outfall Locations

Copper Thiessen Polygons (mg/kg)

- Less than Background
- < or = 18.7
- > 18.7 - 108
- > 108 - 216
- > 216 - 540
- > 540
- Buildings/Roads
- Middle River

TEL = 18.7
PEL = 108
2X PEL = 216
5X PEL = 540

Background Concentration
SD 0-6" = 110 mg/kg
SD 6-18 = 54 mg/kg
SD 18-30" = 16.2 mg/kg
SD 30-52" = 14 mg/kg

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 01/17/11
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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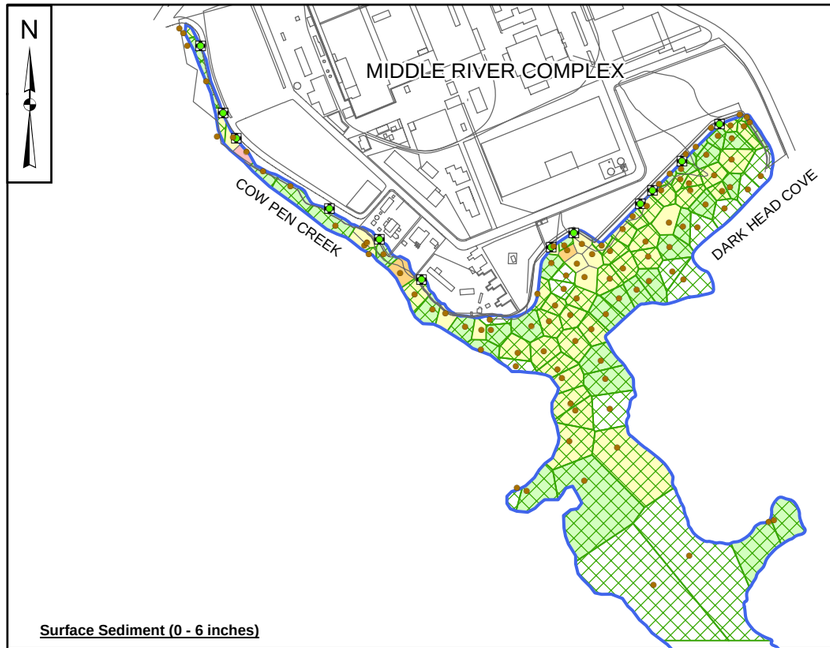
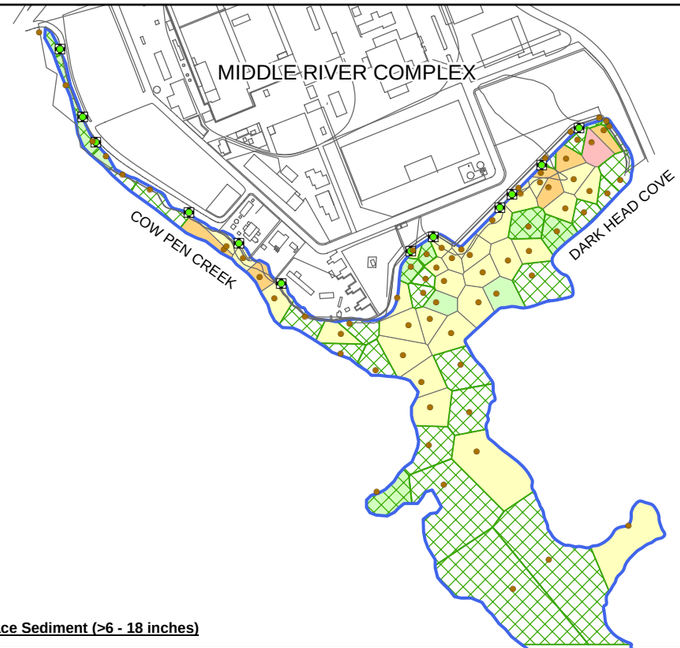
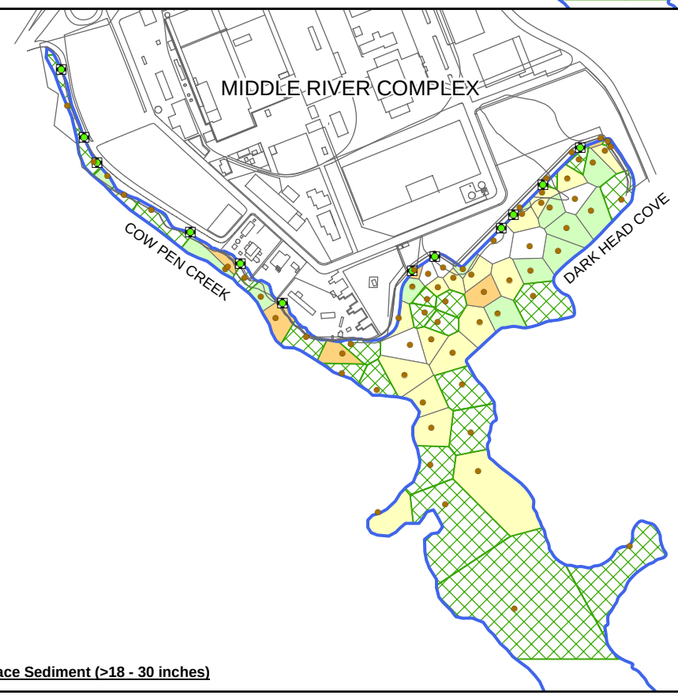


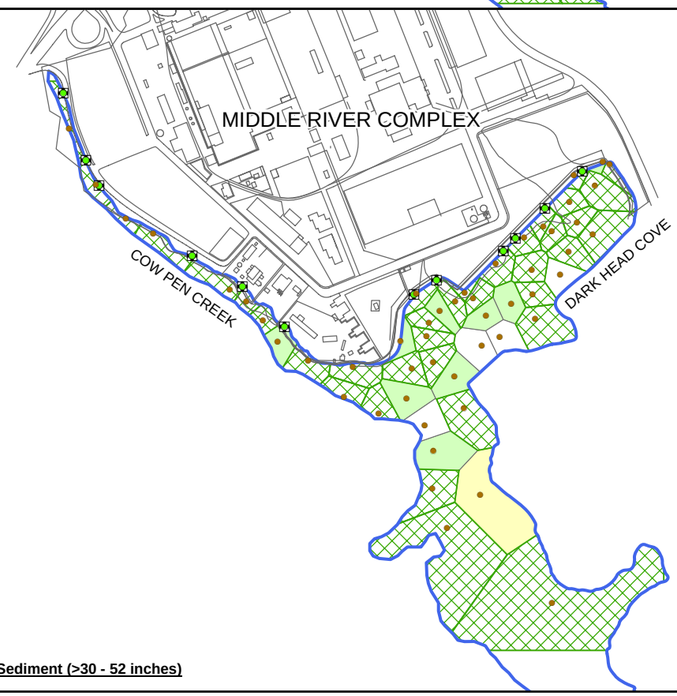
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 12
Thiessen Polygons for
Ecological Risk Assessment of
Lead in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Lead Sample Location
- Stormwater Outfall Locations

Lead Thiessen Polygons (mg/kg)

- Less than Background
- < or = 30.2
- > 30.2 - 112
- > 112 - 224
- > 224 - 560
- > 560
- Buildings/Roads
- Middle River

TEL = 30.2
PEL = 112
2X PEL = 224
5X PEL = 560

Background Concentration
SD 0-6" = 151 mg/kg
SD 6-18" = 95.5 mg/kg
SD 18-30" = 18.7 mg/kg
SD 30-52" = 18.6 mg/kg

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 01/17/11
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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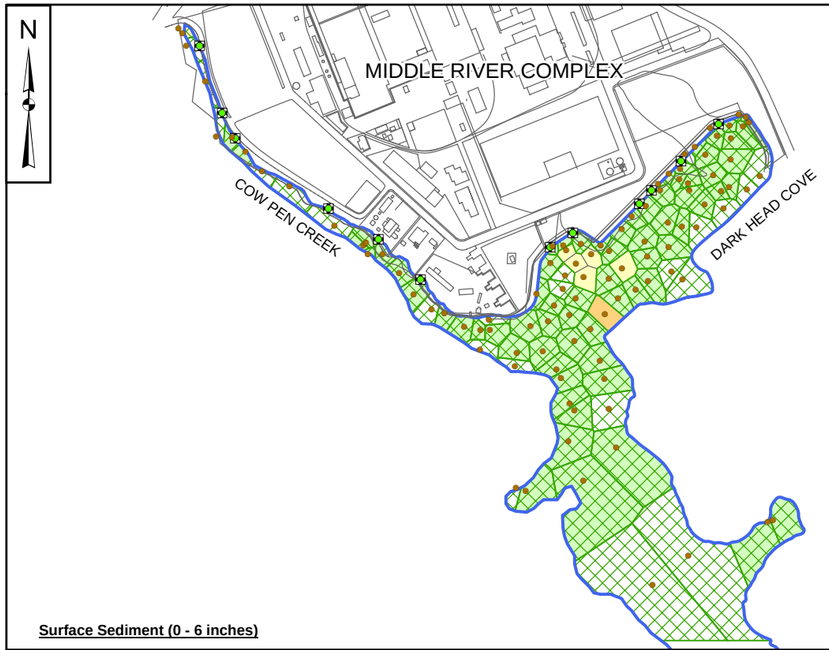
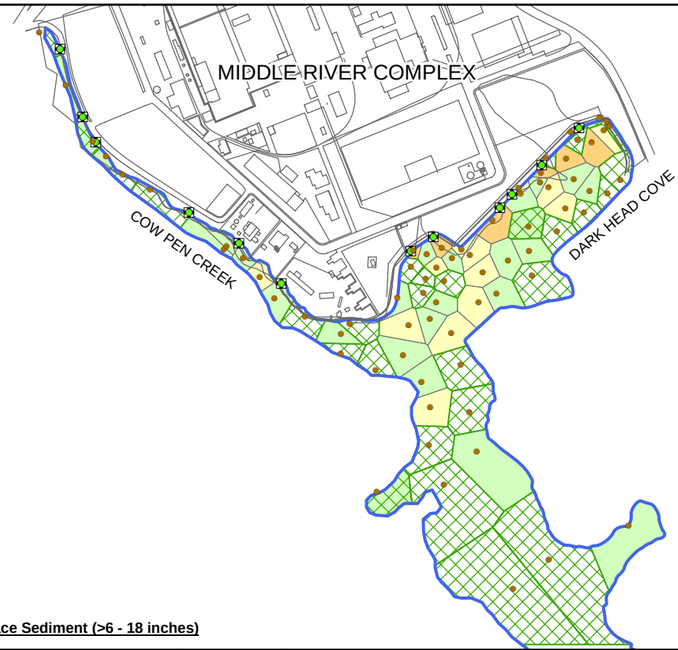
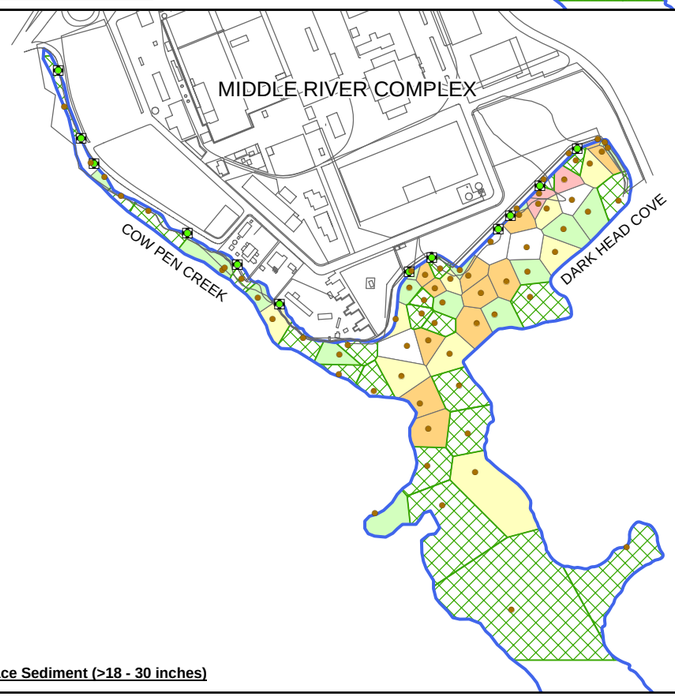


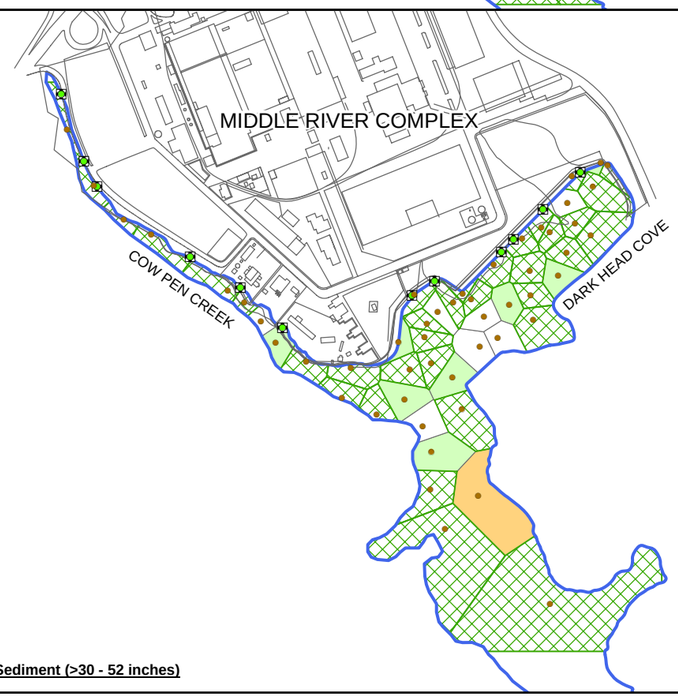
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 13
Thiessen Polygons for
Ecological Risk Assessment of
Mercury in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Mercury Sample Location
- Stormwater Outfall Locations

Mercury Thiessen Polygons (mg/kg)

- Less than Background
- < or = 0.13
- > 0.13 - 0.70
- > 0.70 - 1.4
- > 1.4 - 3.5
- > 3.5
- Buildings/Roads
- Middle River

TEL = 0.13
PEL = 0.70
2X PEL = 1.4
5X PEL = 3.5

Background Concentration
SD 0-6" = 0.71 mg/kg
SD 6-18" = 0.29 mg/kg
SD 18-30" = 0.053 mg/kg
SD 30-52" = 0.051 mg/kg

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 01/17/11
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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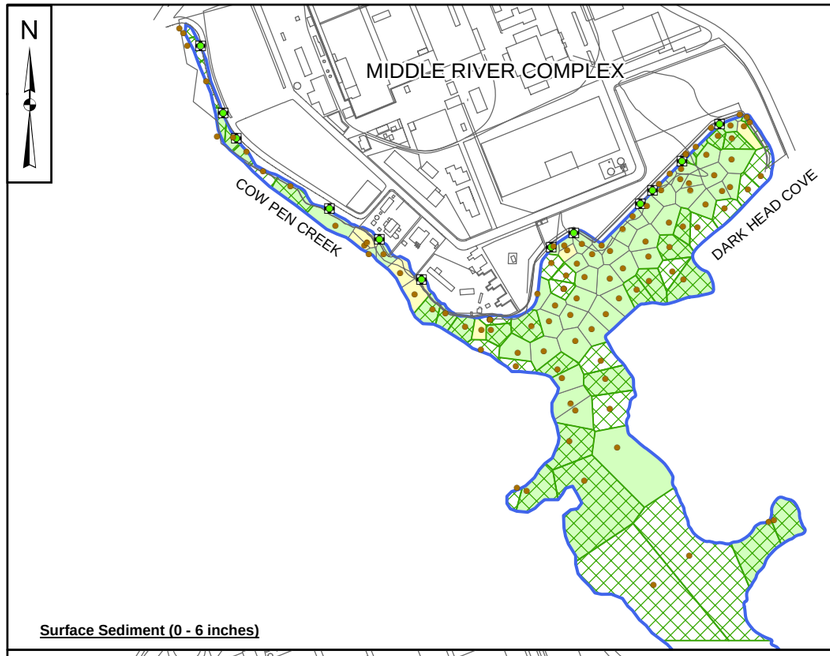
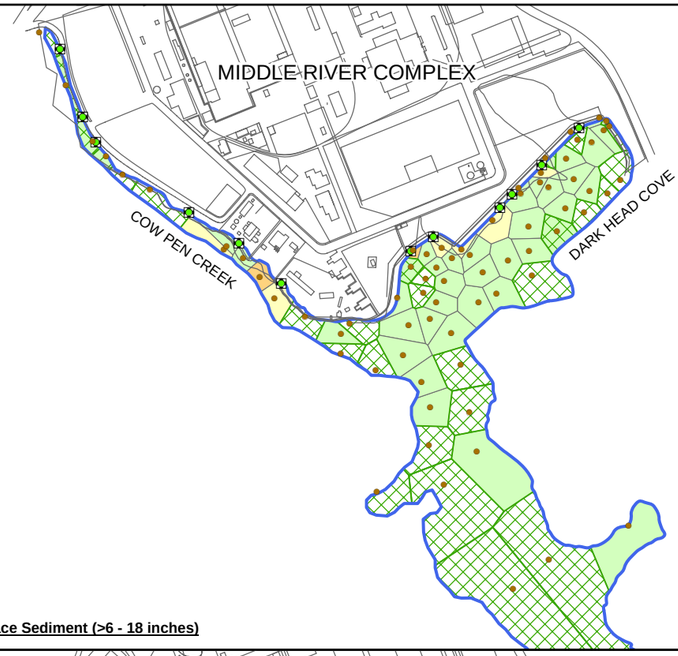
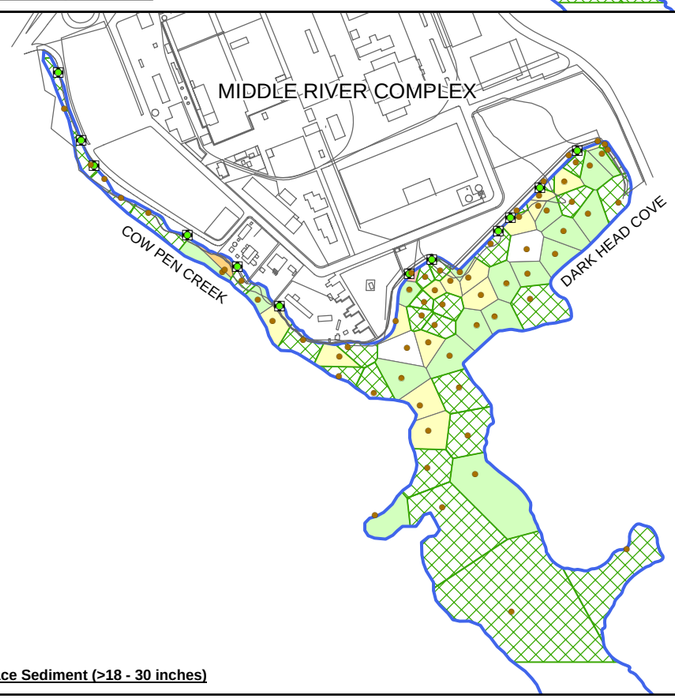


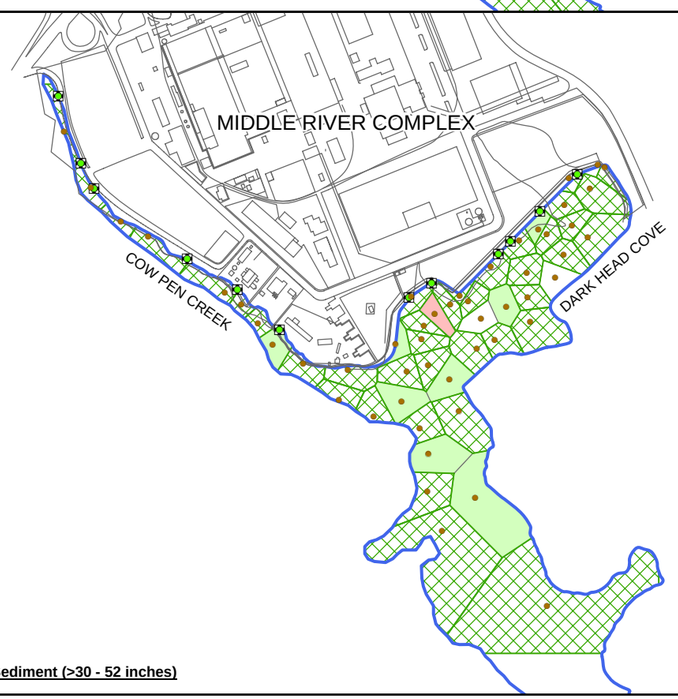
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 14
Thiessen Polygons for Ecological Risk Assessment of Zinc in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Zinc Sample Location
- Stormwater Outfall Locations

Zinc Thiessen Polygons (mg/kg)

- Less than Background
- < or = 121
- > 121 - 459
- > 459 - 918
- > 918 - 2295
- > 2295
- Buildings/Roads
- Middle River

TEC = 121
PEC = 459
2X PEC = 918
5X PEC = 2295

Background Concentration
SD 0-6" = 327 mg/kg
SD 6-18" = 209 mg/kg
SD 18-30" = 95.5 mg/kg
SD 30-52" = 94.7 mg/kg

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 12/17/10
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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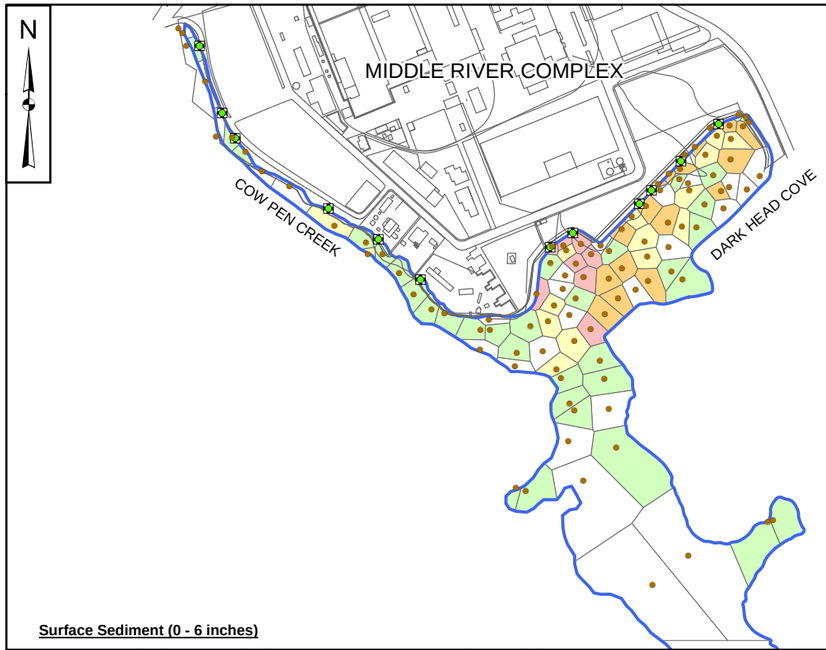
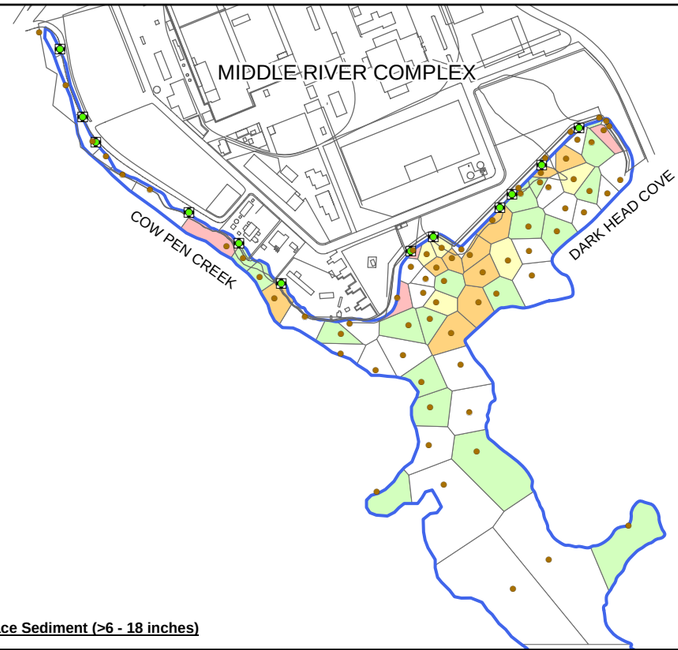
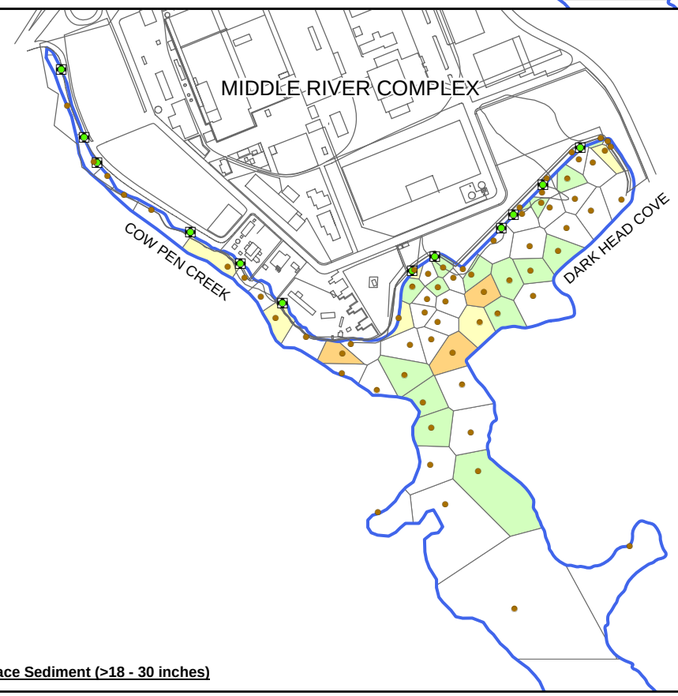


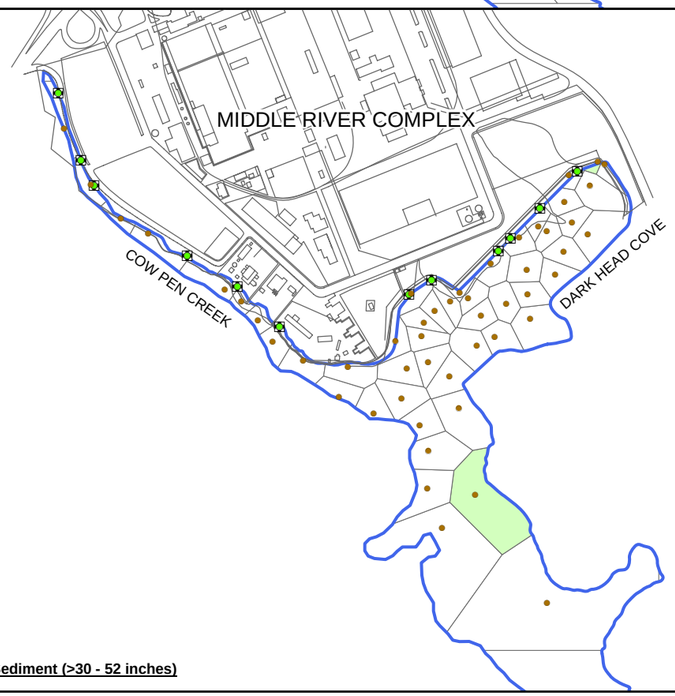
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 15
Thiessen Polygons for
Ecological Risk Assessment of
Total Aroclor in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Total Aroclor Sample Location
- Stormwater Outfall Locations

Total Aroclor Thiessen Polygons (µg/kg)

- < or = 40
- > 40 - 400
- > 400 - 800
- > 800 - 2000
- > 2000
- Buildings/Roads
- Middle River

TEC = 40
MEC = 400
2X MEC = 800
5X MEC = 2000

Categories show different intervals of chemical concentrations.

Site-specific background = ND
Regional level = 1500 µg/kg *

* Regional levels are presented on Table 4-10.

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 01/17/11
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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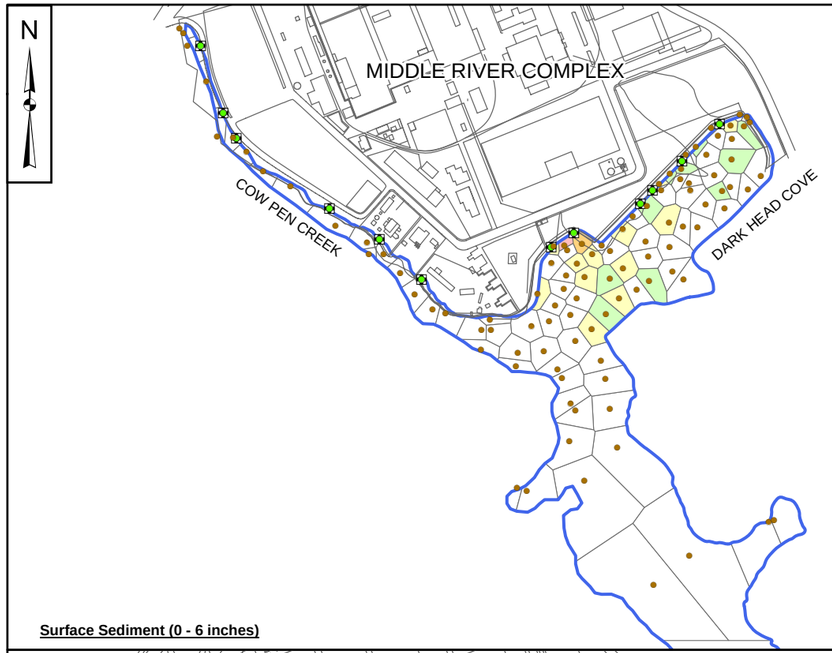
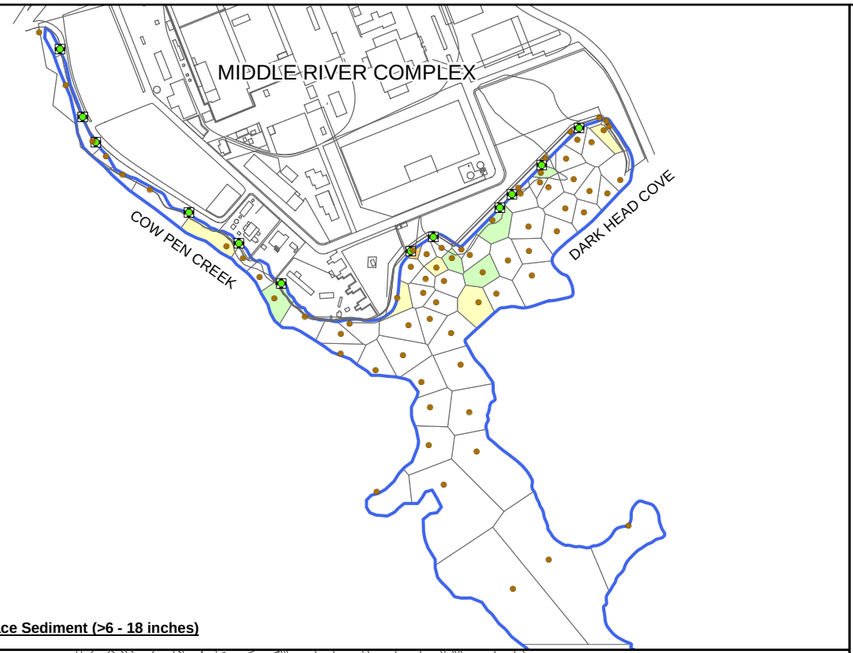
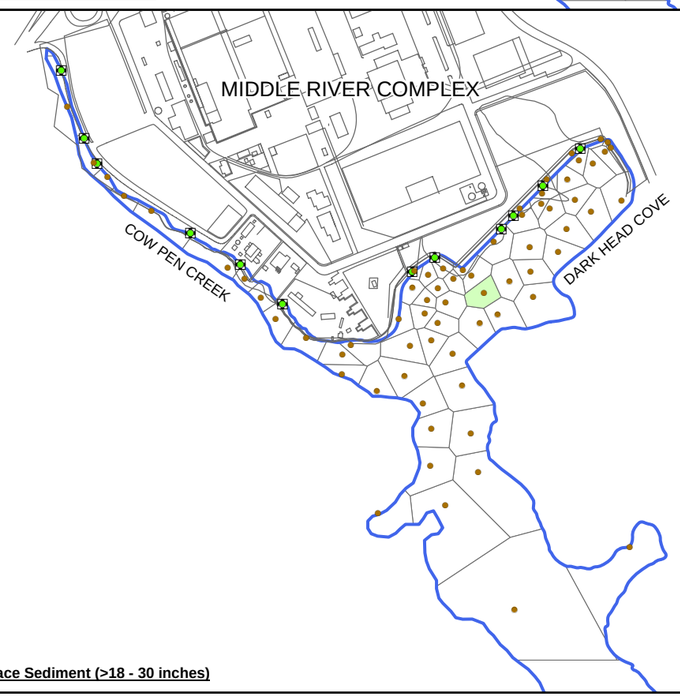


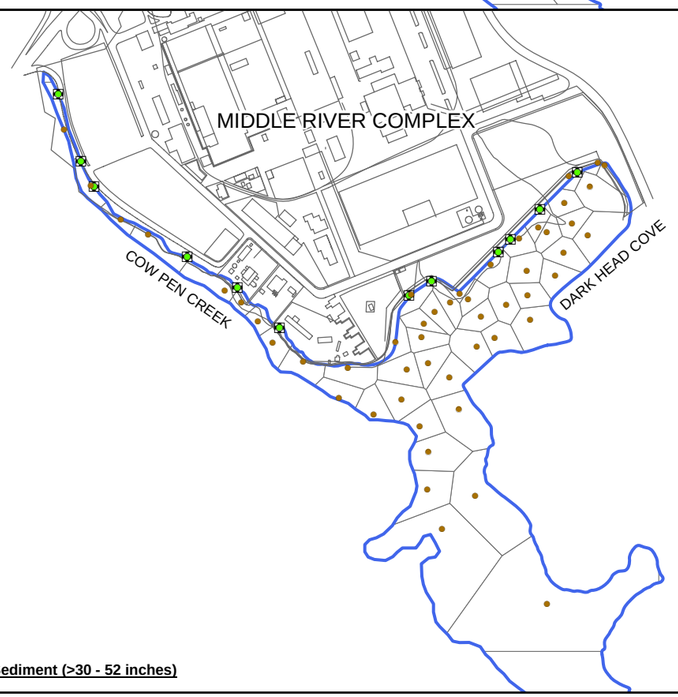
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 16
Thiessen Polygons for
Human Health Risk Assessment of
Total Aroclor in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Total Aroclor Sample Location
- Stormwater Outfall Locations

Total Aroclor Thiessen Polygons (µg/kg)

- < or = 1000
- > 1000 - 1500
- > 1500 - 10000
- > 10000 - 20000
- > 20000
- Buildings/Roads
- Middle River

Categories show different intervals of chemical concentrations.

Site-specific background = ND
Regional level = 1500 µg/kg *
EPA Soil Action Level (residential) = 1000 µg/kg
EPA Soil Action Level (industrial) = 10000 µg/kg

EPA OSWER Directive: 9355.4-01FS (July 1990).

* Regional levels are presented on Table 4-10.

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 12/20/10
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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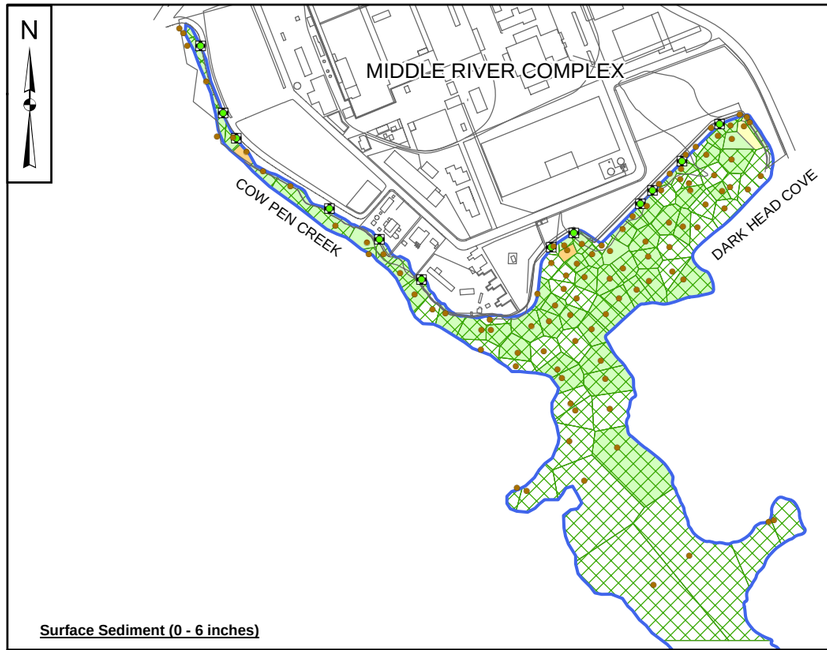
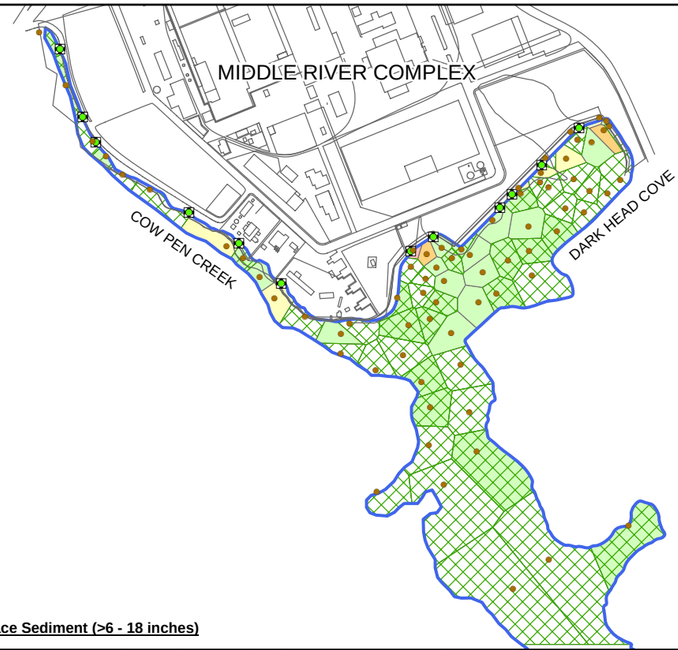
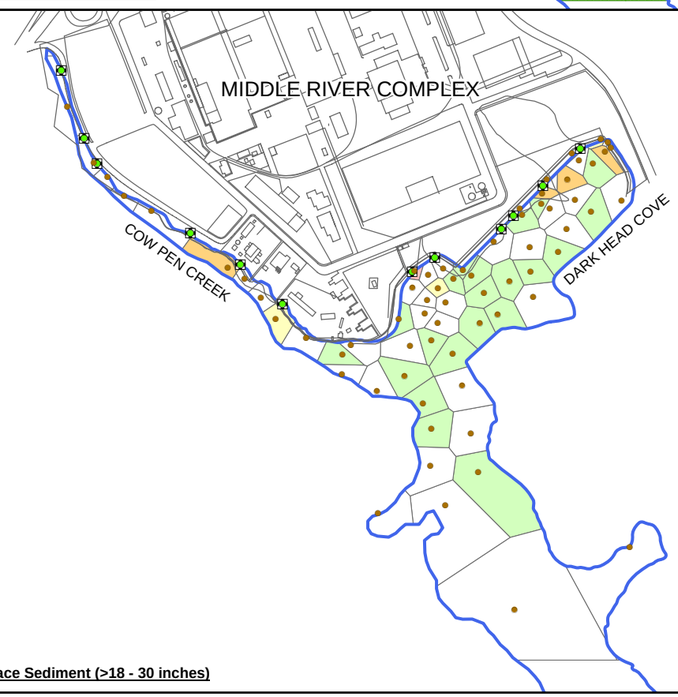


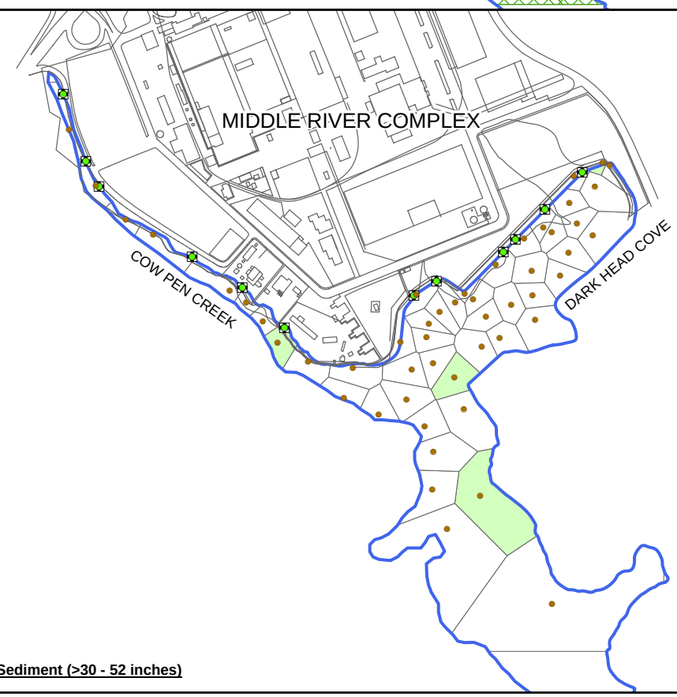
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 17
Thiessen Polygons for Ecological Risk Assessment of Total PAHs in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Total PAH Sample Location
- Stormwater Outfall Locations

Total PAH Thiessen Polygons (µg/kg)

- Less than Background
- < or = 1610
- > 1610 - 22800
- > 22800 - 45600
- > 45600 - 114000
- > 114000
- Buildings/Roads
- Middle River

TEC = 1610
PEC = 22800
2X PEC = 45600
5X PEC = 114000

Background Concentration
SD 0-6" = 15350 µg/kg
SD 6-18" = 5060 µg/kg
SD 18-30" = ND
SD 30-52" = ND

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 12/17/10
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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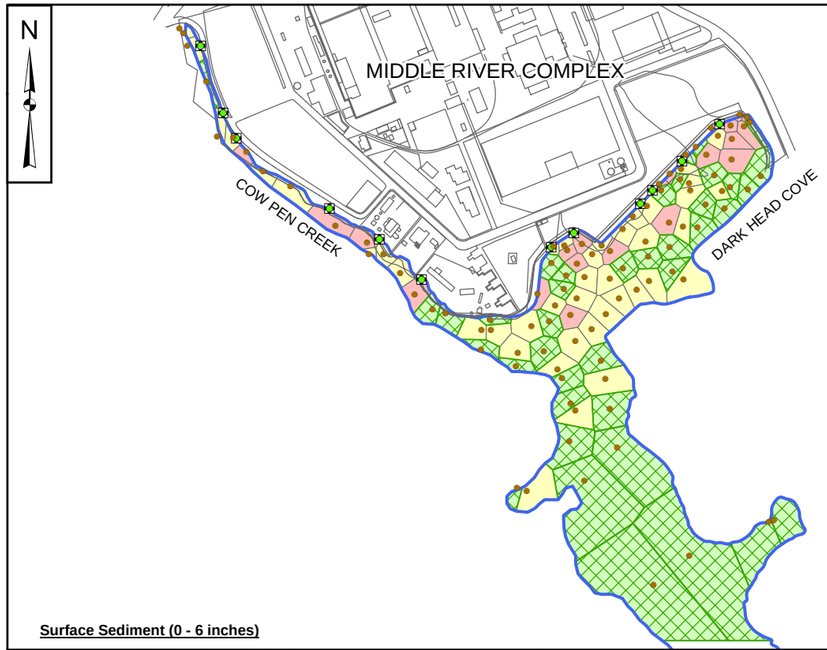
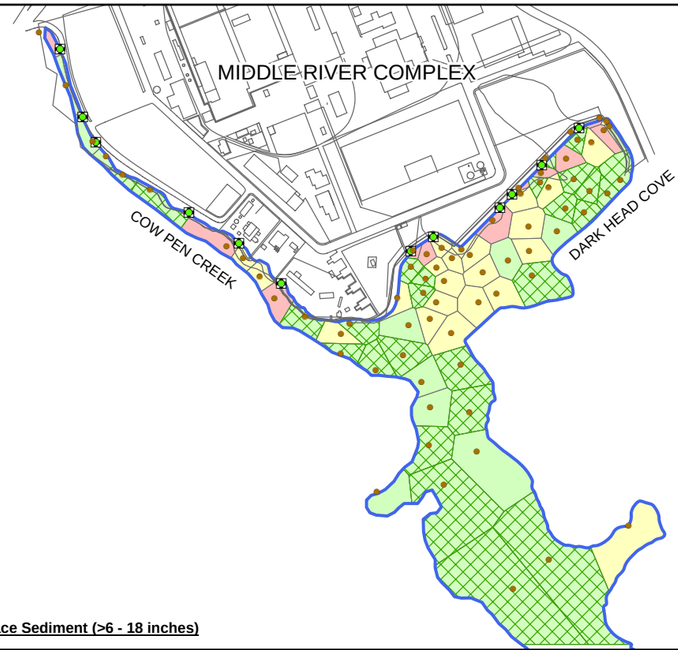
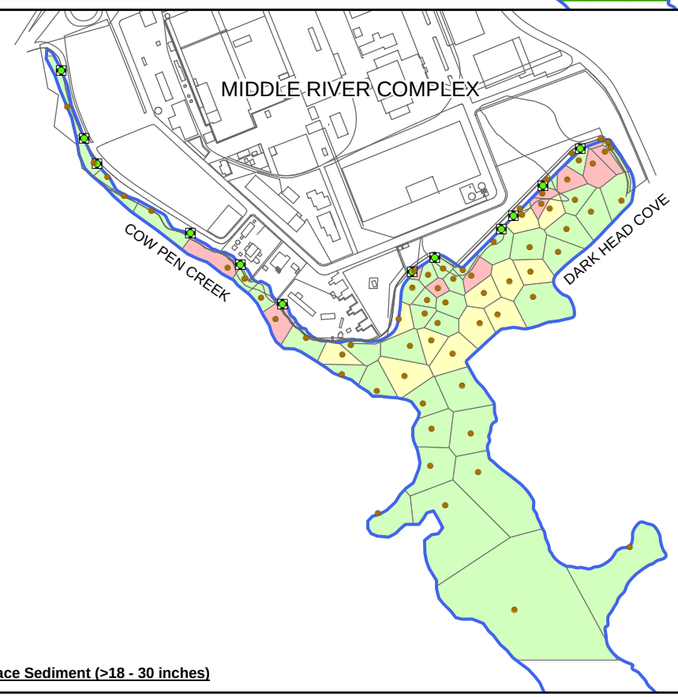


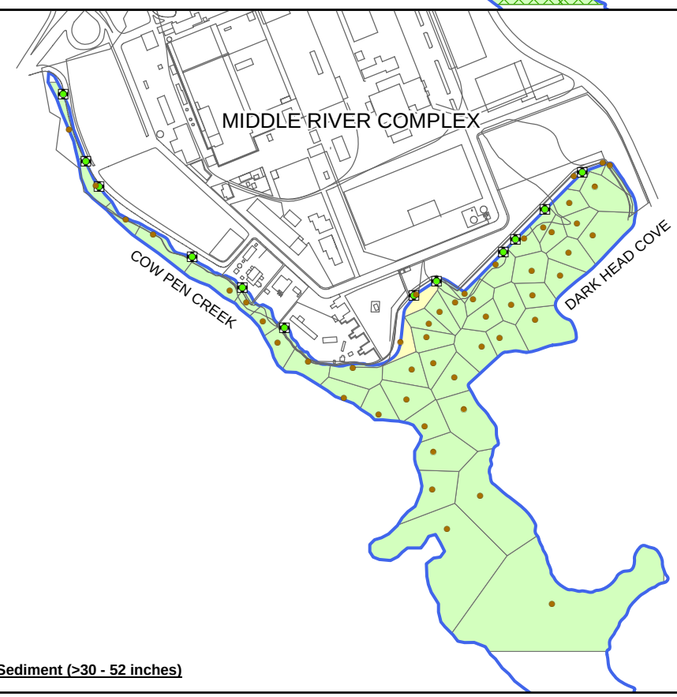
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 18
Thiessen Polygons for Human Health Risk Assessment of Benzo(a)pyrene Equivalents (1/2 U Used for ND Results) in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- PAH Sample Location
- Stormwater Outfall Locations

BAP Equivalents Thiessen Polygons (µg/kg)

- Less than Background
- < or = 700
- > 700 - 1600
- > 1600
- Buildings/Roads
- Middle River

Risk Based Concentration (RBC) for recreational user (direct contact risk) (IE-05 cancer risk level) = 700 µg/kg

Background Concentration
SD 0-6" = approximately 700 µg/kg
SD 6-18" = approximately 100 µg/kg
SD 18-30" = ND
SD 30-52" = ND

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 12/17/10
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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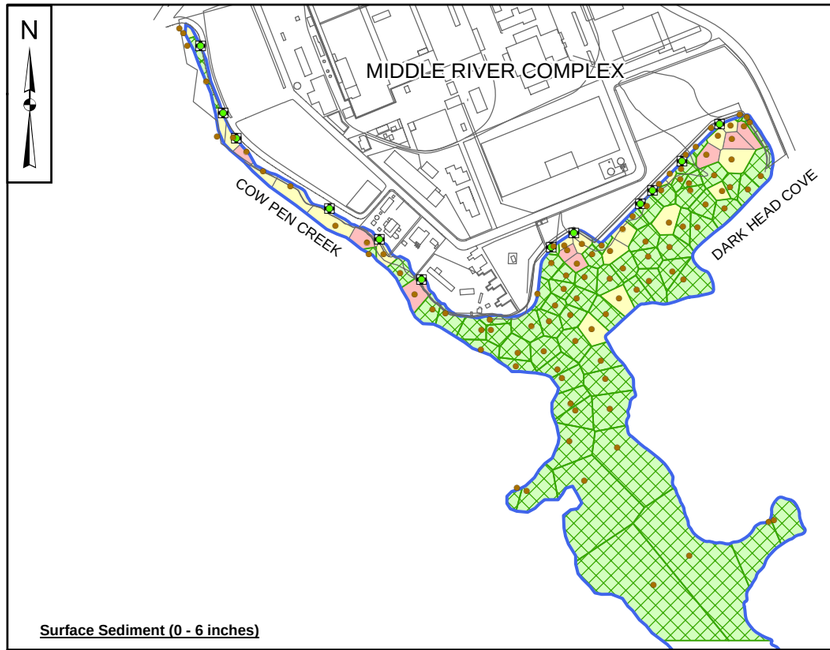
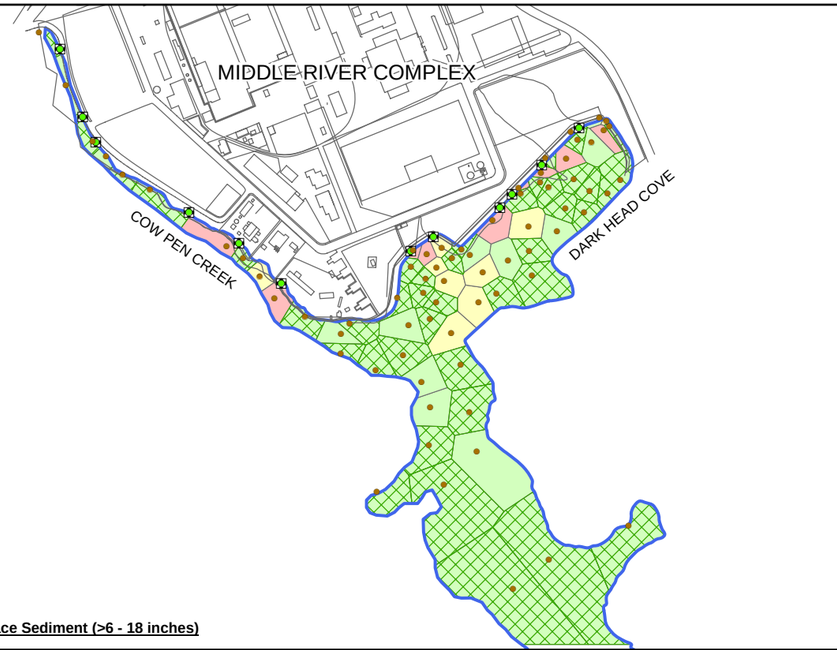
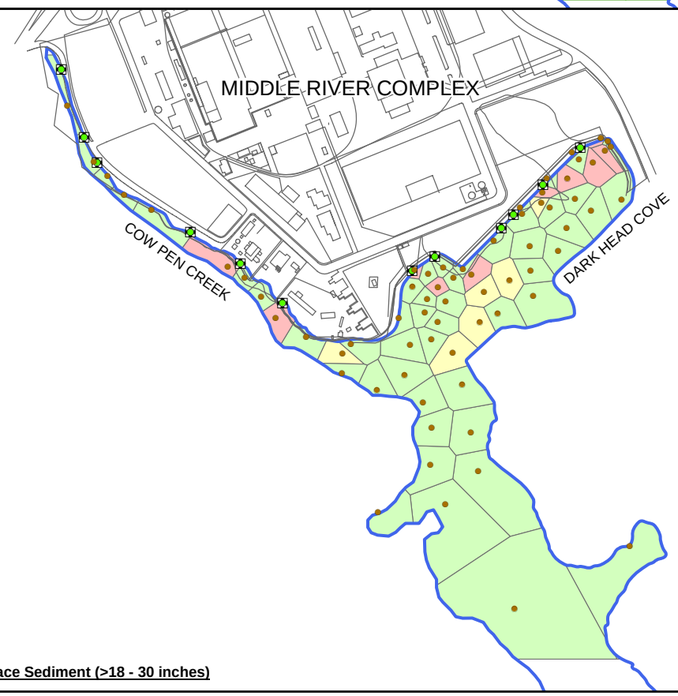


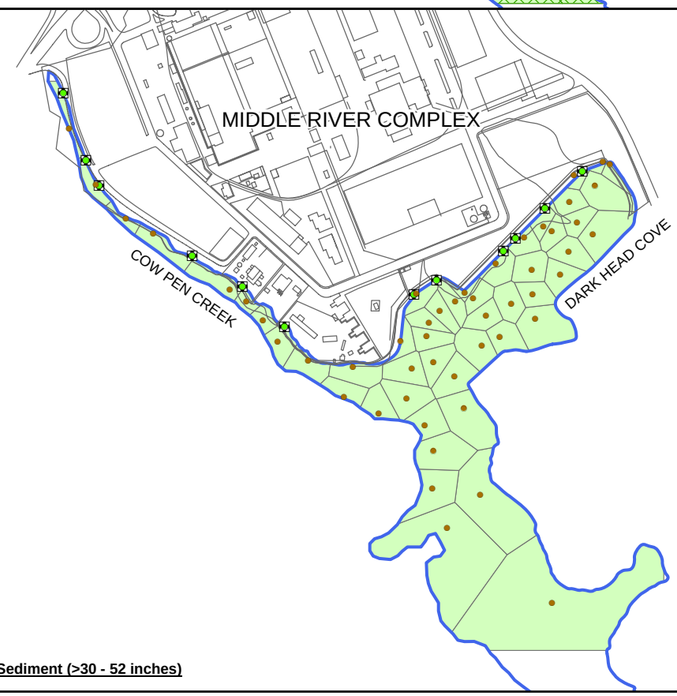
Surface Sediment (0 - 6 inches)



Subsurface Sediment (>6 - 18 inches)



Subsurface Sediment (>18 - 30 inches)



Subsurface Sediment (>30 - 52 inches)

TETRA TECH

Figure 4 - 19
Thiessen Polygons for Human Health Risk Assessment of Benzo(a)pyrene Equivalents (Positive Hits Only) in Sediment
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- PAH Sample Location
- Stormwater Outfall Locations

BAP Equivalents Thiessen Polygons (µg/kg)

- Less than Background
- < or = 700
- > 700 - 1600
- > 1600
- Buildings/Roads
- Middle River

Risk Based Concentration (RBC) for recreational user (direct contact risk) (IE-05 cancer risk level) = 700 µg/kg

Background Concentration
SD 0-6" = approximately 700 µg/kg
SD 6-18" = approximately 100 µg/kg
SD 18-30" = ND
SD 30-52" = ND

1,080 540 0 1,080
Feet

Drawn By: S. PAXTON 12/17/10
Checked By: L. GANSER 01/26/11
Approved By:

Contract Number: 112IC02903

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TETRA TECH

Figure 4-20
Sample Results - Total PCBs
Fish Tissue
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

Sample Location

Note: All sample results presented in ug/kg.

400 200 0 400
Feet

Drawn By: JEE 01/10/11
Checked By: L. GANSER 01/25/11
Approved By:

Contract Number: 112IC02903

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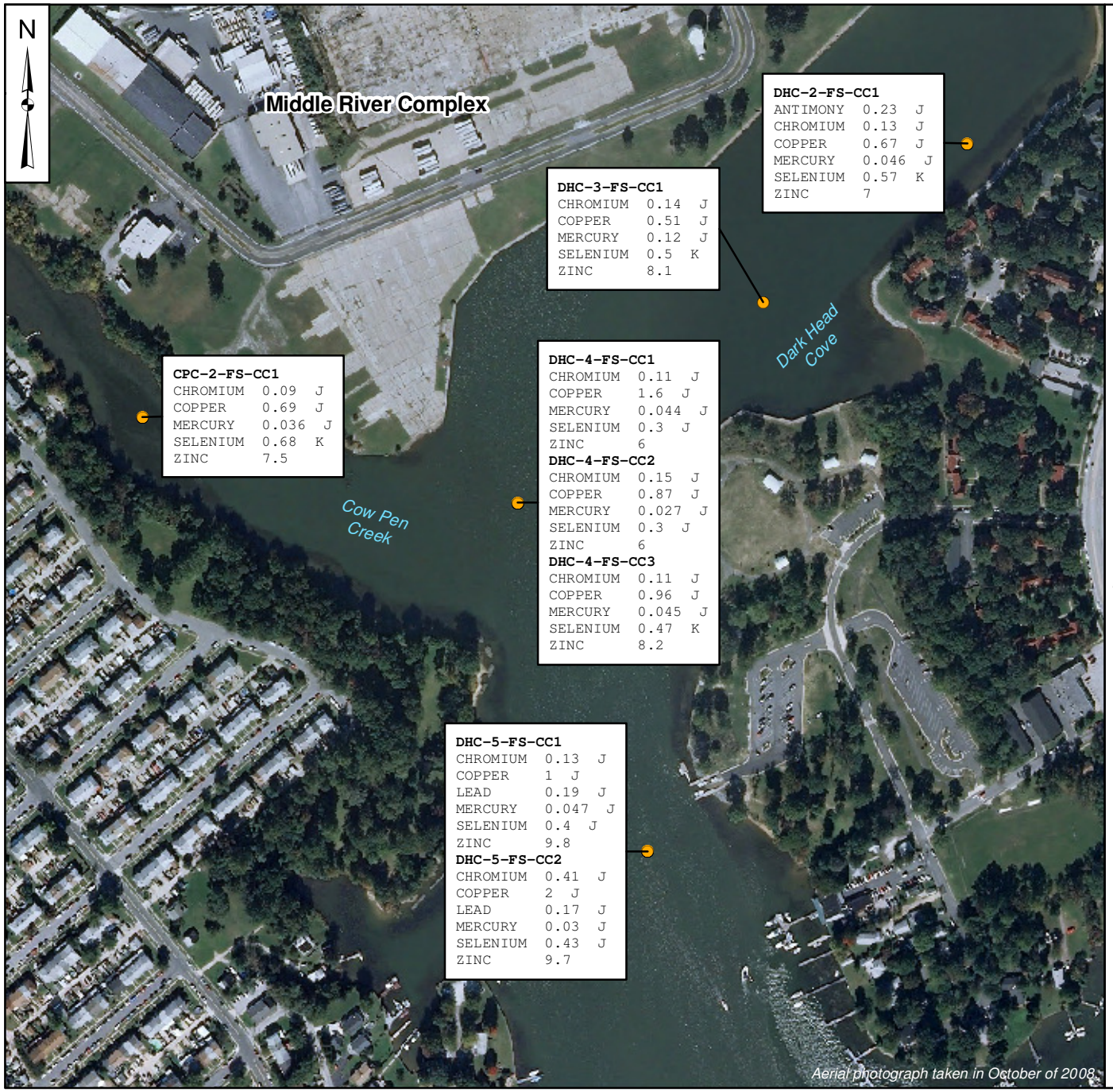

TETRA TECH

Figure 4-21
Sample Results - Metals
Fish Tissue
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sample Location

Note: All sample results presented in mg/kg.

400 200 0 400
Feet

Drawn By: JEE 01/10/11
Checked By: L. GANSER 01/25/11
Approved By:

Contract Number: 112IC02903

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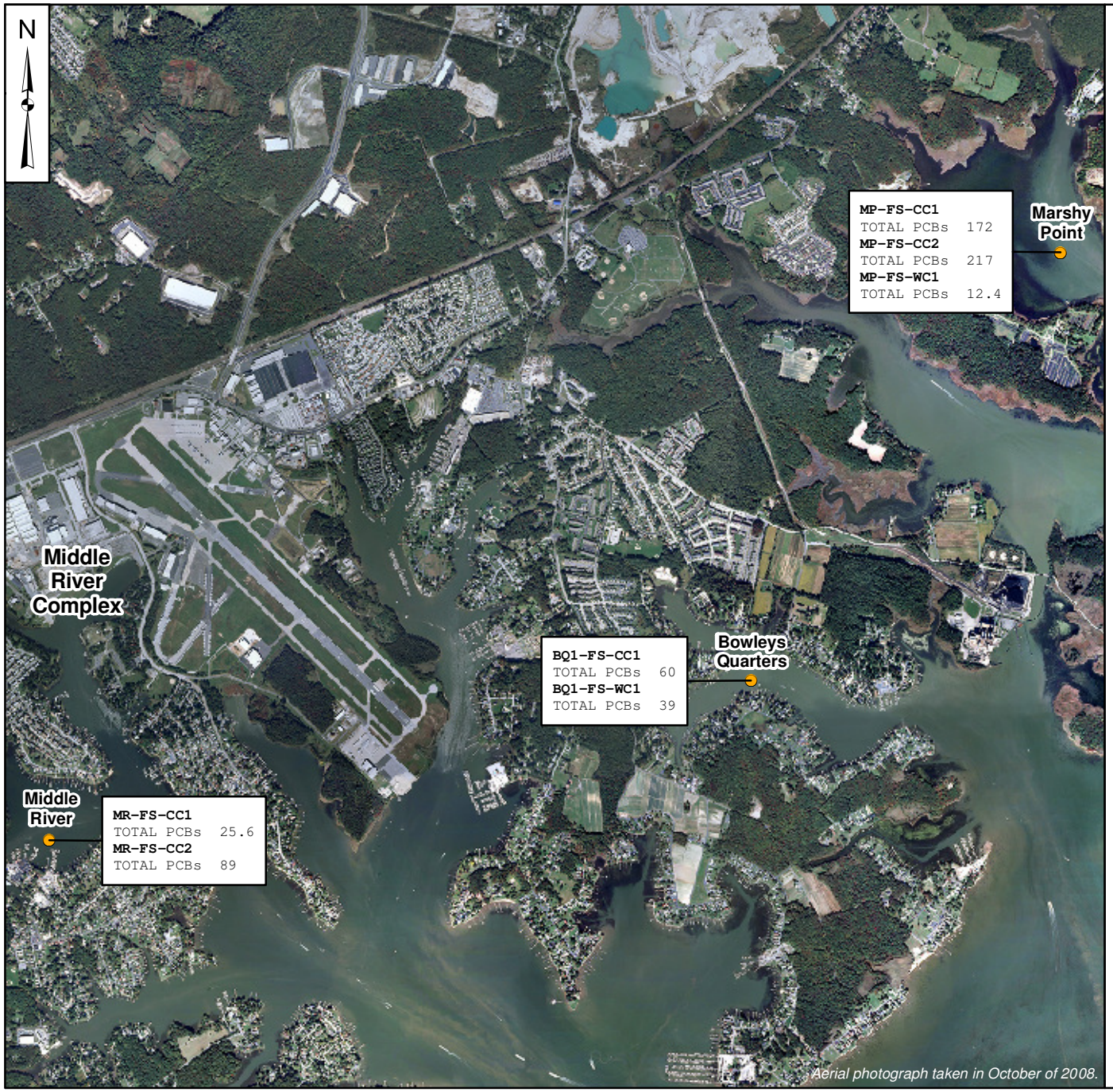
FISH_METALS_AUG10.MXD 01/26/11 SS



TETRA TECH

Figure 4-22
Reference Sample Results - Total PCBs
Fish Tissue
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

Sample Location

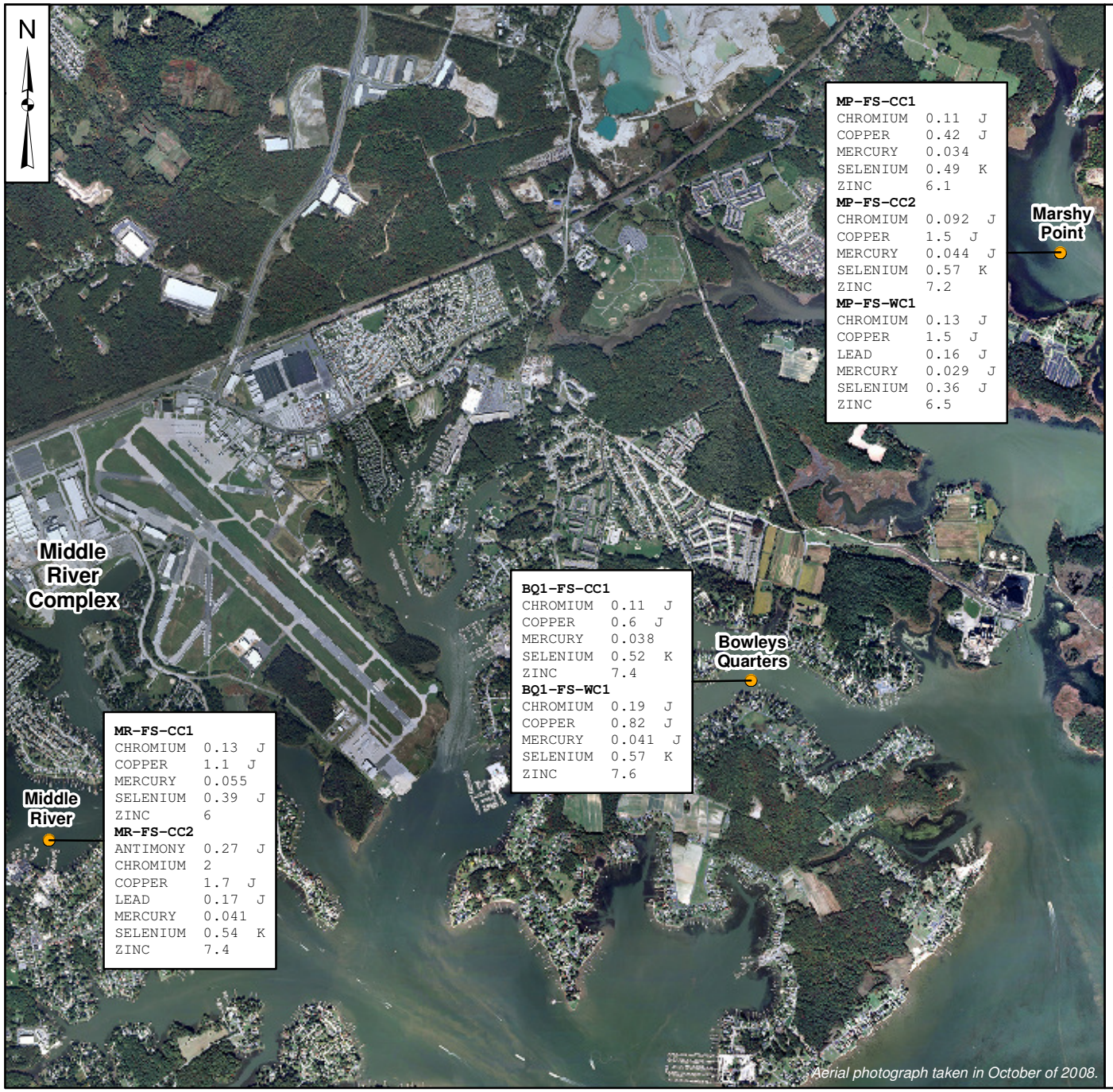
Note: All sample results presented in ug/kg.

3,000 1,500 0 3,000
Feet

Drawn By: JEE 01/07/11
Checked By: L. GANSER 01/25/11
Approved By:

Contract Number: 112IC02903

PGH P:\GIS\MIDDLE_RIVER\MAPDOCS\MXD\
FISH_PCB_REF_AUG10.MXD 01/26/11 SS



TETRA TECH

Figure 4-23
Reference Sample Results - Metals
Fish Tissue
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Sample Locations

Note: All sample results presented in mg/kg.

3,000 1,500 0 3,000
Feet

Drawn By: JEE 01/07/11
Checked By: L. GANSER 01/25/11
Approved By:

Contract Number: 112IC02903

PGH P:\GIS\MIDDLE_RIVER\MAPDOCS\MXD\
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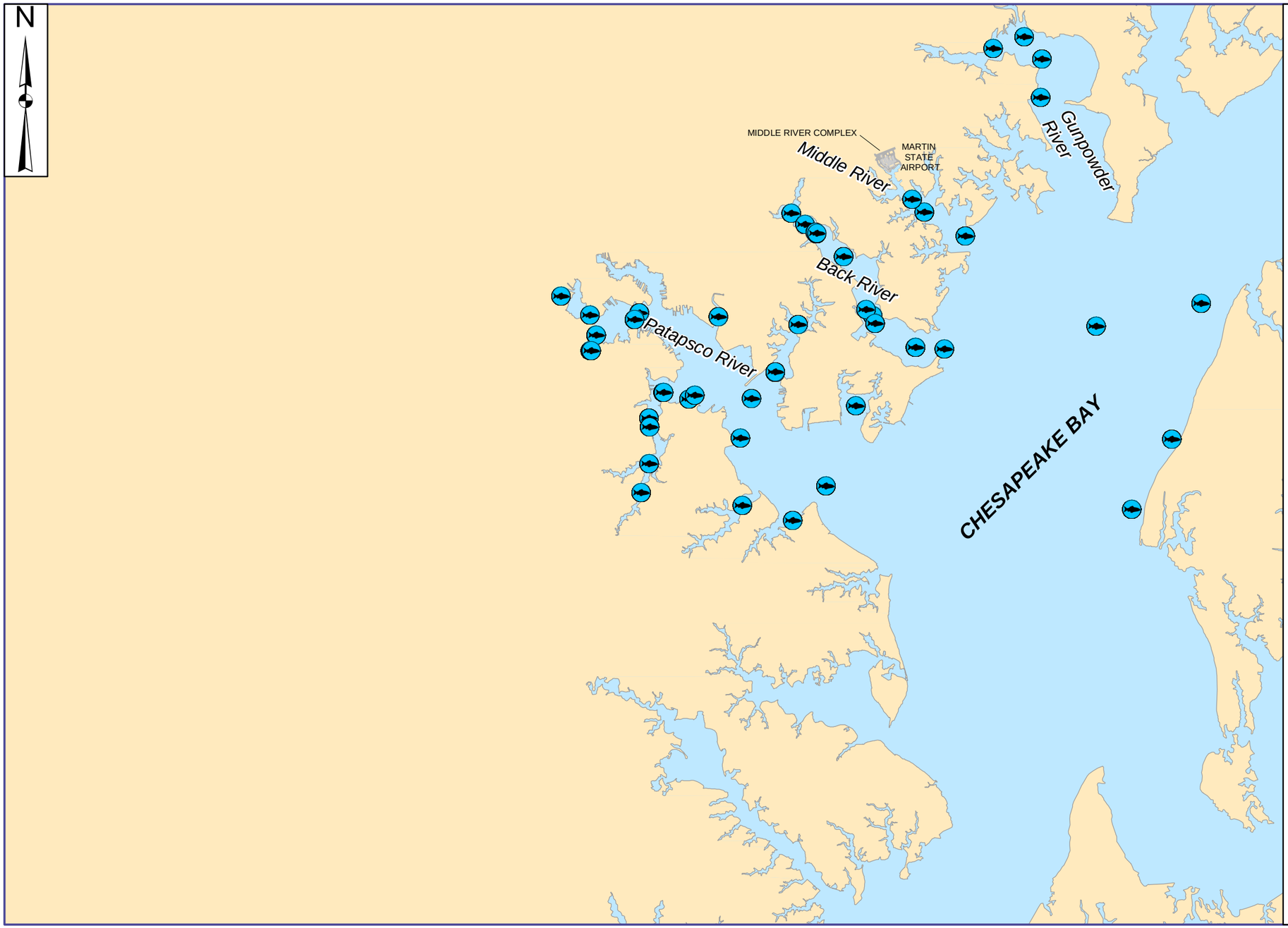

Tetra Tech

FIGURE 4-24

Maryland DNR Fish Sample Locations
Lockheed Martin Middle River Complex
Middle River, Maryland

Legend

- Maryland DNR Fish Sample Locations
- Surface Water

0 1.5 3 6 Miles

Drawn By: MP 2/4/11
Checked By:SB
Approved By:

Contract Number: 112IC02903

Map Document: (K:\GProject\middle_river\Maps\Middle River Fish data 2 4 11.mxd)
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FIGURE 4-25

TOTAL PCB CONCENTRATIONS IN SITE, REFERENCE, AND REGIONAL FISH TISSUE DATA
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

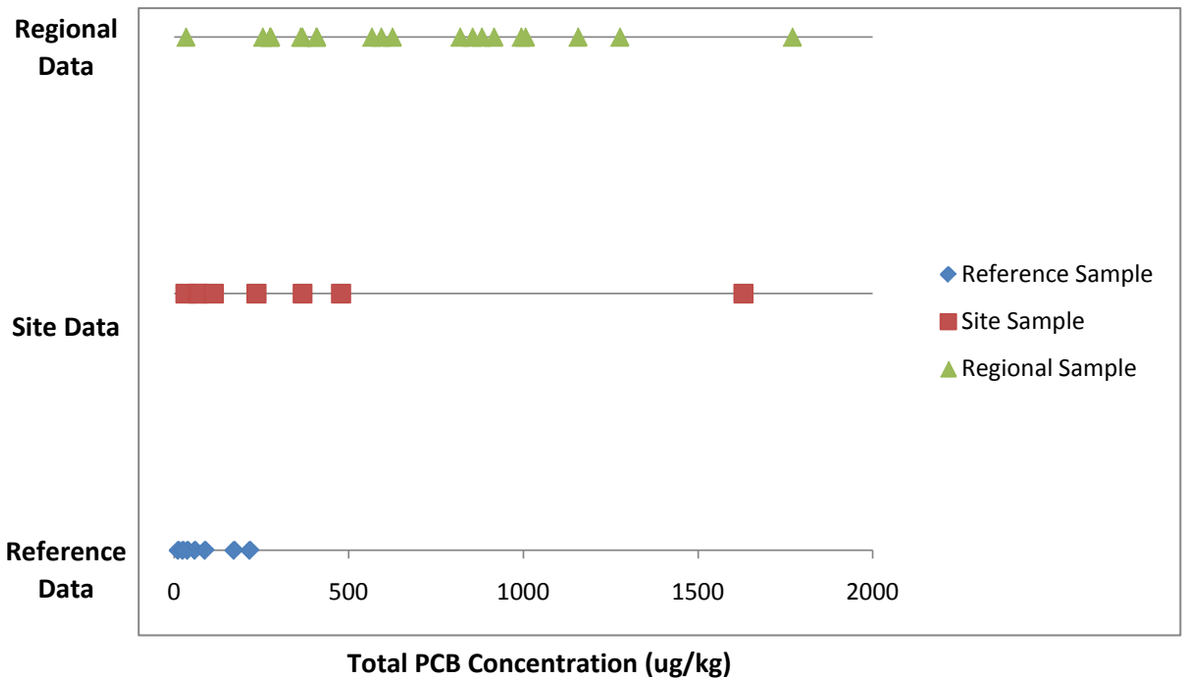


FIGURE 4−26
TOTAL PCB CONGENER CONCENTRATIONS IN BALTIMORE REGION FISH
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

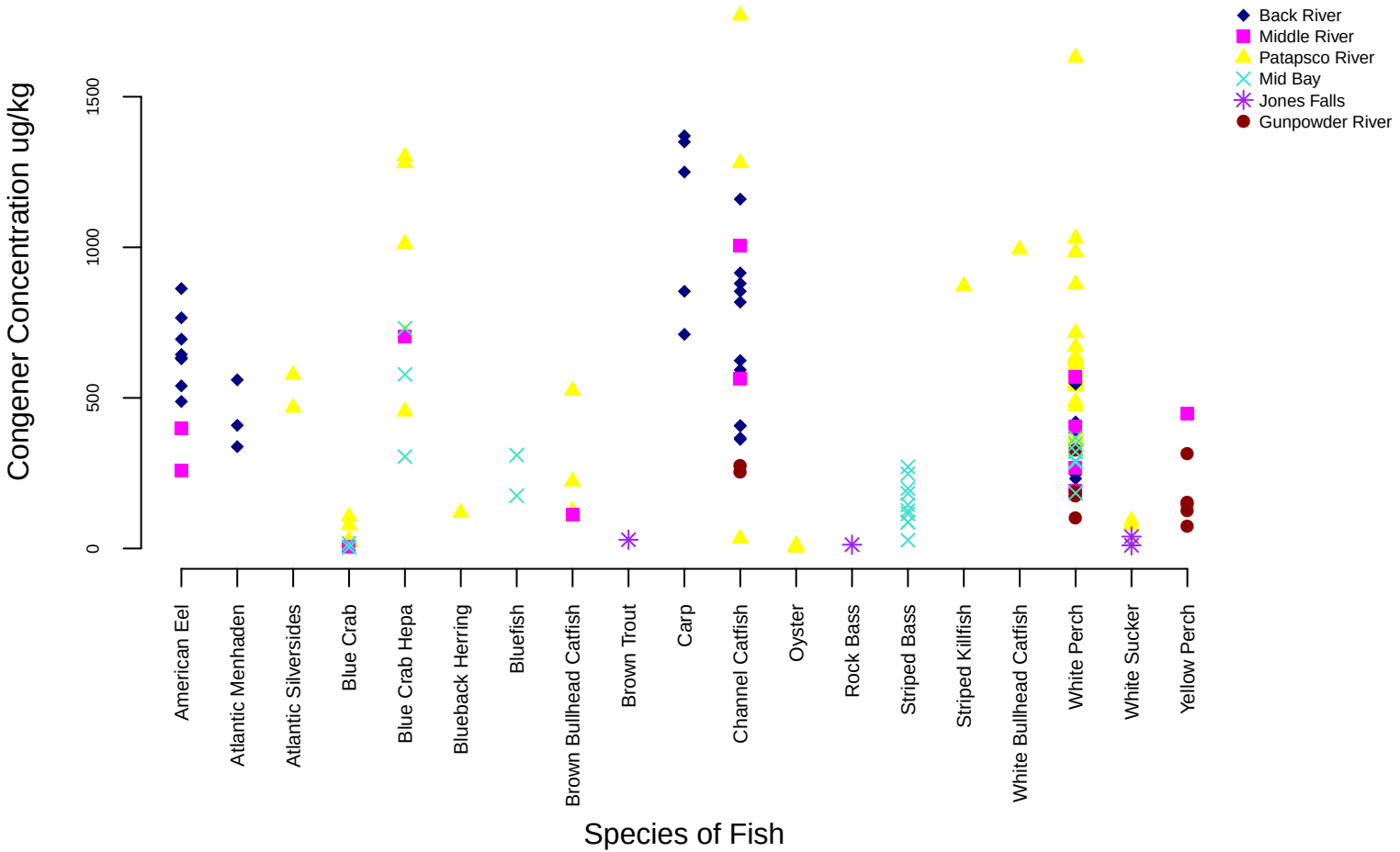
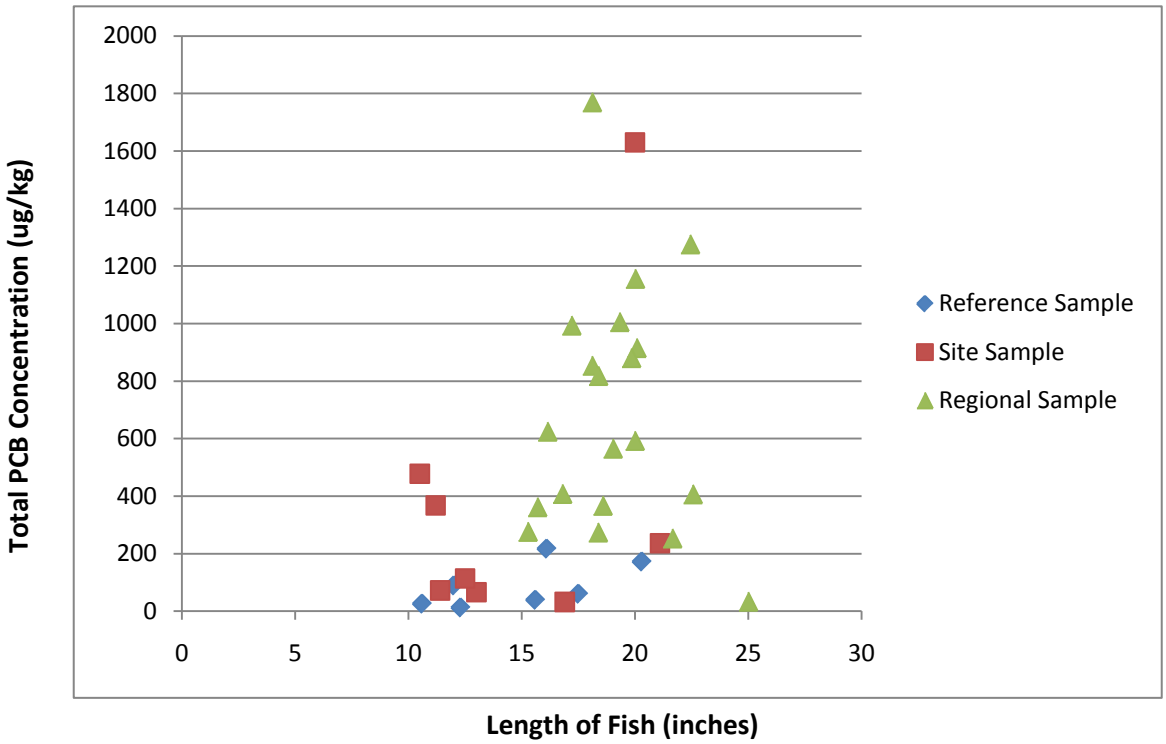


FIGURE 4-27

TOTAL PCB CONCENTRATIONS IN RELATION TO FISH SIZE
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND



Section 5
Human Health Risk Assessment

The human health risk assessment (HHRA) quantitatively and qualitatively assesses potential risks to public health posed by chemicals detected in sediments at the Middle River Complex (MRC). The risk assessment evaluates whether hazardous substances in sediments pose potential health risks to exposed individuals under current or potential future land uses. The risk assessment addresses several chemicals, two environmental media (sediment and fish tissue), two exposure pathways (direct contact with sediment and fish consumption), and one receptor (the recreational user) as a basis for characterizing the types and range of potential risks associated with site related contamination. The overall objective of the HHRA is to determine the potential for adverse health risks to recreational users due to chemicals detected in the sediments and in fish tissue samples collected from fish collected near the site. The following current U.S. Environmental Protection Agency (USEPA) risk assessment guidance was used to develop the framework for the HHRA:

- *Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual* (Part A) (USEPA, 1989)
- *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors*. Washington, D.C. Office of Solid Waste and Emergency Response (OSWER) Directive 9285.6 03 (USEPA, 1991)
- *Distribution of Preliminary Review Draft: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure*. OSWER, Washington, D.C. (USEPA, 1993)
- *Exposure Factors Handbook*. Office of Health and Environmental Assessment, Washington, D.C. USEPA/600/P 95/002Fa (USEPA, 1997a)
- *Calculating Upper Confidence Limits for Exposure-Point Concentrations at Hazardous Waste Sites*. Office of Emergency and Remedial Response (OERR), Washington, D.C. OSWER 9285.6-10 (USEPA, 2002a)

- *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final*. Office of Superfund Remediation and Technology Innovation, Washington, D.C. 20460 USEPA/540/R/99/005, OSWER 9285.7-02EP; PB99-963312 (USEPA, 2004)

An HHRA has five components: data evaluation, exposure assessment, toxicity assessment, risk characterization, and uncertainty analysis. Sections 5.1 through 5.8 contain detailed discussions of these components. Three major aspects of chemical contamination and environmental fate and transport are considered when evaluating potential risks:

- contaminants with toxic characteristics must be found in environmental media and must be released by either natural processes or by human action
- potential exposure points must exist
- human receptors must be present at the point of exposure

Risk is a function of both toxicity and exposure. If any one of the factors listed above is absent, the exposure pathway is considered incomplete, and risks cannot be quantitatively evaluated.

5.1 DATA EVALUATION AND USABILITY

Data evaluation, the first component of an HHRA, is a two-step, medium specific task involving compilation and evaluation of analytical data. The first step compiles the analytical database and evaluates data usability for purposes of HHRA. The second step in data evaluation is to select a medium specific list of chemicals of potential concern (COPC) to quantitatively or qualitatively assess potential human health risks for site environmental media. COPC are selected primarily by a toxicity screen (i.e., a comparison of site contaminant concentrations to conservative toxicity screening values). A background screen (i.e., a comparison of site concentrations to background concentrations) is presented for informational purposes but was not used in selecting COPC.

Data from all four sampling events summarized in Section 4 were used to assess potential risks to human health. Appendix B details the samples collected in each sampling event, including depths sampled and locations considered background for each event. All analytical data used to quantitatively estimate potential risks were subject to a data quality evaluation. All data validation was done in accordance with the *Sediment Sampling Work Plan* (Tetra Tech, 2008) and

Additional Characterization and Sediment Sampling Work Plan (Tetra Tech, 2010). Completed data-validation memoranda are provided in Appendix A.

Fixed base laboratory analytical results for the analytes targeted were used in the quantitative risk evaluation. Field measurements and data regarded as unreliable (i.e., qualified as "R" during validation) were not used. Analytical data qualified as estimated ("J" or "UJ") were used, even though the reported positive concentrations or sample-specific quantitation limits may be somewhat imprecise.

Use of estimated data adds to the uncertainty associated with the risk assessment; however, the associated uncertainty is expected to be negligible compared with other uncertainties inherent in risk evaluation (i.e., uncertainties regarding land uses, exposure scenarios, toxicological criteria, etc.). Analytical data qualified for blank contamination ("B") were included as non-detected results in the baseline risk assessment. Uncertainty associated with the rejection of analytical results and with other aspects of data usability is discussed in Section 5.8. The data set used is considered adequate and sufficiently complete for the HHRA evaluation.

For benzo(a)pyrene and related polycyclic aromatic-hydrocarbons (PAHs) (i.e., benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene), a toxicity-equivalence factor (TEF) approach was used. TEFs are based on the relative potency of each PAH compound relative to that of benzo(a)pyrene. TEFs are used to convert each individual PAH concentration into an equivalent concentration of benzo(a)pyrene (BaPEq). Using BaPEq concentrations calculated for each sample, an exposure point concentration (EPC) for these PAHs is derived.

BaPEq values were calculated using two different methods. For the first, one-half of the detection limit was used to represent non-detected concentrations in the calculation. For the second method, a value of zero was used to represent non-detected concentrations. In either method, if all the benzo(a)pyrene and related PAHs were non-detected in a sample, then the sample quantitation limit for benzo(a)pyrene was used as the equivalent concentration for that sample. Summary statistics results from both calculation methods are presented in the COPC selection tables in this section. BaPEq results using one-half the detection limit for non-detected results were used in the

quantitative risk evaluation. Uncertainties associated with results are discussed in the uncertainty analysis (see Section 5.8).

5.2 SELECTION OF CHEMICALS OF POTENTIAL CONCERN

This section presents the methodology for and results of the COPC selection for this HHRA.

5.2.1 Toxicity Screening Methodology

The following standards, criteria, and risk based concentrations (RBCs) form the basis of the toxicity screening values used to select COPC for sediment and fish tissue:

- ***USEPA regional screening levels (RSLs) for soil (USEPA, 2010)—***The regional screening levels (RSLs) were developed and are maintained through a cooperative agreement between the U.S. Department of Energy's Oak Ridge National Laboratory (ORNL) and USEPA's Office of Superfund and are considered USEPA screening criteria. The RSLs are chemical concentrations corresponding to fixed levels of risk:

  - *A "hazard quotient" (HQ) of "1" for non-carcinogenic chemicals*. Adverse non-carcinogenic health effects are not anticipated when the HQ is ≤1.

  - *A lifetime cancer risk of 1E-06 for carcinogenic chemicals*. A cancer risk of 1E-06 threshold may be interpreted as one additional case in one million exposed individuals.

  - USEPA Region III recommends that COPC screening levels for carcinogenic and non-carcinogenic compounds typically be the RSL and 0.1 times the RSL, respectively, when selecting COPC for soil. One tenth the RSL is recommended for non-carcinogenic compounds, to account for the possible cumulative effects of multiple compounds affecting the same target organ. Screening criteria for sediment are based on USEPA RSLs for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment (due to less intense and less frequent exposures, particularly for underwater sediments), the screening criteria presented in the COPC selection tables for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.

- ***Screening levels for lead in sediment—***Guidance from the USEPA Offices of Prevention, Pesticides, and Toxic Substances and of Solid Waste and Emergency Response recommends 400 mg/kg as the lowest screening level for lead contaminated soil in a residential setting (where children are frequently present) (USEPA, 1994a,b). Conservatively, 400 mg/kg will be used as the screening level for COPC selection for sediment. However, guidance from the USEPA Technical Review Workgroup for Lead indicates that "a reasonable screening level for soil lead at commercial/industrial (i.e., non-residential) sites is approximately 750 mg/kg" for a typical

non-contact-intensive workers (USEPA, 1999a). The aforementioned USEPA RSL table lists 800 milligram per kilogram (mg/kg) as the RSL for lead in soils, assuming an industrial land use scenario. (This benchmark is provided as an additional point of reference only.)

- ***USEPA regional screening levels (RSLs) for fish ingestion (USEPA, 2010)—***Similar to the "Residential Soil" RSLs described previously, RSLs for fish ingestion are chemical concentrations corresponding to fixed levels of risk:

  - *A "hazard quotient" (HQ) of "1" for non-carcinogenic chemicals*. Adverse non-carcinogenic health effects are not anticipated when the HQ is ≤1.

  - *A lifetime cancer risk of 1E-06 for carcinogenic chemicals*. A cancer risk of 1E-06 threshold may be interpreted as one additional case in one million exposed individuals.

USEPA Region III recommends that COPC screening levels for carcinogenic and non-carcinogenic compounds typically be the RSL and 0.1× the RSL, respectively. One tenth the RSL is recommended for non-carcinogenic compounds, to account for the possible cumulative effects of multiple compounds affecting the same target organ.

These screening levels were used to evaluate all data included in the HHRA. The Maryland Department of the Environment (MDE) *Cleanup Standards for Soil and Groundwater, Interim Final Guidance* (MDE, 2008) were not used to select COPC because they are comparable to the USEPA RSLs. These criteria also apply to MDE's Voluntary Cleanup Program (VCP), and sediment is not included in the VCP. Therefore, these criteria were not evaluated in selecting COPC in sediment.

In Section 4, human health screening criteria were compared to surface water and pore water for informational purposes only. The following criteria were used:

- Screening levels based on USEPA *Regional Screening Levels (RSLs) for Tap Water* (November 2010), developed by ORNL, multiplied by a factor of 10 to account for reduced exposure to surface water and pore water. The 10 times adjustment is appropriate because exposures to surface water are anticipated to be less frequent than exposures to groundwater used as tap water. Human exposure to pore water is not anticipated. Thus, the 10 times adjustment may be conservative. The adjusted tap water RSLs are compared to surface water and pore water data for informational purposes only.
- Federal Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) for public drinking-water supplies are enforceable standards designed to protect human health promulgated under the federal SDWA. Primary MCLs are based on laboratory or epidemiological studies and apply to public water systems. A public water system is

defined as a system providing water to the public for human consumption that either has at least 15 service connections or regularly serves an average of 25 individuals daily for at least 60 days per year. Primary MCLs are designed to prevent adverse human health effects, but also reflect the technical feasibility of removing a contaminant from water. Surface water in Cow Pen Creek and Dark Head Cove is not used as a drinking water source, so screening against MCLs is considered conservative. MCLs are compared to surface water data for informational purposes only.

Pore water is not further discussed in this HHRA because human exposures to pore water are unlikely and chemical concentrations in pore water do not exceed the human health based criteria (see Section 4). Surface water is not further discussed in this HHRA because the 2006 HHRA concluded that chemical concentrations in surface water do not result in regulatorily unacceptable human health risks and chemical concentrations in surface water do not exceed the human health based criteria (see Section 4).

5.2.2 Background Concentrations

Background concentrations are concentrations that would exist absent the influence of site operations. Background samples (see Section 4) for both sediment and fish tissue were obtained from locations not believed to be influenced by site operations. Background data-set to site data-set comparisons are typically used to determine if site concentrations exceed background concentrations. The background sediment data-sets and the background fish tissue data-set contain fewer than 10 samples, so no statistical comparisons were made between the background data-sets and the study area sampling data-sets due to the increased uncertainty in statistical comparisons of data sets containing fewer than 10 samples. Thus, maximum site concentrations were compared to maximum background concentrations, the results of which are in Tables 5-1 and 5-2. No chemicals were eliminated as COPC solely based on the background screen. The uncertainty analysis (see Section 5.8) discusses chemicals potentially attributable to background concentrations.

5.2.3 Other Considerations

Risk based COPC screening levels are not available for some compounds because of the lack of toxicity criteria (e.g., acenaphthylene, benzo[g,h,i]perylene, and phenanthrene). Surrogates were selected for these chemicals based on similar chemical structures. In the COPC screening, acenaphthene was used as a surrogate for acenaphthylene, and pyrene was selected as a surrogate for benzo(g,h,i)perylene and phenanthrene. Essential nutrients (calcium, magnesium, potassium,

and sodium) were not included in the MRC data-set. These inorganic chemicals are naturally abundant in environmental matrices and are only toxic at high doses.

5.2.4 Decision Rules for Establishing Chemicals of Potential Concern

The decision rules for selecting COPC are as follows:

- a chemical detected in sediments was selected as a COPC if any detected chemical concentration exceeded the COPC screening level based on direct contact (e.g., incidental ingestion or dermal-contact exposure pathways)
- a chemical detected in fish tissue was selected as a COPC if any detected concentration exceeded the COPC screening level based on ingestion of fish tissue

As noted previously, no chemicals were eliminated solely by the background screen. Therefore, the COPC for this HHRA are those chemicals detected in sediments or fish tissue at a maximum concentration exceeding a risk based COPC screening-level.

5.3 CHEMICALS OF POTENTIAL CONCERN SELECTED FOR HUMAN HEALTH RISK ASSESSMENT

Chemicals of potential concern in MRC sediment were selected using the methodology described in Section 5.2. A media-specific discussion of the chemicals identified as COPC and the rationale for COPC selection are provided in the following subsections. The COPC-selection table for sediment is presented as Table 5-1. The COPC selection table for fish tissue is presented as Table 5-2.

5.3.1 Sediment Direct-Contact Exposure Pathways

As summarized in Table 5-1, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs) (including PAHs), three polychlorinated biphenyls (PCBs), and inorganics (metals) were detected in sediment samples collected from the MRC. As discussed in Section 5.2.1, ten times the risk based screening levels typically used for soils (assuming a residential land-use scenario) were used as the COPC screening criteria for sediment. This adjustment of the screening levels is recommended for sediment COPC-screening because exposures to sediments (particularly those underwater) are likely less intensive and less frequent than exposures to soil. The following chemicals were detected in sediments at maximum

concentrations exceeding the risk based COPC screening level for sediment, and were retained as COPC for sediment at MRC:

- PAHs (BaPEq, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene)
- PCBs (Aroclor-1248, Aroclor-1260, and total Aroclor)
- metals (antimony, arsenic, cadmium, cobalt, hexavalent chromium, and lead)

As detailed in Table 5-1, none of the chemicals detected in the MRC sediments were eliminated as COPC based solely on the background screen.

5.3.2 Fish Tissue (Fish Ingestion Exposure Pathways)

As summarized in Table 5-2, PCBs and metals were detected in the fish tissue samples collected from locations near the MRC. The following chemicals were detected in fish tissue at maximum concentrations exceeding the risk based COPC screening level for fish ingestion, and were retained as COPC for fish tissue at MRC:

- PCBs (total PCBs)
- metals (antimony and mercury)

As detailed in Table 5-2, none of the chemicals detected in the fish tissue were eliminated as COPC based solely on the background screen. The maximum site chromium concentration also exceeds the COPC screening level presented in Table 5-2. However, chromium would only be selected as a COPC if the metal was assumed to be present in the hexavalent state. (The COPC screening levels for trivalent chromium and hexavalent chromium are 2,000 mg/kg and 0.0063 mg/kg, respectively.) The maximum site and reference chromium concentrations are 0.41 mg/kg and 2 mg/kg (i.e., the maximum chromium concentration reported for the reference fish tissue samples is greater than the maximum concentration reported for the site fish tissue samples.)

5.4 EXPOSURE ASSESSMENT

The exposure assessment component of the HHRA defines and provides a means to evaluate (either quantitatively or qualitatively) the type and magnitude of human exposure to chemicals at or migrating from a site. A foundation of the exposure assessment is the conceptual site model

(CSM), which identifies site characteristics, including potential contaminant sources, contaminant release mechanisms, transport routes, receptors, and other appropriate information. The CSM considers both current and future land use scenarios for the MRC. Figure 5-1 illustrates the study area CSM, which is discussed in the following sections.

5.4.1 Sources of Environmental Contamination

Water bodies surrounding the MRC are subject to a variety of influences, given the highly developed nature of the area. Section 4.1 discusses potential sources of contamination to Dark Head Cove and Cow Pen Creek. Historical industrial discharges, surface spills, releases, and waste management activities may have been primary sources of contamination. Other sources may include heavy recreational use of the water bodies and runoff from Martin State Airport, residential properties, and roadways.

5.4.2 Contaminant Fate and Transport

Contaminants released from the primary sources can potentially be transported to Dark Head Cove and Cow Pen Creek. Nine stormwater outfalls are present at the MRC, discharging stormwater into Cow Pen Creek and Dark Head Cove (Figure 2-1 showing outfalls). Most surface water runoff generated during rain events discharges from the MRC to Cow Pen Creek and Dark Head Cove through the nine outfalls mentioned above. Some surface water runoff presumably discharges to these water bodies as overland sheet flow. Some precipitation infiltrates into the ground in unpaved areas. Infiltrating precipitation could result in the transport of contamination in surface soil to subsurface soil and groundwater at the facility. Groundwater beneath the MRC flows into Cow Pen Creek and Dark Head Cove at very low flux rates.

The MRC facility is covered with structures, pavement, and gravel, so volatilization of contaminants is not significant. The surface cover material largely prevents soil in unpaved areas from eroding into Cow Pen Creek and Dark Head Cove, and prevents soil erosion due to wind. Erosion from wind and stormwater runoff may have been significant contaminant transport mechanisms in the past. Current stormwater discharge from MRC outfalls is regulated through a National Pollution Discharge Elimination System (NPDES) permit (see Section 2.1.1.3). Under current conditions, stormwater runoff from the MRC and the entire surrounding area is probably the major contaminant transport mechanism to the surface water bodies.

Contaminants released to surface water, sediment, or porewater in the study area may transfer amongst these media. Contaminants in surface water may transfer to sediment through deposition or to porewater through partitioning. Contaminants in sediment may transfer to surface water through resuspension or to porewater through partitioning. Contaminants in porewater may transfer to sediment or surface water through partitioning.

5.4.3 Potential Current and Future Receptors of Concern and Exposure Pathways

The MRC is currently used for commercial/industrial purposes and the currently anticipated future land use is likewise commercial/industrial. However, recreational activities (wading, swimming, and fishing) do occur on the adjacent surface water bodies, presumably will occur in the future in these areas, and may occur in the future on the current MRC property. Therefore, this HHRA will evaluate potential risks to a potential recreational receptor as a consequence of direct contact (incidental ingestion/dermal contact) with COPC identified in the sediment, as well as because of ingesting fish taken from the study area.

Direct-contact exposures to surface water are not evaluated because this pathway did not result in regulatorily unacceptable risks during the previous (2006) HHRA, and chemical concentrations in the available 2010 surface water samples do not exceed human health screening levels. Therefore, surface water is not considered a medium of concern for this HHRA. Additionally, human receptors are not expected to be exposed to chemicals in porewater. This HHRA evaluates direct-contact risks incurred by child, adolescent, adult, and lifelong recreational users contacting the sediments in the study area, and risks incurred by an adult recreational user consuming fish taken from the study area. Figure 5-1 presents a CSM for exposure pathways associated with the waterways adjacent to the MRC.

5.4.4 Calculation of Exposure Point Concentrations

The EPCs (calculated only for COPC) estimate the chemical concentration in an exposure unit (EU) likely to be contacted over time by a receptor, and are typically used to estimate exposure intakes. An EU is defined as the area typically encountered/traversed by a receptor under a particular land use scenario. For example, a residential lot size of 0.25–2 acres is often used to evaluate a hypothetical future resident. However, the size of an EU selected for HHRA is

typically based on the distribution of the chemical concentrations in a medium as well as on presumed receptor activity patterns.

Sediment from Cow Pen Creek and Dark Head Cove was evaluated as a single EU for all recreational user receptors. The following guidelines were used to calculate the EPCs:

- If a sediment or fish tissue data-set contained five or more samples with at least three positive detections, the 95% upper confidence level (UCL) on the arithmetic mean (based on the distribution of the data set) was selected as the EPC unless then 95% UCL exceeded the maximum concentration. EPCs were calculated following USEPA's *Calculating Upper Confidence Limits for Exposure-Point Concentrations at Hazardous Waste Sites* (USEPA, 2002a) and using USEPA's *ProUCL* Version 4.00.05 (USEPA, May 2010). *ProUCL*-calculation output files are in Appendix B.

- Area weighted average concentrations were also evaluated as sediment EPCs to provide a more refined understanding of the potential for risk. Specifically, area weighted concentrations adjust for the fact that the areal extent of elevated COPC concentrations is limited, in some cases, to relatively small areas as compared to the total area to which the receptor may be exposed. The area weighted average concentrations were calculated using the acreages defined by the Thiessen polygon figures (see Section 4). In overview, the concentration available for each sampled location (representing a certain area or polygon of the study area) was multiplied by the acreage for that location/polygon, and the sum of these results was then divided by the total acreage of the study area under evaluation. See Appendix B for area weighted-average calculation methodology.

- If a sediment or fish tissue data-set contained fewer than five samples or three positive detections, or if the maximum concentration exceeded the 95% UCL, the EPC was defined as the maximum detected concentration (not the 95% UCL on the arithmetic mean).

- Sample and duplicate analytical results for sediment were averaged for statistical use before the EPC was calculated. *ProUCL* uses statistical procedures to incorporate non-detected results into the 95% UCL results. The fish tissue data set does not contain duplicate samples.

- Per USEPA guidance, the arithmetic mean concentration calculated for a data set was selected as the EPC for lead.

Risks to recreational receptors from chemicals in sediment were evaluated over four separate sediment depth intervals because concentrations of some chemicals in deeper sediments exceed the concentrations in shallow sediments:

- surface sediments 0–6 inches below the surface water/sediment interface

- subsurface sediments at >6–18 inches below the surface water/sediment interface

- subsurface sediments at >18–30 inches below the surface water/sediment interface
- subsurface sediments at >30–52 inches below the surface water/sediment interface

Exposure to any subsurface sediments is unlikely under current conditions. However, exposure to subsurface sediments could occur if dredging brings them to the surface. Thus, the HHRA evaluates all depth intervals. Table 5-3 summarizes the EPCs evaluated for the four sediment depth intervals evaluated herein. Table 5-4 summarizes the EPCs evaluated for fish tissue.

5.5 CHEMICAL AND INTAKE ESTIMATION

5.5.1 Exposure Assessment and Risk Characterization of Sediment and Fish

The risk characterization in this HHRA is not based on a calculation of chemical intakes for recreational receptors directly contacting sediments or consuming fish taken from the study area. Rather, the risk estimates are based on a comparison of the EPCs (developed per the methodology presented in the preceding section) against RBCs developed for the direct contact and fish ingestion exposure pathways. Specifically, RBCs representing a 1E-06 cancer risk level and HQ of 1 (i.e., the "no adverse effect" concentration) were developed for carcinogens and non-carcinogens, respectively.

5.5.2 Calculation of Direct-Contact RBCs

RBCs for direct contact (incidental ingestion and dermal contact) with sediments were calculated per the sediment evaluation methodology presented in Section 4 of the *2005 Surface Water and Sediment Sampling Report for the Lockheed Martin Middle River Complex, Middle River, Maryland* (Tetra Tech, 2006). The referenced methodology is presented in Appendix B, which also includes a copy of the risk assessment spreadsheets used to calculate the RBCs for the direct contact exposure pathways. RBCs were calculated for child, adolescent, adult, and lifelong recreational users directly contacting study area sediments. Exposure assumptions used for the direct exposure pathway are summarized below.

Exposure assumptions for direct contact with sediment				
Parameter	Child	Adolescent	Adult	Definition
RBC_{sed} = :				Concentration in sediment (mg/kg)
TCR = :	1.0E-06			Target cancer risk
IR = :	200	100	100	Soil ingestion rate (mg/day)
CF = :	1.0E-06	1.0E-06	1.0E-06	Conversion factor (kg/mg)
FI = :	1	1	1	Fraction from contaminated source (unitless)
SA = :	2800	4320	5700	Skin surface available for contact (cm^2/day)
AF = :	0.2	0.07	0.07	Soil to skin adherence factor (mg/cm^2)
ABS = :	Chemical-specific			Absorption factor (unitless)
EF = :	70	70	70	Exposure frequency (days/year)
ED = :	6	10	14	Exposure duration (years)
BW = :	15	40	70	Body weight (kg)
ATc = :	25,550	25,550	25,550	Averaging time for carcinogenic exposures (days)
ATn = :	2,190	3,650	5,110	Averaging time for noncarcinogenic Exposures (days)

See Appendix B for direct-contact RBCs calculated for all chemicals and receptors.

5.5.3 Calculation of Fish Consumption RBCs

RBCs were also calculated for an adult receptor consuming fish taken from the study area; the methodology used to calculate the RBCs is presented in this section. Risk estimates were then developed for recreational receptors using the simple risk ratio method presented in Section 5.7. The RBCs for PAHs were calculated according to the newest guidance for addressing risks from carcinogenic chemicals, which may act via the mutagenic pathway, as discussed in Section 5.5.4. Risks for the fish consumption pathway were calculated based on a comparison of COPC concentrations in actual fish tissue samples collected from the MRC versus fish tissue RBCs calculated as described in the following paragraphs (also see Appendix B).

Chemical concentrations in fish tissue (RBCfish) associated with the target hazard index (HI) of 1 (for non-carcinogens) and the 1E-06 target cancer risk level (for carcinogens) (i.e., RBCs) were calculated as follows:

$$\text{Non-carcinogenic RBCfish (mg/kg)} = 1 \times \text{RfDo/Intake for non-carcinogens}$$

where:

RfDo = chemical specific reference dose (mg/kg/day)

$$\text{Carcinogenic RBCfish (mg/kg)} = \text{1E-06}/(\text{CSFo} \times \text{Intake for carcinogens})$$

where:

CSFo = chemical specific cancer slope factor (mg/kg/day)-1

Non-carcinogenic and carcinogenic intakes for the fish ingestion exposure route were estimated using the following equation (USEPA, 1989):

$$\text{Ingestion Intake} = \frac{IR \times FI \times EF \times ED}{BW \times AT}$$

where:

Intake = recreational fish ingestion intake (mg/kg/day)

IR = ingestion rate (kg/meal)

FI = fraction ingested from contaminated source (unitless)

EF = exposure frequency (meals/year)

ED = exposure duration (years)

BW = body weight (kg)

AT = averaging time (days):
For non-carcinogens, AT = ED×365 days/yr;
For carcinogens, AT = 70 yr×365 days/yr

The exposure assumptions used for the RBCs are presented below:

Parameter code	Parameter definition	Units	Value	Reference
IR	Ingestion rate of fish	kg/meal	0.129	USEPA, August 1997
FI	Fraction ingested from source	unitless	1	Professional judgment
EF	Exposure frequency	meals/year	52	Professional judgment
ED	Exposure duration	years	30	USEPA, May 1993
BW	Body weight	kg	70	USEPA, May 1993
AT-C	Averaging time (cancer)	days	25,550	USEPA, December 1989
AT-N	Averaging Time (non-cancer)	days	10,950	USEPA, December 1989

Most of the exposure assumptions used to estimate chemical intakes for the ingestion of fish exposure pathway are based on default assumptions described in the standard USEPA guidance. However, this HHRA specifically assumes that receptors consume one meal's worth of fish caught once per week for each week of the year, yielding an exposure frequency (EF) of 52 meals/year. The fish tissue ingestion rate was set at 0.129 kg/meal (USEPA, 1997b) or 18.4 g/day. This daily ingestion rate is the value USEPA recommends for recreational fishers based on information from several studies cited in the *Exposure Factors Handbook* (Section 10.10.3) (USEPA, 1997b).

The exposure duration (ED) was defined as 30 years (USEPA, 1993). The 30-year ED, used in conjunction with other conservative exposure factors (e.g., conservative estimates of EF), is recommended by the USEPA when defining a reasonable maximum exposure (RME) for a long-term residential type of setting. The recommendation is based on lifestyle and human activity data (e.g., the number of years a family lives at one particular location) evaluated by USEPA and published in the USEPA's *Exposure Factors Handbook* (USEPA, 1997b). In aggregate, the exposure factor assumptions selected for this assessment (all valid RME assumptions), are intended to result in an evaluation of the highest exposure that is reasonably expected to occur at a site. The FI from the contaminated source is assumed to be 1.0 (100%), as no specific information on the dietary habits of local residents is available. This conservatively assumes that 100% of the fish caught and ingested by the recreational fisher comes from the study area.

5.5.4 Assessing Cancer Risks from Early Life Exposures

In evaluating early life exposures, USEPA's *Supplemental Guidance for Assessing Susceptibility from Early Life Exposure to Carcinogens* (USEPA, 2005) recommends adjusting the toxicity of carcinogenic chemicals that act mutagenically. The guidance recommends using age-dependent

adjustment factors (ADAFs) combined with age specific exposure estimates when assessing cancer risks. In the absence of chemical specific data, the supplemental guidance recommends the following default adjustments, which reflect that cancer risks are generally higher from early life exposures than from similar exposures later in life:

- for exposures before two years of age (i.e., spanning a two-year interval from the first day of birth up until a child's second birthday), a 10 times adjustment
- for exposures between two and greater than 16 years of age (i.e., spanning a 14-year time interval from a child's second birthday up until their sixteenth birthday), a 3 times adjustment
- for exposures after turning 16 years of age, no adjustment

These adjustments were applied using the same method used by USEPA in developing the RSLs. Children were evaluated as two age groups: ages zero to two years, and ages two to six years; adolescents were evaluated as one age group: ages six to 16 years; and adults were evaluated as one age group: ages greater than 16 years. Using this approach, intakes for recreational users were calculated as follows:

$$\text{Intake}_{\text{Child}} = \text{Intake}_{(\text{ages 0–2 years})} \times 10 + \text{Intake}_{(\text{ages 2–6 years})} \times 3$$

$$\text{Intake}_{\text{Adolescent}} = \text{Intake}_{(\text{ages 6–16 years})} \times 3$$

$$\text{Intake}_{\text{Adult (ages >16 years)}} \times 1$$

This approach was used only for those chemicals identified as mutagenic in the USEPA RSL table (e.g., benzo(a)pyrene and related PAHs).

5.6 TOXICITY ASSESSMENT

The objective of a toxicity assessment is to identify the potential for human health hazards and adverse effects in exposed populations. Quantitative estimates of the relationship between the magnitude and type of exposures and the severity or probability of human health effects are defined for the identified COPC. Quantitative toxicity values (cancer slope factors [CSFs] and reference doses [RfDs]) determined during this component of the risk assessment are, in part, the basis of the RBCs developed as specified in preceding sections. A CSF is an indicator of the

potency of a chemical carcinogen (i.e., the greater the CSF, the more potent the carcinogen). An RfD is the dose at which or below which adverse non-carcinogenic effects are not anticipated.

5.6.1 Sources of Toxicity Criteria

Oral toxicity criteria to develop the aforementioned RBCs were obtained from the following primary USEPA sources (USEPA, 2003a):

- ***Integrated Risk Information System (IRIS)—***USEPA online database
- ***USEPA Provisional Peer Reviewed Toxicity Values (PPRTVs)—***The Office of Research and Development/National Center for Environmental Assessment (NCEA) Superfund Health Risk Technical Support Center develops PPRTVs on a chemical-specific basis when requested by USEPA's Superfund program.
- ***Other toxicity values—***These sources include but are not limited to California Environmental Protection Agency toxicity values, the federal Agency for Toxic Substances and Disease Registry (ATSDR) "minimal risk levels" (MRLs), and the Annual Health Effects Assessment Summary Tables (HEAST) (USEPA, 1997b).

Although toxicity criteria can be found in several toxicological sources, IRIS is the preferred source of toxicity values. This database is continuously updated and its values have been verified by USEPA. The USEPA RSLs table may be used as a source of toxicity criteria when toxicity criteria are not available from the aforementioned references. Toxicity criteria for the constituents selected as COPC are presented in risk assessment spreadsheets used to calculate the RBC used in this HHRA (see Appendix B).

5.6.2 Toxicity Criteria for Carcinogenic Effects of PAHs

Limited toxicity values are available to evaluate the potential carcinogenic effects from exposure to PAHs. Benzo(a)pyrene is the most extensively studied PAH and the USEPA has published a cancer slope factor for this PAH in IRIS (USEPA, 1993b). However, cancer slope factors have not been published in IRIS for other PAH compounds. Alternatively, for a sub-set of related PAH chemicals (benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a)anthracene, indeno(1,2,3-cd)pyrene), USEPA recommends that risk evaluations be conducted using toxicity-equivalency factors (TEFs) that relate the potency of each of these PAHs to that of benzo(a)pyrene (USEPA, 1993b). Specifically, the TEFs are used to convert the individual PAH concentrations into an equivalent concentration of benzo(a)pyrene, referred to as

the benzo(a)pyrene equivalent concentration (BaPEq). For example, the TEF currently used by the USEPA to develop the screening levels presented for chrysene in the USEPA Regional Screening Level table is 0.001 (USEPA, 2011, USEPA, 1993b). Consequently, if the detected chrysene concentration in a sediment sample is 10,000 ug/kg, the benzo(a)pyrene equivalent concentration is 10 ug/kg. If benzo(a)pyrene and chrysene were the only PAHs detected in a sample and each was detected at 10,000 ug/kg, the associated benzo(a)pyrene equivalent concentration (based on positive detections only) would be 10,010 ug/kg (10,000 for benzo(a)pyrene and 10 for chrysene). This equivalent concentration, calculated for each sample, is then further evaluated in the risk assessment.

USEPA's *Guidelines for Carcinogen Risk Assessment* (USEPA, 2005e) and *Supplemental Guidance of Assessing Susceptibility from Early Life Exposure to Carcinogens* (USEPA, 2005f) specifies the use of ADAFs for carcinogens that act mutagenically. Benzo(a)pyrene and related PAHs are included in the group of mutagenic chemicals. No chemical specific ADAFs have been derived for these PAHs, therefore the following default ADAFs were used in this HHRA: 10 for ages zero to two, 3 for ages two to 16, and 1 (no adjustment) for ages 16–70. ADAFs were used to develop the RBCs for evaluating exposures to these PAHs incurred by recreational users, using the approach presented in Section 5.5.2 and 5.5.3.

5.6.3 Toxicity Criteria for PCBs

The HHRA of PCBs considered the guidelines presented in *PCBs: Cancer Dose–Response Assessment and Application to Environmental Mixtures* (USEPA, 1996). This guidance presents a tiered approach to assessing risks posed by exposure to PCBs. A range of CSFs for PCBs is presented for use in the HHRA, according to criteria that consider the environmental media investigated, the type of exposure, and the anticipated persistence, bioaccumulation potential, and toxicity of the PCBs detected in the samples.

5.7 RISK CHARACTERIZATION

Risk estimates in this HHRA were calculated using the simple risk ratio technique presented in Sections 5.7.1 and 5.7.2 below. The resulting risk estimates are compared to USEPA and MDE risk management benchmarks presented in Section 5.7.3 and discussed in Section 5.7.4.

5.7.1 Risk Estimation for Carcinogens

The risk posed by carcinogenic compounds is estimated by calculating the incremental lifetime cancer risk (ILCR) according to the following equation:

$$ILCR = \Sigma (95\% \text{ UCL or Area-WT AVG/RBC}) \times 1.0E\text{-}06$$

where:

ILCR = Incremental lifetime cancer risk (unitless)

95% UCL = 95% upper confidence limit (mg/kg or µg/kg)

Area-WT AVG = Area weighted average concentration (mg/kg or µg/kg)

RBC = Risk based concentration (mg/kg or µg/kg)

1.0E-06 = Risk assessment point of departure for carcinogenic effects (unitless)

5.7.2 Risk Estimation for Non-Carcinogens

The risk posed by non-carcinogens is estimated by first calculating the HQ. The HI can then be calculated by summing the individual HQs. The equations for HQs and the HI are as follows:

$$HQ = (95\% \text{ UCL or Area-WT AVG/RBC}) \times 1.0$$
$$HI = \Sigma HQs$$

where:

HQ = hazard quotient (unitless)

95% UCL = 95% upper confidence limit (mg/kg or µg/kg)

Area-WT AVG = Area weighted average concentration (mg/kg or µg/kg)

RBC = Risk based concentration (mg/kg or µg/kg)

HI = Hazard index (unitless)

1.0 = Risk assessment point of departure for non-carcinogenic effects (unitless)

5.7.3 Interpretation of Risk Assessment Results

To interpret the quantitative risk estimates and to aid risk managers in identifying the need for possible remedial action, quantitative risk estimates were compared to typical USEPA risk

benchmarks as well as to MDE risk management benchmarks. USEPA has defined a "target cancer risk" range of 1E-04 to 1E-06 (i.e., a one-in-10,000 to one-in-one-million probability of developing cancer). MDE's upper end cancer risk threshold is 1E-05 (i.e., a one-in-100,000 probability of developing cancer). HQs and HI are typically evaluated by both USEPA and MDE using a value of 1.0. Generally, adverse non-carcinogenic health effects are not anticipated if an HQ or HI (developed on a target organ/effect-specific basis) does not exceed 1.0. Current USEPA policy regarding lead exposures is to limit the childhood risk of exceeding a 10 µg/dL blood-lead level to 5%.

5.7.4 Risk Characterization Results

This section summarizes the risk characterization for the MRC sediments and fish tissue. Risks due either to direct contact with sediments or as a consequence of consuming fish taken from the study area were evaluated for hypothetical current/future recreational receptors exposed to sediments at four separate depth intervals or fish tissue. Potential cancer risks and HI for exposure to the COPC are summarized in Tables 5-5 through 5-13. The methodology to calculate these risks was provided in the preceding sections. Uncertainties associated with the risk estimates are discussed in Section 5.8.

5.7.4.1 Sediment Risk Characterization Results

Non-carcinogenic risks—direct contact exposure pathways (EPCs = 95% UCL)—Cumulative HI for recreational users are less than or equal to unity (1) for all COPC at all depth intervals when evaluating the 95% UCLs as the EPCs (Tables 5-5 through 5-8). Consequently, adverse non-carcinogenic effects are not anticipated for these receptors under the conditions defined in the exposure assessment.

Carcinogenic risks—direct contact exposure pathways (EPCs = 95% UCL)—Cumulative ILCRs for recreational receptors exposed to surface sediments and subsurface sediments were within USEPA's target risk range of 1E-04 to 1E-06 (Tables 5-5 through 5-8). The following risk estimates exceed the Maryland cancer risk threshold of 1E-05:

Medium	Depth	ILCR	Primary risk contributors
SS	0–6"	4E-05	BaPEq, PCBs, Arsenic
SB	>6–18"	3E-05	BaPEq, PCBs, Arsenic
SB	>18–30"	5E-05	BaPEq, Arsenic

SS: surface sediment *BaPEq: Benzo(a)pyrene equivalents*
SB: subsurface sediment *PCBs: polychlorinated biphenyls*

The BaPEq, PCBs, and arsenic are the main contributors to the ILCRs estimated for recreational exposure to sediment.

Non-carcinogenic risks—direct contact exposure pathways (EPCs = area weighted averages)—Cumulative HI for recreational users are less than or equal to unity (1) for the primary risk-contributing chemicals in all depth intervals when evaluating area weighted average concentrations as the EPCs (Tables 5-9 through 5-12). Consequently, adverse non-carcinogenic effects are not anticipated for these receptors under the conditions defined in the exposure assessment.

Carcinogenic risks—direct contact exposure pathways (EPCs = area weighted averages)—The cumulative ILCRs estimated using area weighted average concentrations are within USEPA's target risk range of 1E-04 to 1E-06 for all depth intervals (Tables 5-9 through 5-12). The ILCRs estimated for recreational receptor exposure to the 0–6 inch depth interval, the >6–18 inch depth interval, and the >18-30 inch depth interval exceed the Maryland cancer risk threshold of 1E-05 (ILCRs are equal to 2E-05 for these three depth intervals).

Risks from lead—Lead was selected as a COPC for direct contact with sediment. The maximum and arithmetic mean lead concentrations for each depth interval are listed below (see Tables 4-3, 4-5, 4-7, and 4-9):

Medium	Depth interval	Maximum (mg/kg)	Average (mg/kg)
SS	0–6"	31500	407
SB	>6–18"	1370	131
SB	>18–30"	316	89.4
SB	>30–52"	163	18.9

SS: surface sediment
SB: subsurface sediment

The arithmetic mean lead concentrations for sediments, from all depth intervals except the surface sediment, are significantly less than (less than 40%) the COPC selection criterion for lead (400 mg/kg). Therefore, lead concentrations in sediments from the subsurface depth intervals are not further evaluated in the HHRA. The arithmetic mean lead concentration in surface sediment marginally exceeds the COPC selection criterion for lead.

The arithmetic mean lead concentration in surface sediment is largely driven by the maximum detected concentration. No other sample in surface sediment has a lead concentration exceeding the COPC selection criterion of 400 mg/kg. Using 400 mg/kg as the criterion for lead is conservative because 400 mg/kg is an appropriate benchmark for residential soil, and recreational exposure to sediment is expected to be less intense. The maximum concentration was detected at location SD-84 (the antimony result reported for this location was several orders of magnitude greater than any other antimony result in surface sediment as stated previously). The arithmetic mean lead concentration in surface sediment is 102 mg/kg if the lead concentration from SD-84 is excluded. Samples collected from the nearby locations SD-4, SD-43, and SD-44 have lead concentrations of 140 mg/kg, 178 mg/kg, and 43.5 mg/kg, respectively. The lead concentration at location SD-84 is 107 mg/kg in the >6–18 inch depth interval. Therefore, the lead concentration in surface sediment at SD-84 appears to be either an isolated hot spot or an anomalous result. Lead is not considered a risk driver for sediments typical of the study area.

5.7.4.2 Fish Tissue Risk Characterization Results

Non-carcinogenic risks—fish tissue (EPCs = 95% UCL)—The cumulative HI for recreational users exceeds unity (the total HI = 13) (Table 5-13). PCBs are the only risk drivers for the noncarcinogenic HI. However, the RSL table has no non-cancer toxicity value for Aroclor-1262 or -1268. Consequently, to be conservative, the non-cancer RfD (target organ [immune system]) for Aroclor-1254 was used as a surrogate value to evaluate the total PCB concentrations. Antimony and mercury do not significantly contribute to the total HI.

Carcinogenic risks—fish tissue (EPCs = 95% UCL)—Cumulative ILCRs for recreational receptors exposed to COPC in fish tissue slightly exceed USEPA's target risk range of 1E-04 to 1E-06, and exceed the Maryland cancer risk threshold of 1E-05 (Table 5-13). The total ILCR is

estimated as 2E-04. PCBs are the only risk contributor. However, if chromium were to be evaluated as hexavalent chromium, the estimated ILCR for chromium would be 1E-05.

5.8 UNCERTAINTY ANALYSIS

Uncertainty is associated with all aspects of human health risk assessment. A summary of these uncertainties, including a discussion of how they may affect interpretation of final risk numbers, is provided below.

5.8.1 Uncertainty in Data Evaluation

Among the significant issues related to uncertainty in selecting COPC are the lack of analytical fish tissue data for some chemicals detected in sediment, the screening levels used for COPC selection, the absence of screening levels for a few chemicals detected in study area media, and elevated detection limits for some compounds. A brief discussion of each of these issues is provided in the remainder of this section.

Lack of fish tissue data for some sediment chemicals—When available, actual fish tissue data were used to characterize risks associated with the consumption of fish taken from the waters adjacent to the MRC. The use of fish tissue data is expected to introduce less uncertainty to the risk assessment than attempting to estimate risks for fish consumers based on concentrations of chemicals in sediment alone. However, the fish tissue samples were analyzed only for PCBs and priority-pollutant metals (i.e., those chemicals demonstrated to be the greatest risk contributors based on previous investigations; see Section 4). In contrast, at least a subset of the sediment samples was analyzed for other chemicals as well (e.g., VOCs, PAHs and other SVOCs, barium, cobalt, dibutyltin, hexavalent chromium, molybdenum, and vanadium were target analytes for sediments but not fish tissue samples). Consequently, for purposes of completeness, this section of the "Uncertainty" section includes a risk evaluation of predicted fish tissue concentrations estimated based on chemical concentrations detected in sediments.

Calculation and use of COPC screening level for sediments based on the fish consumption exposure pathway—COPC screening level for sediments were developed for the fish ingestion pathway, as discussed below (see Appendix B), and are based in part on the RBCs for fish tissue calculated for adult recreational fishers (as discussed in Section 5.5.2). RBCs for fish tissue represent concentrations of chemicals in fish tissue (RBCfish) that correspond to a cancer risk of

1×10^{-6} or a noncancer HQ of 1. Subsequently, sediment COPC screening level for metals were then calculated using biota sediment accumulation factors (BSAFs) as follows:

$$\text{Sediment screening-level for metals} = \text{RBCfish/BSAF}$$

Sediment to aquatic invertebrate BSAFs from ORNL (1998) were used to estimate tissue concentrations in fish because sediment-to-fish BSAFs are not available for all metals. Using sediment to aquatic invertebrate BSAFs is likely to result in BSAFs that are biased high, because invertebrates are generally assumed to have more contact with sediment than fish. Although invertebrate BSAFs may be derived for metals, metals may be well regulated by organisms, so concentrations of metals in an organism may not relate linearly to the concentrations of metals in sediment. Therefore, uncertainty exists in predicting chemical concentrations in fish tissue from chemical concentrations in sediment. The BSAFs for metals are not normalized to lipids or total organic carbon (TOC), so concentrations of metals in benthic invertebrates were estimated by multiplying each COPC sediment concentration by its associated BSAF and converted to a wet weight by multiplying by 0.16.

Sediment screening levels for organics were derived as follows:

$$\text{Sediment screening level for organics} = \frac{\text{RBCfish}\times\%\ \text{TOC}}{\text{BSAF}\times\%\ \text{Lipids}}$$

where:

BSAF	=	biota sediment-accumulation factor
% TOC	=	average TOC in sediment (%), depth-specific
% Lipids	=	average percent lipids concentration from site fish tissue data = 1.2%

The preceding equations assume that the fish in Cow Pen Creek or Dark Head Cove are in routine contact with the study area contaminants when, in fact, the biota may be traveling in and out of Cow Pen Creek and Dark Head Cove and are thus not consistently exposed to the

contaminated sediments. Uncertainty associated with screening levels for sediments that would protect fish consumers is discussed further in Section 5.8.4.

As noted above, sediment-to-fish consumption COPC screening levels were developed assuming that chemicals in sediments may be transferred to fish tissue, which would then be consumed by human receptors. Sediment chemical concentrations were then compared to these screening levels for COPC selection. The following chemicals were detected in sediments at maximum concentrations exceeding the risk based COPC screening levels for sediment and were retained as COPC for sediment for the fish-ingestion pathway at MRC (Table 5-14):

- SVOCs (1-methylnaphthalene, BaPEq, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, indeno[1,2,3-cd]pyrene, bis[2-ethylhexyl]phthalate, dibenzofuran, fluoranthene, phenanthrene, and pyrene)
- PCBs (Aroclor-1248, Aroclor-1254, Aroclor-1260, and total Aroclor)
- metals (antimony, arsenic, beryllium, cadmium, cobalt, copper, hexavalent chromium, mercury, nickel, silver, vanadium, zinc, and dibutyltin)

As detailed in Table 5-14, none of the chemicals evaluated for the sediment-to-fish consumption pathway were eliminated as a COPC based solely on the background screen. Most of the SVOCs selected as COPC for the sediment-to-fish ingestion pathway are PAHs. PAHs were not fish tissue analytes.

PCBs were also selected as COPC for fish tissue. The metals antimony and mercury were likewise selected as COPC for fish tissue. Copper and zinc were detected in fish tissue but were not selected as fish tissue COPC, and arsenic, beryllium, cadmium, nickel, and silver were not detected in fish tissue. Estimates of cancer risks and noncarcinogenic HQs for each sediment-chemical selected as a COPC for fish ingestion were developed using the equations provided in Sections 5.7.1 and 5.7.2. The following subsections describe the cancer risks and HQs estimated from this analysis.

Non-carcinogenic risks—sediment to fish consumption exposure pathway (EPCs = 95% UCL)—Cumulative HI for recreational receptors exposed to COPC in sediment through the fish ingestion exposure pathway were 15 for the surficial sediments, 6 for subsurface sediments at the >6–18 inch depth interval, 6 for subsurface sediments at the >18–30 inch depth interval,

and 3 for subsurface sediments at the >30–52 inch depth interval (Tables 5-15 through 5-18). HIs exceed unity even when calculated on an individual target organ basis. The chemicals contributing most to the exceedances are Aroclor-1254 and metals (antimony and cobalt) in the surface sediments and metals (antimony and cobalt) in subsurface sediments. No non-carcinogenic RfD is available for Aroclor-1248 or Aroclor-1260. Uncertainty associated with non-carcinogenic risks for Aroclor-1248 and Aroclor-1260 is discussed in Section 5.8.6. The EPC for antimony (68.3 mg/kg) is considerably influenced by the maximum concentration (2,320 mg/kg) detected at location SD-84. The second greatest detected concentration of antimony in surface sediment is 4.6 mg/kg. The contribution of antimony to the noncarcinogenic HI may be overestimated because the EPC is affected by the maximum concentration, which is orders of magnitude greater than the second greatest concentration.

As mentioned previously, uncertainty is associated with using BSAFs for metals because metals are regulated by the fish, so using BSAFs, especially those for benthic invertebrates, is not likely to be very accurate (see Section 5.8.4). All of these risk estimates assume that the biota being consumed are somewhat confined to the study area and, thus, concentrations in fish tissue would reflect concentrations in the sediments. In reality, biota are not confined to the study area. Consequently, the risks estimated based on study area sediment concentrations may exceed estimates of the actual risks to receptors from consuming fish from the study area.

Carcinogenic risks—sediment to fish consumption exposure pathway (EPCs = 95% UCL)—The cumulative ILCR for exposures to COPC in sediment through fish consumption estimated using the 95% UCL is within USEPA's target risk range of 1E-04 to 1E-06 for the subsurface sediments at the greater than 30–52 inch interval (Table 5-18). The cancer risk estimate for this interval (5E-05) did exceed the Maryland cancer risk threshold of 1E-05. However, the ILCRs estimated for fish consumption from surface sediments (0–6 inch depth interval) and subsurface sediments in the >6–18 inch and >18–30 inch depth intervals (Tables 5-15 through 5-17) exceed both the USEPA target risk range and the Maryland cancer risk threshold (estimated ILCRs = 1E-03, 9E-04, and 5E-04, respectively). BaPEq and PCBs are the primary risk drivers (i.e., contributors to the risk estimates). As mentioned previously, PAHs (including the BaPEq) were not analytes in fish tissue. Fish can metabolize PAHs, so PAHs in fish tissue are often not detected or are detected at very low concentrations, even in areas of high PCB contamination (USEPA, 2000).

Non-carcinogenic risks—sediment to fish consumption exposure-pathway (EPCs = area weighted average)—The estimated total HI (4) and one target-organ-specific HI exceed unity for the primary risk-contributing COPC detected in the surface sediment (Table 5-19). Cobalt and, to a lesser extent, antimony are the primary risk drivers in surface sediment; the target organ is blood. The HI estimated for Aroclor-1254 is approximately equal to 1 and thus does not exceed the target level. No non-carcinogenic RfD is available for Aroclor-1260.

Uncertainty associated with non-carcinogenic risks for Aroclor-1260 is discussed in Section 5.8.6. Total HI for subsurface sediments in the >6–18 inch interval, >18–30 inch interval, and >30–52 inch interval exceeds unity, with total HIs of 2 for each of these intervals (Tables 5-20 through 5-22). The target-organ-specific HIs for blood for the three subsurface sediment intervals exceeds unity and are approximately equal to 2 for each of these intervals. Cobalt is the primary risk contributor; antimony is a lesser risk contributor in the >6–18 inch depth interval, although additional uncertainty is associated with estimating risks and HQs for metals using this method (see Section 5.8.4).

Carcinogenic risks—sediment to fish consumption exposure-pathway (EPCs = area weighted average)—The estimated ILCRs for exposure to COPC in sediment through the fish consumption pathway exceed USEPA's target risk range of 1E-04 to 1E-06 and the Maryland cancer risk threshold of 1E-05 for surface sediment, subsurface sediment at the >6–18 inch depth interval, and subsurface sediment at the 18–30 inch depth interval (Tables 5-19 through 5-21). The estimated ILCRs for these depth intervals are 3E-04, 2E-04, and 2E-04, respectively. BaPEq and PCBs are the main contributors to carcinogenic risks. The cumulative ILCR for fish consumption estimated from sediment at the >30–52 inch interval (5E-05) is within the USEPA target risk range but exceeds the Maryland cancer risk threshold (Table 5-22). The cancer risks and HIs estimated for fish consumption based on sediment data are further discussed in Section 5.8.4, along with significant uncertainties associated with this analysis.

COPC screening levels—The use of risk based screening values for COPC selection corresponding to an ILCR of 1E-06 and HI of 0.1 should ensure that all significant contributors to risk from the study area are evaluated. As mentioned earlier, the risk based screening values typically recommended by USEPA for COPC selection for soils were multiplied by a factor of 10 to account for the anticipated reduced exposure to sediment. The COPC screening samples for

the actual fish tissue samples are also reasonably conservative, as they are based on RBCs published by EPA Region III.

Sediment COPC screening levels for the fish consumption exposure pathway evaluated as part of the uncertainty analysis incorporated the same conservative assumptions as were used to calculate the fish consumption RBCs that were evaluated in the risk characterization. Those RBCs are based on conservative assumptions (e.g., receptors consume one meal of fish from the Cow Pen Creek or Dark Head Cove per week, and the home range of the fish includes only the Creek and Cove). Therefore, the sediment screening level/RBCs for the fish consumption pathway should ensure that all chemicals that could potentially contribute significantly to risks are evaluated. Elimination of chemicals present at concentrations equal to (or less than) the screening levels used in this assessment should not affect the final conclusions of the risk assessment because these chemicals are not expected to cause a potential health concern at the detected concentrations.

Chemicals without established screening levels—Risk based screening levels are currently not available for some constituents (e.g., acenaphthylene, benzo[g,h,i]perylene, and phenanthrene). Therefore, surrogates with similar chemical structures were selected for these chemicals. In the COPC screening, acenaphthene was used as a surrogate for acenaphthylene, and pyrene was selected as a surrogate for benzo(g,h,i)perylene and phenanthrene. Applying toxicity values of one compound to another adds to uncertainty in the risk assessment, with respect to both the selection of COPC and the subsequently calculated risks.

5.8.2 Uncertainty in the Exposure Assessment

Uncertainty in the exposure assessment arises because of the determination of land use conditions, the selection of receptors and scenarios, estimation of exposure point concentrations, and the selection of exposure parameters discussed below.

Land use—Current land use patterns in the study area are well established, thereby limiting the uncertainty associated with land use assumptions. Land use for the MRC is currently industrial and likely to remain so in the future as long as the MRC remains operational. Recreational use of the surface waters adjacent to the MRC will presumably continue. Therefore, uncertainty due to land use is assumed low. Whether the subsurface sediments may be dredged and become more

accessible to receptors is uncertain. Consequently, risks due to subsurface sediments were conservatively evaluated in this HHRA.

***Exposure point concentrations*—**Uncertainty is associated with use of the 95% UCL on the mean concentration as the EPC. In some cases (because data sets contained fewer than five samples or three positive detections, or because the UCL is greater than the maximum concentration), the maximum concentration was used as the EPC. Use of the maximum concentration may overestimate potential risks because receptors are assumed to be continuously exposed to the maximum concentration for the entire exposure period.

Uncertainty is also associated with using the area weighted average concentration as the EPC. Area weighted average concentrations were determined by constructing Thiessen polygons for sampling locations and then multiplying the concentration at each sampling location by the area of its respective polygon. Uncertainty increases when the number of samples in a data set (e.g., for a particular depth interval) is small because each sample concentration is assumed to represent a larger area when a smaller data set is evaluated. For example, samples from locations SD-2, SD-39, SD-79, SD-80, SD-81, SD-82, SD-104, SD-105, and SD-106 were removed from the surface sediment data set used for area weighted average calculations because few samples were near these locations. Thus, the polygons constructed for these locations are large and heavily influence the calculation of the area weighted averages.

Removal of data for these polygons should not underestimate potential risks because these locations are far from the shoreline and outside of Dark Head Cove and Cow Pen Creek. In general, fewer samples are available for the subsurface data-sets, resulting in larger polygons and more uncertainty. The uncertainty of the analysis was reduced by excluding data from locations SD-78, SD-79, SD-80, SD-81, SD-82, SD-104, SD-105, and SD-106 from the weighted average calculations, because the polygons associated with these locations are relatively large and outside the main cove area. Excluding these polygons from the area weighted average calculations for subsurface sediment is not expected to underestimate risks.

Uncertainty was also introduced when incorporating non-detected values into EPC calculations. Detection limits for chemicals not detected (i.e., “non-detects”) were input into *ProUCL* for 95% UCL calculation, and half of the detection limits for chemicals not detected were used in the

area weighted average calculations. This may have overstated or understated risks to receptors. Importantly, elevated detection limits were reported for some of the Aroclor compounds in samples SD-57-SS, SD-58-02, SD-50-SS, SD-50-01, SD-50-02, SD-50-04, SD-82-SS, SD-81-SS, and SD-82-01.

Detection limits for the non-detected Aroclor compounds in these samples were adjusted (i.e., elevated) by the data validation chemist during the quality assurance review because the associated chromatogram indicates a large interfering peak that the laboratory did not properly resolve by dilution (see Appendix A). Since Aroclor-1254 was detected only once, *ProUCL* was not used to calculate an EPC for this chemical. Likewise, the maximum concentrations of Aroclor-1248 were used as EPCs for sediment. The area weighted average concentrations calculated for Aroclor-1248 and Aroclor-1254 used half of the elevated detection limits for these compounds, resulting in elevated area weighted average concentrations. Area weighted average concentrations for one or both of these two PCBs were only used in the risk evaluations for the sediment-to-fish consumption pathway in the surface, 6–18 inch, and 18–30 inch sediment depth intervals, because neither Aroclor-1248 nor Aroclor-1254 were detected in the >30–52 inch depth interval. Aroclor-1248 and Aroclor-1254 were lesser risk contributors than the BaPEq and Aroclor-1260. Detection limits for the only other PCB COPC, Aroclor-1260, were not elevated.

For fish tissue, 95% UCLs were used as the EPC when appropriate (i.e., when data sets met the requirements stated previously). Some uncertainty is associated with the UCLs because several fish samples were collected from the same locations. All fish tissue samples were included in the 95% UCL calculation; samples from the same location were not averaged together before an EPC was calculated. However, this is assumed appropriate because fish are mobile and may have had contact with sediments in other areas, even though they were caught in the same location.

Using mean concentrations as was done in this evaluation for lead or for other COPC by using area weighted mean concentrations can overestimate risks if the data set contains isolated elevated concentrations. Some of the EPCs are strongly influenced by elevated concentrations detected in a single sample. Examples previously mentioned are surface-sediment antimony and lead concentrations at location SD-84. Concentrations of these metals in surface sediment detected at SD-84 are several orders of magnitude greater than at any other sampling location. The following

table shows the average (arithmetic mean) concentrations for antimony and lead in the study area with and without the concentrations from SD-84:

Constituent	Mean concentration (mg/kg)	Mean concentration excluding SD-84 (mg/kg)
Antimony	23.2	0.73
Lead	407	102

Both antimony and lead mean concentrations are considerably lower if results from SD-84 are removed from the data set. Uncertainty associated with EPCs for these chemicals is also noted in Section 5.7.

5.8.3 Exposure Routes and Receptor Identification

Various receptor groups and exposure routes of potential concern were identified based on current and anticipated land uses in the study area. Therefore, uncertainty associated with selecting exposure routes and potential receptors is minimal because they are considered well defined. However, risks from exposure to sediment via the direct contact pathway may be overestimated because the sediments are routinely submerged, which greatly reduces the likelihood of receptor contact with this medium. Subsurface sediments are also buried, making exposure to the subsurface sediments unlikely under current conditions.

The potential for significant exposure to metals contamination is somewhat mitigated by the fact (in most cases) that metals concentrations in deeper sediments (i.e., the 6–30 inch below sediment surface) exceed the metals concentrations detected in the very shallow sediments (i.e., the less contaminated 0–6 inch sediment interval). Human exposure to the shallowest sediments is more likely than human exposure to deeper sediments. However, the sediment contaminant-profile may change over time due to dredging or other disturbances of the sediment bed. Thus, this assessment evaluates metals concentrations in both shallow and deep sediments in the study area.

To ensure that potential direct-contact risks are not over or underestimated because the study area sediments were evaluated as a single EU, a subset of surface-sediment data representing areas that are shallow (i.e., six feet below the water level) were evaluated for direct-contact exposure. Ninety-five percent UCLs were calculated for each of the direct-contact COPC for the locations listed in Appendix B, based on bathymetry survey results (Appendix B). These locations are

primarily in Cow Pen Creek or on the southern shoreline of Dark Head Cove. Note that some of the sampling locations selected are not in close proximity to the shoreline and/or are below deeper water (e.g., SD-98, SD-103) (see Figures 4-1 and 4-5). However, results from these locations are the only data available to represent shoreline concentrations according to the area of influence delineated by the Thiessen polygons. Therefore, such locations were included to be conservative. Table 5-23 shows the results of this evaluation. Risk estimates are comparable to those presented for the study area as a whole, It should be noted, however, that antimony is identified as a chemical of concern (i.e., hazard index greater than 1) if the potential anomalous results at location SD-84 are included in the analysis. (This risk assessment has recommended additional sampling in this area to resolve the anomalous results at this location.)

Total cancer risks (5E-05) for the subset of surface sediment results are similar to those estimated when the entire site is evaluated as one exposure unit (4E-05) (Table 5-5). However, for non-cancer risks, the total HI is now greater than 1 due to antimony (HQ = 3). As previously discussed, elevated lead and antimony detections (i.e., several orders of magnitude greater than any other detections) were reported for the sample collected at location SD-84. The 95% UCL calculated for the subset of antimony concentrations (EPC = 413 mg/kg) exceeds that calculated when the entire study area is evaluated as one EU because of the smaller sample size. Similarly, the average lead concentration for the subset evaluation (853 mg/kg) is greater than the average lead concentration for the entire study area evaluation (407 mg/kg). Except for the higher EPCs due to elevated metals concentrations at SD-84, direct-contact risks and HIs estimated for the subset evaluation are similar to those estimated for the entire study area evaluation.

Appendix B also includes an additional evaluation of direct contact with surface sediments in Cow Pen Creek only for informational purposes. Results for the Cow Pen Creek only risk evaluation were similar to the results of the shallow water risk evaluation discussed above.

5.8.4 Exposure Parameters

Uncertainty is associated with the RBCs calculated for sediment concentrations that would protect fish consumers (presented in the uncertainty analysis). This is important because, as detailed in the uncertainty analysis, risk estimates based on the fish consumption exposure pathway significantly exceed USEPA's cancer target risk range and the Maryland cancer risk threshold. EPCs for sediment were compared to sediment RBCs protective of the fish

consumption exposure pathway. As noted above, this method assumes that fish taken by recreational fishers are routinely in contact with the sediments (i.e., are likely to be bottom dwelling species) and that bioaccumulation occurs from contaminated sediments to fish (see Section 5.2.1 and Appendix B). However, this assumption may significantly overestimate risk if species typically taken by recreational fishers do not routinely contact the sediments. Sediment RBCs that protect fish consumers assume that fish have a home range limited to Cow Pen Creek and Dark Head Cove. In reality, fish may swim to other nearby waterways.

The scientific literature provides varied results regarding the home range of channel catfish, which may change by region. However, data in the literature indicate that channel catfish do have homing instincts and may migrate upstream in spring and return to home ranges in summer in the northern part of their ranges. Mean linear distances traveled by channel catfish in two different studies were 6.1 km (Duncan and Myers, 1978) and 5.6 km (Wendel and Kelsch, 1999), which are both greater than the study area. Therefore, the possibility that some of the contamination observed in the fish tissue may be representative of conditions outside the study area should be considered. The RBCs also assume that all fish caught and consumed by recreational fishers came from the study area, rather than from multiple sources. As noted in Section 4, several fish advisories are in effect for the region surrounding the MRC. For example, the MDE lists PCBs as risk drivers for six species of fish and shellfish in Middle River, indicating regional PCB contamination.

Fish tissue data were collected and analyzed to provide another means of estimating risks for fish consumption. As noted in Section 4, investigators tried to collect tissue samples from the study area. Target species of fish were those that typically have contact with sediments. The risk evaluation based on fish tissue data also assumes that recreational fishers would consume fish only from the study area (not from multiple sources), that the fishers would consume the fish species collected in this investigation, and that the tissue samples were from fish that had a home range limited to Dark Head Cove and Cow Pen Creek. These assumptions are sources of uncertainty for the risks estimated from fish tissue data.

The risks due to fish consumption estimated from sediment concentrations are similar to those estimated based on the fish tissue samples collected. The potential cancer risk for fish consumption estimated using the area weighted average concentration of PCBs in sediment is

approximately 1.6E-04. The potential cancer risk for fish consumption estimated using the available fish tissue data is approximately 2.2E-04. This indicates that the assumptions used to calculate the sediment RBCs protective of fish consumption are reasonable for PCBs. However, the risk estimates may still be conservative due to the assumptions about recreational user fishing and consumption patterns and fish mobility, as discussed above. As discussed in Section 4, concentrations of PCBs in fish tissue data collected from the study area are less than or similar to available regional data.

5.8.5 Uncertainty in the Toxicity Assessment

Uncertainties associated with the toxicity assessment (determination of RfDs and CSFs and use of available criteria) are presented in this section.

5.8.6 Derivation of Toxicity Criteria

Uncertainties associated with the toxicity assessment of COPC include how CSFs and RfDs (from which RBCs are calculated) are determined. CSFs are upper bound estimates of the probability of a response per unit of dose. These values are estimated from available toxicological data. RfDs are estimates of daily exposure to particular chemicals that are unlikely to result in harmful non-carcinogenic health effects, even to members of sensitive populations (USEPA, 2010). The USEPA screening level values and RBCs used in this assessment incorporate the most recent CSFs and RfDs into the screening level values. These values are designed to be conservative and may overestimate potential risks. Thus, uncertainty due to the toxicity criteria used in this HHRA may overestimate risk in this assessment.

The lack of non-carcinogenic toxicity criteria for Aroclor-1248, Aroclor-1260, and total PCBs leads to additional uncertainty, as no RfD is available for PCBs other than Aroclor-1254. A non-carcinogenic RfD of 2.0E-05 mg/kg/day was used for Aroclor-1254. Using this RfD for Aroclor-1254 results in a sediment-to-fish consumption RBC of 0.11 mg/kg for surface sediments and non-carcinogenic HQs of approximately 4 and 0.8 when using the 95% UCL and the area weighted average as the EPC, respectively.

Only one positive detection of Aroclor-1254 in the surface sediment (400 µg/kg) occurred, and Aroclor-1254 was not detected in subsurface sediment. Aroclor-1248 was also detected in sediment and does not have a non-cancer RfD. Using the RfD for Aroclor-1254 as a surrogate for

Aroclor-1248 would result in non-cancer HI exceedances for this chemical in 6–18 inch sediment interval and 18–30 inch sediment interval using the 95% UCL as the EPC but would not result in exceedances if using the area weighted average as the EPC. However, Aroclor-1248 was also detected infrequently (i.e., detected in only three of 291 samples when considering all sediment depth ranges). The maximum concentration of Aroclor-1248 in sediment is 2,300 micrograms per kilogram (µg/kg). In contrast, Aroclor-1260 was detected in 152 of 291 samples across all depth ranges, with a maximum concentration of 54,000 µg/kg. Non-carcinogenic risks for Aroclor-1260 may be underestimated because Aroclor-1260 was detected much more frequently than Aroclor-1254, at greater concentrations, and has no RfD available.

If the Aroclor-1254 RfD is used as a surrogate value for Aroclor-1260, the resulting HQs for sediment-to-fish consumption would be approximately 9, 5, 2, and 0.2 for the surface sediment, >6–18 inch, >18–30 inch, and >30 inch data sets, respectively, when using the area weighted average as the EPC and the conservative fish RBCs.

Substituting the Aroclor-1254 non-carcinogenic direct-contact RBC (5.62 mg/kg, Appendix B) for Aroclor-1260 would not yield an HQ exceeding unity for any depth interval for direct contact using the area weighted average concentration. However, generally the Aroclor-1254 RfD is not substituted for the other Aroclor compounds. This may underestimate non-carcinogenic risks, but Aroclor-1260, like Aroclor-1248 and Arolcor-1254, has already been identified as a potential risk contributor due to carcinogenic risk.

Total PCBs were selected as COPC for the fish tissue data set. In Table 5-13, the RfD for Aroclor-1254 was conservatively used in the evaluation because no RfD is available for total PCBs. However, as noted in Section 4, Aroclor-1254 was not detected in fish tissue. The risk evaluation already recognized the carcinogenic risks due to PCBs in fish tissue. Thus, using the RfD for Aroclor-1254 as a surrogate criterion for PCBs does not change the conclusion of the evaluation.

Only total chromium data (not hexavalent chromium data) were available in the fish tissue data set. Hexavalent chromium data are limited in sediment. Six of 61 samples had positive hexavalent chromium detections across all sediment-depth ranges. Five positive detections of hexavalent chromium were in surface sediment. The average ratio of hexavalent chromium to total chromium

in surface sediment is 4% for samples in which hexavalent chromium was detected. This is likely an overestimation, since hexavalent chromium was not detected in most samples. However, even if this conservative ratio were applied to the fish tissue (i.e., if 4% of total chromium in fish tissue were assumed to be hexavalent chromium), hexavalent chromium would not be a risk driver for fish tissue (i.e., the associated risk estimate would not exceed 1E-06).

As noted above, hexavalent chromium data for sediment are limited. Hexavalent chromium in sediment was selected as a COPC for both the direct-contact and sediment-to-fish consumption exposure pathways. Hexavalent chromium is not a risk driver for direct contact (ILCRs were approximately 1E-06 and HQs were less than 0.1 for depths in which hexavalent chromium was detected). Hexavalent chromium is a very minor cancer risk driver (ILCR approximately = 2E-06) for the surface sediment depth interval only in the sediment-to-fish evaluation using the conservative 95% UCL. No area weighted average concentration was calculated for hexavalent chromium because so few samples are available (only five surface sediment samples and one subsurface sediment sample). Therefore, considerable uncertainty would be associated with area weighted averages calculated for hexavalent chromium. Hexavalent chromium is not considered a risk driver for the sediment-to-fish exposure pathway because hexavalent chromium only marginally exceeds 1E-06 when the 95% UCL is evaluated.

5.8.7 Uncertainty in the Risk Characterization

Uncertainty in risk characterization results from assumptions made regarding additivity of effects from exposure to multiple COPC via various exposure routes. Summing non-cancer risks for several substances across different exposure pathways is a highly uncertain endeavor. This method assumes that each substance has a similar effect and/or mode of action. Even when compounds affect the same target organs, they may have different mechanisms of action or differ in their fate in the body, so additivity may not be an appropriate assumption. However, the assumption of additivity is considered because in most cases it represents a conservative estimate of risk.

No chemicals were eliminated as COPC based solely on background comparisons. However, risks associated with background data are provided to determine whether chemicals detected in sediments adjacent to the MRC and fish tissue samples from fish caught in Dark Head Cove and Cow Pen Creek reflect, in part, regional contamination (versus site-specific contamination). Information regarding regional background levels may be considered as part of the risk

management process consistent with USEPA policy considerations for the application of background data in risk assessment and remedy selection. Although study area maximum chemical concentrations exceed study-area-specific background concentrations for all sediment chemicals exceeding the COPC screening criteria, Tables 5-24 and 5-25 show the sediment background concentrations of COPC also exceeding screening criteria. For the direct-contact pathway, the maximum background concentrations of BaPEq and arsenic also exceed screening levels.

For the sediment-to-fish consumption pathway, background concentrations of BaPEq, arsenic, and cobalt exceed screening levels. Risk estimates associated with these maximum background concentrations are presented in Tables 5-26 and 5-27 for direct contact and sediment-to-fish consumption, respectively. For direct contact, the ILCR exceeds the Maryland cancer risk threshold (1E-05) primarily due to the BaPEq (ILCR = 4E-05). Arsenic is not a significant risk contributor. For sediment-to-fish consumption, the ILCR exceeds both the USEPA and Maryland cancer risk thresholds primarily due to BaPEq (ILCR = 2E-04). The HI for cobalt is approximately equal to the non-cancer risk target level of 1.

The BaPEq are primary risk drivers for both direct contact and sediment-to-fish consumption. Arsenic also contributes to direct-contact risks. Cobalt is a risk contributor for the sediment-to-fish consumption pathway. Risks due to sediment concentrations of COPC in the study area are greater than the risk due to background concentrations. However, as discussed in Section 4, background concentrations that exceed criteria indicate that some contamination is due to regional (not study-area-specific) contaminant sources.

The MDE lists PCBs as risk drivers for multiple species of fish and shellfish in Middle River, indicating that, to a certain extent, regional PCB contamination exists. Arsenic concentrations also likely reflect background concentrations, as arsenic was frequently detected on the site (292 detections in 295 samples) and was within one order-of-magnitude of the maximum background concentration (study area maximum concentration = 37.2 mg/kg, background maximum concentration = 13.5 mg/kg). In addition, the maximum concentration of arsenic (37.2 mg/kg) is similar to the upper end of the range of arsenic concentrations reported for the Mid-Atlantic/southern New England Region (0.7–36.2 mg/kg; Paul, et al. 2002). PAH contamination observed in the study area sediments can probably be attributed to multiple

anthropogenic sources of pollution. Regional background data for cobalt in sediment are not available.

For fish tissue, as Table 5-2 indicates, concentrations of COPC in the reference fish tissue samples exceed the USEPA screening levels for fish tissue for the same chemicals selected as COPC in the site fish tissue samples. Table 5-28 presents EPCs for the reference concentrations of these COPC using the maximum reference concentration or the 95% UCL (when appropriate). Table 5-29 presents the risk estimates using the 95% UCL or maximum concentration for the reference samples.

The cancer risk estimate for total PCBs exceeds the Maryland target cancer risk level (ILCR = 3E-05). Although the cancer risk estimate for PCBs in site fish-tissue samples is greater than the cancer risk estimate for the reference fish-tissue samples, the fact that the risk due to PCBs in reference fish-tissue data exceeds Maryland's target level indicates that PCB contamination is, to some extent, a regional issue. In Table 5-2, the maximum reference concentrations of antimony and chromium exceed the maximum site concentrations of these metals, indicating that regional background may contribute to the metals concentrations detected in fish tissue.

5.9 SUMMARY

The HHRA for the MRC characterizes potential risks to likely human receptors under current and potential future land uses. Potential receptors retained for quantitative evaluation were current/future adult, adolescent, child, and lifelong recreational users. Risks were evaluated for receptor exposure to sediments in Cow Pen Creek and Dark Head Cove through direct contact (ingestion and dermal contact) and indirectly through fish ingestion using fish tissue data. Several COPC were selected for each exposure pathway:

Summary of Human Health Chemicals of Potential Concern

Parameter	Sediment	Fish tissue
	Direct contact (ingestion, dermal contact)	Ingestion (recreational fisher)
Semivolatile organic compounds		
Benzo(a)pyrene Equivalents	X	
Polychlorinated biphenyls (PCBs)		
Aroclor-1248	X	
Aroclor-1260	X	
Total PCBs	X	X
Inorganics		
Antimony	X	X
Arsenic	X	
Cadmium	X	
Cobalt	X	
Hexavalent chromium	X	
Lead	X	
Mercury		X

Notes:

X—Chemical was retained as a chemical of potential concern (COPC).

Cancer and non-cancer risk estimates calculated for receptor exposure to sediments in the study area were compared to the following risk management target levels:

- USEPA "target cancer risk" range of 1E-04 to 1E-06
- Maryland "target cancer risk" threshold of 1E-05
- HQ/HI value of 1.0. Generally, adverse non-carcinogenic health effects are not anticipated if an HQ or HI, developed on a target organ/effect specific basis, does not exceed 1.0
- Current USEPA policy regarding lead exposures is to limit the childhood risk of exceeding a 10 µg/dL blood lead level to 5%

The following tables and discussions summarize cancer risks and hazard indices for direct contact with sediment and fish consumption.

Risk Summary for Direct Contact Exposure Pathways

	Cancer risk estimates[1,2] 95% UCL/area weighted[3]	Non-cancer risk estimates[2] (hazard index) 95% UCL/area weighted[3]
Sediment depth interval		
0–6"	4E-05 (BaPEq, PCBs, As)/2E-05 (BaPEq, As)	0.8/0.07
6 –18"	3E-05 (BaPEq, PCBs, As)/2E-05 (BaPEq, As)	0.4/0.06
18–30"	5E-05 (BaPEq, As)/2E-05 (BaPEq, As)	0.4/0.06
>30"	6E-06/5E-06	0.2/0.05

(1) The U.S. Environmental Protection Agency target cancer risk range is 1E-04 to 1E-06 (or a one in 10,000 to one-in-one-million probability of developing cancer). The Maryland cancer risk benchmark is 1E-05 (or a one in 100,000 probability of developing cancer).

(2) Primary chemicals of potential concern for cancer risks are listed where applicable. Primary chemicals of potential concern for non-cancer effects are not listed because no hazard indices exceed 1. Hazard indices exceeding 1 are an indicator of the potential for adverse non-carcinogenic health effects.

(3) Risk estimates based on area weighted average concentrations were calculated for primary risk drivers only (i.e., the benzo(a)pyrene equivalents (BaPEq), arsenic (As), and the polychlorinated biphenyls (PCBs)).

Cancer risks for direct contact exposure pathways are less than or equal to the Maryland threshold (1E-05) for the >30–52 inch sediments when estimated from the 95% UCL and when using the area weighted average as the EPC. Cancer risks estimated from the 95% UCL exceed the 1E-05 threshold for surface sediment (ILCR = 4E-05) and the >6–18 inch interval (ILCR = 3E-05), primarily due to the BaPEq, PCBs, and arsenic. The ILCR estimated from the 95% UCL for the >18–30 inch depth interval (ILCR = 5E-05) also exceeds 1E-05 threshold due to the BaPEq and arsenic. Direct-contact cancer risks estimated from the area weighted average exceed the Maryland risk threshold in surface sediment and the >6–18 inch and >18–30 inch depth intervals due to BaPEq and arsenic (ILCRs = 2E-05 for these depths). Non-cancer cumulative HI are less than or equal to unity (1) for the direct-contact pathway when calculated with the 95% UCL and the area weighted average concentration.

Summary of Sediment Lead Concentrations

Medium	Depth interval	Maximum (mg/kg)	Average (mg/kg)
SS	0–6"	31500	407
SB	>6–18"	1370	131
SB	>18–30"	316	89.4
SB	>30–52"	163	18.9

SS: surface sediment
SB: subsurface sediment

Average sediment-lead concentrations at all subsurface depths are less than the 400 mg/kg OSWER residential soil benchmark for lead. For surface sediment, one elevated lead concentration was detected that resulted in an average lead concentration slightly in excess of 400 mg/kg. This detection is likely either an isolated hot spot or an anomalous result and warrants further investigation. However, lead risks are not further evaluated in this HHRA, as this detection does not appear to reflect lead concentrations across the study area.

Risk Summary for Fish Consumption Based on Fish Tissue Data

	Cancer risk estimates[1],[2]	Non-cancer risk estimates[2] (hazard index)
Fish tissue data grouping		
Site fish tissue data	2E-04 (PCBs)	13 (Total PCBs)
Reference area fish tissue data	3E-05 (PCBs,)	2 (Total PCBs)

[1] *The U.S. Environmental Protection Agency target cancer risk range is 1E-04 to 1E-06 (or a one in 10,000 to one-in-one-million probability of developing cancer). The Maryland cancer risk benchmark is 1E-05 (or a one in one hundred thousand probability of developing cancer).*

[2] *Primary chemicals of potential concern for risk estimates and non-cancer effects are listed (PCBs = polychlorinated biphenyls).*

Cancer risks estimated for fish tissue exceed the USEPA target risk range and the Maryland threshold (ILCR = 2E-04) due to PCBs. (Total chromium in fish tissue was conservatively evaluated using hexavalent chromium criteria for informational purposes; however, the PCBs are still the main risk contributor, and risks due to hexavalent chromium are likely overestimated.) The cumulative HI estimated for fish tissue exceeds the target non-cancer risk level (HI = 13), primarily due to PCBs. The toxicity criteria for Aroclor-1254 were conservatively used for total PCBs because Aroclor-1254 is the only PCB compound with an available non-cancer RfD. However, cancer risks for total PCBs exceed target levels, and thus overall conclusions are not affected by whether non-cancer risks are considered for PCBs.

For completeness, this HHRA includes a risk evaluation of predicted fish tissue concentrations estimated based on chemical concentrations detected in sediments. This analysis is included because some chemicals (i.e., mainly chemicals not expected to be primary risk contributors based on past investigations) that were target analytes for the sediment sampling program(s) were not target analytes for fish tissue samples. However, given the uncertainties associated with modeling fish tissue concentrations based on sediment concentrations, it is recommended that risk-management decisions be made on risk estimates based on actual fish tissue data. The following chemicals exceed calculated sediment RBCs protective of fish consumption and were selected as COPC for the analysis:

- SVOCs (1-methylnaphthalene, BaPEq, bis(2-ethylhexyl)phthalate, fluoranthene, phenanthrene, pyrene)
- PCBs (Aroclor-1248, Aroclor-1254, Aroclor-1260)
- metals (antimony, arsenic, beryllium, cadmium, cobalt, hexavalent chromium, copper, mercury, nickel, silver, vanadium, zinc)

The results of the sediment-to-fish consumption analysis are presented below.

Risk Summary for Consumption of Fish Based on Sediment Data

	Cancer risk estimates[1] 95% UCL/area weighted[3]	Non-cancer risk estimates[2] (hazard index) 95% UCL/area weighted[3]
Sediment depth interval		
0–6"	1E-03 (BaPEq, PCBs)/3E-04 (BaPEq, PCBs)	15(Aroclor-1254/antimony/cobalt)/ 4(antimony/cobalt)
6–18"	9E-04 (BaPEq, PCBs)/2E-04 (BaPEq, PCBs)	6 (cobalt)/ 2(cobalt)
18–30"	5E-04 (BaPEq, PCBs)/2E-04 (BaPEq, PCBs)	6 (antimony/cobalt)/ 2 (cobalt)
>30"	5E-05 (BaPEq, PCBs)/5E-05 (BaPEq, PCBs)	3(cobalt)/ 2 (cobalt)

[1] The U.S. Environmental Protection Agency target cancer risk range is 1E-04 to 1E-06 (or a one-in-10,000 to one-in-one-million probability of developing cancer). The Maryland cancer risk benchmark is 1E-05 (or a one–in-100,000 probability of developing cancer).

[2] Primary chemicals of potential concern for non-cancer effects are listed

[3] Risk estimates based on area weighted average-concentrations were calculated for primary risk drivers only (i.e., benzo(a)pyrene equivalents (BaPEq), polychlorinated biphenyls (PCBs), antimony, and cobalt)

ILCRs estimated using both the 95% UCL and the area weighted average are less than or equal to the USEPA 1E-04 threshold for the >30–52 inch interval. ILCRs estimated with the 95% UCL exceed the USEPA threshold and the Maryland threshold for surface sediment (ILCR = 1E-03), in the >6–18 inch interval (ILCR = 9E-04), and the >18–30 inch interval (ILCR = 5E-04). BaPEq and PCBs are the main risk contributors. ILCRs estimated with the area weighted average exceed the USEPA and Maryland risk thresholds in the surface sediment (ILCR = 3E-04), the 6–18 inch interval (ILCR = 2E-04), and the >18–30 inch interval (ILCR = 2E-04). BaPEq and PCBs are the main risk contributors for all three depth intervals. Cancer risks estimated in the >352 inch interval exceeded the Maryland threshold (ILCR = 5E-05 in both cases) due to BaPEq and PCBs.

The cumulative HI and individual target organ HI for the fish consumption pathway estimated with the 95% UCL for surface sediment exceeds unity for all depth intervals, with Aroclor-1254 antimony, and cobalt as the main risk contributors in surface sediment and antimony and cobalt as the main risk contributors in all subsurface sediment depth intervals. Cumulative HI estimated with the 95% UCL are 15, 6, 6, and 3 for the surface sediment, >6–18 inch, >18–30 inch, and >30–52 inch depth intervals, respectively. Cumulative and individual target organ HI estimated using the area weighted average for surface sediment exceed unity, with cobalt and antimony as the main risk contributors in the surface sediment and >6–18 inch depth intervals, and cobalt as the main risk contributor in the two deepest subsurface depth intervals. Cumulative HIs estimated using the area weighted average are 4 for surface sediment and 2 for all subsurface depth intervals.

Table 5-1

Occurrence, Distribution, and Selection of Chemicals of Potential Concern - Human Health Risk Assessment - Sediment Direct Contact
Lockheed Martin, Middle River Complex
Middle River, Maryland

CAS Number	Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Sample Containing Maximum Concentration	Range of Non-Detects	Average of Positive Concentrations[2]	Average of All Results[3]	Concentration Used for Screening[4]	Maximum Background Concentration[5]	Adjusted USEPA Regional Screening Level[6]	Retained as a COPC?	Rationale
Volatile Organics (ug/kg)														
541-73-1	1,3-DICHLOROBENZENE	1/61	2 J	2 J	SD-22	SD-22-SS	1 - 54	2.0	7.5	2	ND	NA	No	NTX
106-46-7	1,4-DICHLOROBENZENE	4/61	1 J	3 J	SD-22	SD-22-SS	5.9 - 54	1.8	7.1	3	ND	24000 C	No	BSL
78-93-3	2-BUTANONE	9/28	13 J	40 J	SD-16	SD-16-02	12 - 120	24.3	22.5	40	ND	28000000 N	No	BSL
67-64-1	ACETONE	13/58	7.1 J	240 J	SD-40, SD-16	SD-40-02, SD-16-02	13 - 270	127	64.0	240	12 J	61000000 N	No	BSL
75-15-0	CARBON DISULFIDE	12/60	5 J	19 J	SD-14	SD-14-01	5.9 - 24	8.3	7.7	19	ND	820000 N	No	BSL
108-90-7	CHLOROBENZENE	2/61	3 J	7 J	SD-27	SD-27-02	5.9 - 54	5.0	7.6	7	ND	290000 N	No	BSL
74-87-3	CHLOROMETHANE	1/61	13 J	13 J	SD-35	SD-35-SS	12 - 110	13.0	15.4	13	ND	120000 N	No	BSL
156-59-2	CIS-1,2-DICHLOROETHENE	1/61	2 J	2 J	SD-19	SD-19-02	5.9 - 54	2.0	7.7	2	ND	160000 N	No	BSL
98-82-8	ISOPROPYLBENZENE	4/61	3 J	38 K	SD-13	SD-13-02	5.9 - 54	13.5	8.2	38	ND	2100000 N	No	BSL
1634-04-4	METHYL TERT-BUTYL ETHER	28/61	2 J	9 J	SD-18, SD-32, SD-23, SD-16	SD-18-SS, SD-32-SS, SD-32-SS, SD-16-SS	5.9 - 110	5.5	8.6	9	ND	430000 C	No	BSL
91-20-3	NAPHTHALENE	1/50	7 J	7 J	SD-13	SD-13-SS	6 - 54	7.0	8.1	7	NA	36000 C	No	BSL
135-98-8	SEC-BUTYLBENZENE	4/50	7 J	180 K	SD-13	SD-13-02	6 - 54	60.0	12.5	180	NA	NA	No	NTX
98-06-6	TERT-BUTYLBENZENE	1/50	2 J	2 J	SD-19	SD-19-01	6 - 54	2.0	8.1	2	NA	NA	No	NTX
108-88-3	TOLUENE	8/61	1 J	10	SD-19, SD-27	SD-19-02, SD-27-SS	5.9 - 54	5.3	7.7	10	ND	5000000 N	No	BSL
Semivolatile Organics (ug/kg)														
95-50-1	1,2-DICHLOROBENZENE	1/57	260 J	260 J	SD-13	SD-13-01	390 - 1600	260	488	260	ND	1900000 N	No	BSL
541-73-1	1,3-DICHLOROBENZENE	1/57	420 J	420 J	SD-27	SD-27-SS	390 - 1600	420	492	420	ND	NA	No	NTX
106-46-7	1,4-DICHLOROBENZENE	10/57	76 J	850 J	SD-27	SD-27-SS	74 - 1600	252	368	850	ND	24000 C	No	BSL
90-12-0	1-METHYLNAPHTHALENE	5/190	39 J	950	SD-58	SD-58-02	320 - 6400	273	439	950	ND	220000 C	No	BSL
91-57-6	2-METHYLNAPHTHALENE	7/201	34 J	1100 J	SD-58	SD-58-02	320 - 6400	409	438	1100	30 J	310000 N	No	BSL
83-32-9	ACENAPHTHENE	71/291	1.2 J	11000 J	SD-58	SD-58-02	0.39 - 6400	361	352	11000	ND	3400000 N	No	BSL
208-96-8	ACENAPHTHYLENE	60/291	2.4 J	790	SD-84	SD-84-SS	0.46 - 6400	105	320	790	180 J	3400000 N[7]	No	BSL
120-12-7	ANTHRACENE	116/291	0.77 J	19000	SD-58	SD-58-02	0.4 - 6400	487	419	19000	490 J	17000000 N	No	BSL
CALC055	**BAP EQUIVALENT-1/2 NON-DETECT**	173/291	3.4	38692	SD-58	SD-58-02	0.4 - 6400	1765	1165	38692	1978	**150 C**	Yes	ASL
CALC049	**BAP EQUIVALENT-POSITIVE RESULTS**	173/291	0.090	38387	SD-58	SD-58-02	0.4 - 6400	1309	894	38387	706	**150 C**	Yes	ASL
56-55-3	**BENZO(A)ANTHRACENE**	120/291	5.6 J	38000	SD-58	SD-58-02	0.51 - 6400	1356	774	38000	650	**1500 C**	Yes	ASL
50-32-8	**BENZO(A)PYRENE**	127/291	5 J	30000	SD-58	SD-58-02	0.4 - 6400	1224	733	30000	530	**150 C**	Yes	ASL
205-99-2	**BENZO(B)FLUORANTHENE**	166/291	8.5 J	31000	SD-58	SD-58-02	0.64 - 6400	1401	922	31000	1200	**1500 C**	Yes	ASL
191-24-2	BENZO(G,H,I)PERYLENE	116/291	22	11000 J	SD-58	SD-58-02	0.4 - 6400	882	563	11000	320	1700000 N[8]	No	BSL
207-08-9	**BENZO(K)FLUORANTHENE**	94/291	8 J	25000	SD-58	SD-58-02	0.82 - 6400	1019	482	25000	1100	**15000 C**	Yes	ASL
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	48/57	78 J	3400 J	SD-13	SD-13-01	460 - 1500	811	745	3400	730	350000 C	No	BSL
85-68-7	BUTYL BENZYL PHTHALATE	4/57	120 J	830 J	SD-13	SD-13-01	390 - 1600	325	485	830	2500	2600000 C	No	BSL
86-74-8	CARBAZOLE	11/57	130 J	1000 J	SD-13	SD-13-01	390 - 1600	448	494	1000	ND	NA	No	NTX
218-01-9	CHRYSENE	168/291	7.3 J	37000	SD-58	SD-58-02	0.48 - 6400	1248	846	37000	1600	150000 C	No	BSL
53-70-3	**DIBENZO(A,H)ANTHRACENE**	59/291	4.7 J	1400	SD-86	SD-86-02	0.45 - 6400	337	355	1400	ND	**150 C**	Yes	ASL
132-64-9	DIBENZOFURAN	5/57	240 J	400 J	SD-13	SD-13-01	390 - 1600	316	479	400	ND	78000 N	No	BSL
206-44-0	FLUORANTHENE	189/291	1.8 J	78000	SD-58	SD-58-02	0.43 - 1400	1882	1316	78000	3200	2300000 N	No	BSL
86-73-7	FLUORENE	84/291	1 J	10000 J	SD-58	SD-58-02	0.53 - 6400	296	355	10000	210	2300000 N	No	BSL
193-39-5	**INDENO(1,2,3-CD)PYRENE**	133/291	26	12000 J	SD-58	SD-58-02	0.42 - 6400	781	544	12000	550	**1500 C**	Yes	ASL
91-20-3	NAPHTHALENE	70/291	2.8 J	2200 J	SD-58	SD-58-02	0.35 - 6400	161	320	2200	110	36000 C	No	BSL
85-01-8	PHENANTHRENE	163/291	1.2 J	76000	SD-58	SD-58-02	3.5 - 6400	1382	937	76000	2800	1700000 N[8]	No	BSL
129-00-0	PYRENE	183/291	1.5 J	76000	SD-58	SD-58-02	0.41 - 6400	2303	1556	76000	4200	1700000 N	No	BSL
TTNUS072	TOTAL PAHS	195/291	1.2	457300	SD-58	SD-58-02	0 - 0	11344	7602	457300	15350	NA	No	NTX
PCBs (ug/kg)														
12672-29-6	**AROCLOR-1248**	3/291	430 J	2300	SD-86	SD-86-01	0.96 - 11000	1093	89	2300	ND	**2200 C**	Yes	ASL
11097-69-1	AROCLOR-1254	1/291	400 J	400 J	SD-43	SD-43-SS	1.4 - 11000	400	79	400	ND	1100 N[9]	No	BSL
11096-82-5	**AROCLOR-1260**	152/291	11 J	54000	SD-9	SD-9-031805	1.4 - 79	1250	659	54000	ND	**2200 C**	Yes	ASL
1336-36-3	**TOTAL AROCLOR**	153/291	11	54000	SD-9	SD-9-031805	0 - 0	1265	665	54000	ND	**2200 C**[10]	Yes	ASL

Table 5-1

Occurrence, Distribution, and Selection of Chemicals of Potential Concern - Human Health Risk Assessment - Sediment Direct Contact
Lockheed Martin, Middle River Complex
Middle River, Maryland

CAS Number	Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Sample Containing Maximum Concentration	Range of Non-Detects	Average of Positive Concentrations[2]	Average of All Results[3]	Concentration Used for Screening[4]	Maximum Background Concentration[5]	Adjusted USEPA Regional Screening Level[6]	Retained as a COPC?	Rationale
Inorganics (mg/kg)														
7440-36-0	**ANTIMONY**	135/295	0.048 J	2320 L	SD-84	SD-84-SS	0.03 - 2.1	19.9	9.2	2320	0.48	**31 N**	Yes	ASL
7440-38-2	**ARSENIC**	292/295	0.55	37.2 J	SD-105	SD-105-SS	0.75 - 1.46	7.0	6.9	37.2	13.5	**3.9 C**	Yes	ASL
7440-39-3	BARIUM	194/194	4.4	238	SD-58	SD-58-02	-	47.2	47.2	238	58.9	15000 N	No	BSL
7440-41-7	BERYLLIUM	295/295	0.17	6.9	SD-69	SD-69-01, SD-69-SS-D	-	1.7	1.7	6.9	2	160 N	No	BSL
7440-43-9	**CADMIUM**	264/295	0.016	306	SD-46	SD-46-01	0.01 - 0.14	15.4	13.8	306	0.95	**70 N**	Yes	ASL
7440-47-3	CHROMIUM	295/295	6 J	2460	SD-46	SD-46-01	-	206	206	2460	90.9	120000 N[11]	No	BSL
7440-48-4	**COBALT**	194/194	0.76	70.8 J	SD-68	SD-68-04	-	15.0	15.0	70.8	7.4	**23 N**	Yes	ASL
7440-50-8	COPPER	295/295	1.6	183 J	SD-105	SD-105-SS	-	63.2	63.2	183	110	3100 N	No	BSL
18540-29-9	**HEXAVALENT CHROMIUM**	6/61	0.53 J	13 J	SD-37	SD-37-SS	0.44 - 2.5	4.2	1.1	13	ND	**2.9 C[12]**	Yes	ASL
7439-92-1	**LEAD**	295/295	1.5	31500	SD-84	SD-84-SS	-	198	198	31500	151	**400**	Yes	ASL
7439-97-6	MERCURY	254/295	0.0079	6.1 L	SD-16	SD-16-02	0.01 - 0.1	0.5	0.5	6.1	0.71	23 N[13]	No	BSL
7439-98-7	MOLYBDENUM	159/194	0.052	4.7	SD-75	SD-75-02-D	0.05 - 1.7	1.3	1.2	4.7	0.69	390 N	No	BSL
7440-02-0	NICKEL	295/295	0.67	103 L	SD-88	SD-88-04	-	30.3	30.3	103	69.4	1500 N	No	BSL
7782-49-2	SELENIUM	214/295	0.33 J	3.1 J	SD-66	SD-66-SS	0.33 - 1.9	1.4	1.1	3.1	2.5	390 N	No	BSL
7440-22-4	SILVER	226/295	0.0088 J	55.8	SD-76	SD-76-02	0.07 - 3.4	5.1	3.9	55.8	2.5	390 N	No	BSL
7440-28-0	THALLIUM	97/295	0.049 J	20.3	SD-88	SD-88-04	0.2 - 4	0.5	0.39	20.3	0.39	NA	No	NTX
7440-62-2	VANADIUM	194/194	6.4 J	120 J	SD-28	SD-28-SS	-	46.1	46.1	120	14.5	390 N	No	BSL
7440-66-6	ZINC	295/295	2	4370	SD-88	SD-88-04	-	267	267	4370	327	23000 N	No	BSL
Metals (ug/kg)														
1002-53-5	DIBUTYLTIN	6/12	5	11 J	SD-40	SD-40-SS	2.8 - 5.6	7.6	4.7	11	NA	1800 N	No	BSL
Miscellaneous Parameters (%)														
TTNUS291	PERCENT SOLIDS	166/166	20	85	SD-44, SD-3	SD-44-01, SD-3-031705	-	46.9	46.9	85	81	NA	No	NTX
Miscellaneous Parameters (mg/kg)														
TTNUS003	TOTAL ORGANIC CARBON	71/71	1400	58100	SD-87	SD-87-SS	-	25959	25959	58100	35200	NA	No	NTX

A shaded criterion indicates that the maximum detected concentration exceeds that value. A shaded chemical name indicates that the chemical was retained as a COPC.

1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection.
2 - Average of positive analytical results only.
3 - Average of all analytical results are calculated using half of the detection limit for nondetects.
4 - The maximum concentration is used for screening.
5 - The maximum background concentration is presented for information purposes.
6 - Screening criteria for sediment are based on USEPA Regional Screening Levels (RSLs) for residential soil (November, 2010). To account for the anticipated reduced exposure to sediment, the screening criteria presented in the table for sediment are 10 times those typically used for soil (which are also based on RSLs). Therefore, the screening criteria for carcinogens in the sediment are set at 10 times the RSL for residential soil. The screening criteria for non-carcinogens in the sediment are set equal to the RSL for residential soil.
7 - The value for acenapthene is used as a surrogate for acenaphthylene.
8 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
9 - One-tenth the noncarcinogenic value is less than the carcinogenic value. Therefore, the noncarcinogenic value is presented.
10 - The value is for high risk PCBs.
11 - The value is for trivalent chromium.
12 - The value is for hexavalent chromium.
13 - The value is for mercuric chloride (and other mercury salts).

Rationale Codes:
For selection as a COPC:
ASL = above screening level
For deletion as a COPC:
BSL = Below screening level
NTX = No toxicity criteria

Definitions:
BAP = Benzo(a)pyrene
C = Carcinogen
COPC = Chemical of potential concern
J = Estimated
K = Biased high
L = Biased low
NA = Not applicable or not available
ND = Non-detected
N = Noncarcinogen
PCB = Polychlorinated biphenyl

Table 5-2

Occurrence, Distribution, and Selection of Chemicals of Potential Concern - Human Health Risk Assessment - Fish Tissue
Lockheed Martin, Middle River Complex
Middle River, Maryland

CAS Number	Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Sample Containing Maximum Concentration	Range of Non-Detects	Average of Positive Concentrations[2]	Average of All Results[3]	Concentration Used for Screening[4]	Maximum Reference Concentration	USEPA Regional Screening Level - Fish Ingestion[5]	Retained as a COPC?	Rationale
PCBs (ug/kg)														
37324-23-5	AROCLOR-1262	8/8	20 J	1500	DHC-3-FS	DHC-3-FS-CC1	-	329	329	1500	140 J	NA	No	NTX
11100-14-4	AROCLOR-1268	8/8	12 J	130 J	DHC-3-FS	DHC-3-FS-CC1	-	45.8	46	130	77 J	NA	No	NTX
1336-36-3	**TOTAL PCBs**	8/8	32	1630	DHC-3-FS	DHC-3-FS-CC1	-	375	375	1630	217	**1.6 C[6]**	Yes	ASL
Inorganics (mg/kg)														
7440-36-0	**ANTIMONY**	1/8	0.23 J	0.23 J	DHC-2-FS	DHC-2-FS-CC1	0.13 - 0.16	0.23	0.1	0.23	0.27 J	**0.054 N**	Yes	ASL
7440-47-3	CHROMIUM	8/8	0.09 J	0.41 J	DHC-5-FS	DHC-5-FS-CC2	-	0.16	0.2	0.41[10]	2 [10]	**0.0063 N[7]**	No	[9]
7440-50-8	COPPER	8/8	0.51 J	2 J	DHC-5-FS	DHC-5-FS-CC2	-	1.0	1.0	2	1.7 J	5.4 N	No	BSL
7439-92-1	LEAD	2/8	0.17 J	0.19 J	DHC-5-FS	DHC-5-FS-CC1	0.12 - 0.14	0.18	0.1	0.19	0.17 J	NA	No	NTX
7439-97-6	**MERCURY**	8/8	0.027 J	0.12 J	DHC-3-FS	DHC-3-FS-CC1	-	0.05	0.0	0.12	0.055	**0.014 N[8]**	Yes	ASL
7782-49-2	SELENIUM	8/8	0.3 J	0.68 K	CPC-2-FS	CPC-2-FS-CC1	-	0.46	0.5	0.68	0.57 K	0.68 N	No	BSL
7440-66-6	ZINC	8/8	6	9.8	DHC-5-FS	DHC-5-FS-CC1	-	7.8	8	9.8	7.6	41 N	No	BSL
Miscellaneous Parameters (%)														
TTNUS024	LIPIDS	8/8	0.27	3.8	DHC-4-FS	DHC-4-FS-CC3	-	1.2	1.2	3.8	3.2	NA	No	NTX

Shaded criterion indicates that the maximum detected concentration exceeds the screening level and that the shaded chemical was retained as a COPC.

1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection.
2 - Average of positive analytical results only.
3 - Average of all analytical results are calculated using half of the detection limit for nondetects.
4 - The maximum concentration is used for screening.
5 - USEPA Regional Screening Level (RSL) for Fish Ingestion, November 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - The value is for high risk PCBs.
7 - The value is for hexavalent chromium.
8 - The value is for methyl mercury.
9 - Although the maximum site concentration of total chromium exceeds the screening level for hexavalent chromium, it is unlikely that all of the chromium is present in the hexavalent state. The maximum site chromium concentration is less than the screening level for trivalent chromium (2000 mg/kg). Therefore, chromium is not retained as a COPC for fish tissue. However, the uncertainty associated with chromium in fish tissue is further discussed in Section 5 of the text.
10 - The maximum reference concentration of chromium is greater than the maximum site concentration of chromium.

Rationale Codes:
For selection as a COPC:
ASL = above screening level
For deletion as a COPC:
BSL = Below screening level
NTX = No toxicity criteria

Definitions:
C = Carcinogen
COPC = Chemical of potential concern
J = Estimated
K = Biased high
NA = Not applicable or not available
N = Noncarcinogen
PCB = Polychlorinated biphenyl

Associated Samples:
CPC-2-FS-CC1
DHC-2-FS-CC1
DHC-3-FS-CC1
DHC-4-FS-CC1
DHC-4-FS-CC2
DHC-4-FS-CC3
DHC-5-FS-CC1

Table 5-3

Exposure Point Concentrations - Sediment
Lockheed Martin, Middle River Complex
Middle River, Maryland

Chemical of Potential Concern	Exposure Pathway(s)	Exposure Point Concentration (EPC)[1] (mg/kg)							
		Surface Sediment: 0 to 6"		Subsurface Sediment: >6 to 18"		Subsurface Sediment: >18 to 30"		Subsurface Sediment: >30 to 52"	
		Maximum Concentration	EPC - 95% UCL or Maximum Concentration[2]	Maximum Concentration	EPC - 95% UCL or Maximum Concentration[2]	Maximum Concentration	EPC - 95% UCL or Maximum Concentration[2]	Maximum Concentration	EPC - 95% UCL or Maximum Concentration[2]
1-Methylnaphthalene	Fish Consumption	0.039	0.039[3]	0.15	0.15[3]	0.95	0.19	ND	ND
BAP Equivalent-1/2 Non-detect	Direct Contact, Fish Consumption	6.5	1.7	12.1	1.8	38.7	3	0.81	0.18
BAP Equivalent-Positive Results	Direct Contact, Fish Consumption	6.5	1.1	12.1	1.4	38.4	2.5	0.32	0.12
Bis(2-ethylhexyl)phthalate	Fish Consumption	2.9	1.2	3.4	1.5	1.7	0.9	NA	NA
Dibenzofuran	Fish Consumption	0.34	0.34[3]	0.4	0.4[3]	0.33	0.33[3]	NA	NA
Fluoranthene	Fish Consumption	10	1.7	20	3.6	78	9.9	0.43	0.15
Phenanthrene	Fish Consumption	12	1.2	15	2.4	76	8.9	0.7	0.11
Pyrene	Fish Consumption	13	2.1	24	4.5	76	10.1	0.48	0.16
Aroclor-1248	Direct Contact, Fish Consumption	ND	ND	2.3	2.3[3]	0.43	0.43[3]	ND	ND
Aroclor-1254	Direct Contact, Fish Consumption	0.4	0.4[3]	ND	ND	ND	ND	ND	ND
Aroclor-1260	Direct Contact, Fish Consumption	54	5	14.0	1.5	1.3	0.22	0.12	0.02
Antimony	Direct Contact, Fish Consumption	2320	68.3	55.1	4.8	132	6.8	23.9	1.6
Arsenic	Direct Contact, Fish Consumption	37.2	10	12.6	7.6	12.3	6.8	35.9	6.6
Beryllium	Fish Consumption	6.9	1.8	6.9	2	2.9	1.9	5.6	2.2
Cadmium	Direct Contact, Fish Consumption	296	23.8	306	52.4	296	53	33.6	10
Cobalt	Direct Contact, Fish Consumption	28.5	17.5	33	17.2	37.9	18.1	70.8	16.4
Copper	Fish Consumption	183	112	178	93.6	147	67.3	84.1	22.1
Dibutyltin	Fish Consumption	0.011	0.0095	0.005	0.005[3]	0.0085	0.0085[3]	NA	NA
Hexavalent Chromium	Direct Contact, Fish Consumption	13	1.8	1.6	1.6[3]	ND	ND	NA	NA
Lead	Direct Contact	31500	407[4]	1370	131[4]	316	89.4[4]	163	18.9[4]
Mercury	Fish Consumption	3.5	0.43	3.5	0.82	6.1	1.5	1.5	0.23
Nickel	Fish Consumption	62.8	33.8	70.4	37.2	66.2	34.3	103	25.3
Silver	Fish Consumption	28.6	3.7	37.2	9.7	55.8	13.8	9.1	2.6
Vanadium	Fish Consumption	120	52	110	60	110	50.3	48.1	32.9
Zinc	Fish Consumption	636	352	1300	411	2980	508	4370	144

1 - Risk was estimated using the 95% upper confidence limit (UCL) recommended by ProUCL, where appropriate.
2 - The maximum concentration was used in place of the 95% UCL if there were fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL was greater than the maximum concentration.
3 - The maximum concentration was used.
4 - Per USEPA guidance, the arithmetic mean is used as the EPC for lead.

BAP = Benzo(a)pyrene
NA = Not analyzed
ND = Not Detected
UCL = Upper confidence limit

Table 5-4

Exposure Point Concentrations - Fish Tissue
Lockheed Martin, Middle River Complex
Middle River, Maryland

Chemical of Potential Concern	Exposure Point Concentration (EPC)[1] (mg/kg)	
	Maximum Concentration	EPC - 95% UCL or Maximum Concentration[2]
Total PCBs	1.63	0.98
Antimony	0.23	0.23[3]
Chromium[4]	0.41	0.23
Mercury	0.12	0.07

1 - Risk was estimated using the 95% upper confidence limit (UCL) recommended by ProUCL 4.00.05 as appropriate.
2 - The maximum concentration was used in place of the 95% UCL if there were fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL was greater than the maximum concentration.
3 - The maximum concentration was used.
4 - Chromium was not selected as a COPC in fish tissue; however, the EPC is presented for informational purposes. Chromium in fish tissue is further discussed in Section 5 of the text.

Note: All 8 available sample results were used in UCL calculation.

TABLE 5-5

DIRECT CONTACT RISK CHARACTERIZATION OF SURFACE SEDIMENT (0-6") USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**95% UCL or Maximum Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[3] (mg/kg)**	**Estimated HQ**
BAP Equivalent-1/2 Non-detects	1.7	0.07	2.4E-05	NA	NA	NA
Aroclor-1248	ND	1.0	NA	NA	NA	NA
Aroclor-1260	5	1.0	5.0E-06	NA	NA	NA
Antimony	68.3	NA	NA	Blood	132	0.52
Arsenic	10	1.8	5.6E-06	Skin, CVS	108	0.093
Cadmium	23.8	NA	NA	Kidney	352	0.068
Cobalt	17.5	NA	NA	Blood	114	0.15
Hexavalent chromium	1.8	1.4	1.3E-06	None Reported	550	0.0033
		Total ILCR	**4E-05**		Total HI	0.8

Bolded totals exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL is greater than the maximum concentration.
2 - The cancer PRGs presented are for the lifelong recreational user receptor.
3 - The noncancer PRGs presented are for the child recreational user receptor.

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System

Individual Target Organ HIs

Total Blood HI =	0.7
Total CVS HI =	0.09
Total Kidney HI =	0.07
Total Skin HI =	0.09

TABLE 5-6

DIRECT CONTACT RISK CHARACTERIZATION OF SUBSURFACE SEDIMENT (>6-18") USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**95% UCL or Maximum Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[3] (mg/kg)**	**Estimated HQ**
BAP Equivalent-1/2 Non-detects	1.8	0.07	2.6E-05	NA	NA	NA
Aroclor-1248	2.3	1.0	2.3E-06	NA	NA	NA
Aroclor-1260	1.5	1.0	1.5E-06	NA	NA	NA
Antimony	4.8	NA	NA	Blood	132	0.04
Arsenic	7.6	1.8	4.2E-06	Skin, CVS	108	0.070
Cadmium	52.4	NA	NA	Kidney	352	0.15
Cobalt	17.2	NA	NA	Blood	114	0.15
Hexavalent chromium	1.6	1.4	1.1E-06	None Reported	550	0.0029
		Total ILCR	**3E-05**		Total HI	0.4

Bolded totals exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL is greater than the maximum concentration.
2 - The cancer PRGs presented are for the lifelong recreational user receptor.
3 - The noncancer PRGs presented are for the child recreational user receptor.

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System

Individual Target Organ HIs

Total Blood HI =	0.2
Total CVS HI =	0.07
Total Kidney HI =	0.1
Total Skin HI =	0.07

TABLE 5-7

DIRECT CONTACT RISK CHARACTERIZATION OF SUBSURFACE SEDIMENT (>18-30") USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**95% UCL or Maximum Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[3] (mg/kg)**	**Estimated HQ**
BAP Equivalent-1/2 Non-detects	3.0	0.07	4.3E-05	NA	NA	NA
Aroclor-1248	0.43	1.0	4.3E-07	NA	NA	NA
Aroclor-1260	0.22	1.0	2.2E-07	NA	NA	NA
Antimony	6.8	NA	NA	Blood	132	0.052
Arsenic	6.8	1.8	3.8E-06	Skin, CVS	108	0.063
Cadmium	53	NA	NA	Kidney	352	0.15
Cobalt	18.1	NA	NA	Blood	114	0.16
Hexavalent chromium	ND	1.4	NA	None Reported	550	NA
		Total ILCR	**5E-05**		Total HI	0.4

Bolded totals exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL is greater than the maximum concentration.
2 - The cancer PRGs presented are for the lifelong recreational user receptor.
3 - The noncancer PRGs presented are for the child recreational user receptor.

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System

Individual Target Organ HIs

Total Blood HI =	0.2
Total CVS HI =	0.06
Total Kidney HI =	0.2
Total Skin HI =	0.06

TABLE 5-8

DIRECT CONTACT RISK CHARACTERIZATION OF SUBSURFACE SEDIMENT (>30-52") USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**95% UCL or Maximum Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[3] (mg/kg)**	**Estimated HQ**
BAP Equivalent-1/2 Non-detects	0.18	0.07	2.6E-06	NA	NA	NA
Aroclor-1248	ND	1.0	NA	NA	NA	NA
Aroclor-1260	0.02	1.0	2.0E-08	NA	NA	NA
Antimony	1.6	NA	NA	Blood	132	0.012
Arsenic	6.6	1.8	3.7E-06	Skin, CVS	108	0.061
Cadmium	10	NA	NA	Kidney	352	0.028
Cobalt	16.4	NA	NA	Blood	114	0.14
Hexavalent chromium	NA	1.4	NA	None Reported	550	NA
		Total ILCR	6E-06		Total HI	0.2

Bolded totals exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL is greater than the maximum concentration.
2 - The cancer PRGs presented are for the lifelong recreational user receptor.
3 - The noncancer PRGs presented are for the child recreational user receptor.

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System

Individual Target Organ HIs

Total Blood HI =	0.2
Total CVS HI =	0.1
Total Kidney HI =	0.03
Total Skin HI =	0.06

TABLE 5-9

DIRECT CONTACT RISK CHARACTERIZATION OF SURFACE SEDIMENT (0-6") USING THE AREA-WEIGHTED AVERAGE CONCENTRATION
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**Area-Weighted Average Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[3] (mg/kg)**	**Estimated HQ**
BAP Equivalent-1/2 Non-detects	1.1	0.07	1.6E-05	NA	NA	NA
Aroclor-1248	NA[4]	1.0	NA	NA	NA	NA
Aroclor-1260	0.95	1.0	9.5E-07	NA	NA	NA
Antimony	NA[4]	NA	NA	Blood	132	NA
Arsenic	7.8	1.8	4.3E-06	Skin, CVS	108	0.072
Cadmium	NA[4]	NA	NA	Kidney	352	NA
Cobalt	NA[4]	NA	NA	Blood	114	NA
Hexavalent chromium	NA[4]	1.4	NA	None Reported	550	NA
		Total ILCR	**2E-05**		Total HI	0.07

Area-weighted average concentrations were calculated for primary risk drivers only.

Bolded totals exceed the risk target.

1 - One-half the deteciton limit was used for non-detected results in the area-weighted average calculation.
2 - The cancer PRGs presented are for the lifelong recreational user receptor.
3 - The noncancer PRGs presented are for the child recreational user receptor.
4 - Not a primary risk driver.

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System

Individual Target Organ HIs

Total CVS HI =	0.07
Total Skin HI =	0.07

TABLE 5-10

DIRECT CONTACT RISK CHARACTERIZATION OF SUBSURFACE SEDIMENT (>6-18") USING THE AREA-WEIGHTED AVERAGE CONCENTRATION
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
	Area-Weighted Average Concentration[1] (mg/kg)	Cancer PRG[2] (mg/kg)	Estimated ILCR	Primary Target Organs	Noncancer PRG[3] (mg/kg)	Estimated HQ
BAP Equivalent-1/2 Non-detects	0.96	0.07	1.4E-05	NA	NA	NA
Aroclor-1248	0.090	1.0	9.0E-08	NA	NA	NA
Aroclor-1260	0.45	1.0	4.5E-07	NA	NA	NA
Antimony	NA[4]	NA	NA	Blood	132	NA
Arsenic	6.9	1.8	3.8E-06	Skin, CVS	108	0.064
Cadmium	NA[4]	NA	NA	Kidney	352	NA
Cobalt	NA[4]	NA	NA	Blood	114	NA
Hexavalent chromium	NA[4]	1.4	NA	None Reported	550	NA
		Total ILCR	**2E-05**		Total HI	0.06

Area-weighted average concentrations were calculated for primary risk drivers only.

Bolded totals exceed the risk target.

1 - One-half the deteciton limit was used for non-detected results in the area-weighted average calculation.
2 - The cancer PRGs presented are for the lifelong recreational user receptor.
3 - The noncancer PRGs presented are for the child recreational user receptor.
4 - Not a primary risk driver.

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System

Individual Target Organ HIs

Total CVS HI =	0.06
Total Skin HI =	0.06

TABLE 5-11

DIRECT CONTACT RISK CHARACTERIZATION OF SUBSURFACE SEDIMENT (>18-30") USING THE AREA-WEIGHTED AVERAGE CONCENTRATION
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**Area-Weighted Average Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[3] (mg/kg)**	**Estimated HQ**
BAP Equivalent-1/2 Non-detects	1.2	0.07	1.7E-05	NA	NA	NA
Aroclor-1248	0.044	1.0	4.4E-08	NA	NA	NA
Aroclor-1260	0.17	1.0	1.7E-07	NA	NA	NA
Antimony	NA[4]	NA	NA	Blood	132	NA
Arsenic	6.2	1.8	3.4E-06	Skin, CVS	108	0.057
Cadmium	NA[4]	NA	NA	Kidney	352	NA
Cobalt	NA[4]	NA	NA	Blood	114	NA
Hexavalent chromium	NA[4]	1.4	NA	None Reported	550	NA
		Total ILCR	**2E-05**		Total HI	0.06

Area-weighted average concentrations were calculated for primary risk drivers only.

Bolded totals exceed the risk target.

1 - One-half the deteciton limit was used for non-detected results in the area-weighted average calculation.
2 - The cancer PRGs presented are for the lifelong recreational user receptor.
3 - The noncancer PRGs presented are for the child recreational user receptor.
4 - Not a primary risk driver.

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System

Individual Target Organ HIs

Total CVS HI =	0.06
Total Skin HI =	0.06

TABLE 5-12

DIRECT CONTACT RISK CHARACTERIZATION OF SUBSURFACE SEDIMENT (>30-52") USING THE AREA-WEIGHTED AVERAGE CONCENTRATION
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**Area-Weighted Average Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[3] (mg/kg)**	**Estimated HQ**
BAP Equivalent-1/2 Non-detects	0.18	0.07	2.6E-06	NA	NA	NA
Aroclor-1248	ND	1.0	NA	NA	NA	NA
Aroclor-1260	0.0095	1.0	9.5E-09	NA	NA	NA
Antimony	NA[4]	NA	NA	Blood	132	NA
Arsenic	5.0	1.8	2.8E-06	Skin, CVS	108	0.046
Cadmium	NA[4]	NA	NA	Kidney	352	NA
Cobalt	NA[4]	NA	NA	Blood	114	NA
Hexavalent chromium	NA[4]	1.4	NA	None Reported	550	NA
		Total ILCR	5E-06		Total HI	0.05

Area-weighted average concentrations were calculated for primary risk drivers only.

Bolded totals exceed the risk target.

1 - One-half the deteciton limit was used for non-detected results in the area-weighted average calculation.
2 - The cancer PRGs presented are for the lifelong recreational user receptor.
3 - The noncancer PRGs presented are for the child recreational user receptor.
4 - Not a primary risk driver.

Individual Target Organ HIs

Total CVS HI =	0.05
Total Skin HI =	0.05

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System

TABLE 5-13

RISK CHARACTERIZATION OF FISH TISSUE CONCENTRATIONS USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**95% UCL or Maximum Concentration[(1)(2)] (mg/kg)**	**Cancer PRG[(3)] (mg/kg)**	**Estimated ILCR[(6)]**	**Primary Target Organs**	**Noncancer PRG[(3)] (mg/kg)**	**Estimated HQ[(6)]**
Total PCBs[(4)]	0.98	0.0044	2.2E-04	Immune	0.076	13
Antimony	0.23	NA	NA	Blood	1.5	0.15
Mercury[(5)]	0.070	NA	NA	Developmental	0.38	0.18
		Total ILCR	**2E-04**		Total HI	**13**

Bolded values exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL is greater than the maximum concentration.
2 - UCLs were calculated using all 8 sample results.
3 - The cancer and noncancer PRGs presented are for the adult recreational user receptor.
4 - The toxicity criteria for Aroclor-1254 were used for Total PCBs.
5 - The toxicity criteria for methyl mercury were used for mercury.
6 - Total chromium was not selected as a COPC for fish tissue because the maximum total chromium site concentration did not exceed the trivalent chromium screening level. However, the maximum site total chromium concentration exceeded the hexavalent chromium screening level, though it is unlikely all chromium is present in the hexavalent state. For informational purposes, the 95% UCL for total chromium (0.23 mg/kg) would result in an ILCR of 1.3E-05 using the cancer PRG for hexavalent chromium (0.018 mg/kg). If 5% of the total chromium was assumed to be present in the hexavalent state (i.e., EPC for hexavalent chromium was 0.012 mg/kg), the resulting ILCR would be 6.7E-07. The HQs for hexavalent chromium would be less than 0.1 in both of these scenarios if the noncancer PRG for hexavalent chromium (11 mg/kg) was used in the risk ratio equation. Also, the maximum chromium concentration in the reference fish tissue samples (2 mg/kg) exceeded the maximum chromium concentration in the site fish tisue samples (0.41 mg/kg).

Individual Target Organ HIs

Total Blood HI =	0.2
Total Developmental HI =	0.2
Total Immune HI =	**13**

HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PCB = Polychlorinated biphenyl
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Table 5-14

Occurrence, Distribution, and Selection of Chemicals of Potential Concern - Human Health Risk Assessment - Sediment-to-Fish - Fish Consumption
Lockheed Martin, Middle River Complex
Middle River, Maryland

CAS Number	Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Sample Containing Maximum Concentration	Range of Non-Detects	Average of Positive Concentrations[2]	Average of All Results[3]	Concentration Used for Screening[4]	Maximum Background Concentration	Sediment Preliminary Remediation Goal (PRG) for Fish Consumption[6]	Retained as a COPC?	Rationale
Volatile Organics (ug/kg)														
541-73-1	1,3-DICHLOROBENZENE	1/61	2 J	2 J	SD-22	SD-22-SS	1 - 54	2.0	7.5	2	ND	NA	No	NTX
106-46-7	1,4-DICHLOROBENZENE	4/61	1 J	3 J	SD-22	SD-22-SS	5.9 - 54	1.8	7.1	3	ND	1600 C	No	BSL
78-93-3	2-BUTANONE	9/28	13 J	40 J	SD-16	SD-16-02	12 - 120	24.3	22.5	40	ND	2200000 N	No	BSL
67-64-1	ACETONE	13/58	7.1 J	240 J	SD-40, SD-16	SD-40-02, SD-16-02	13 - 270	127	64.0	240	12 J	3300000 N	No	BSL
75-15-0	CARBON DISULFIDE	12/60	5 J	19 J	SD-14	SD-14-01	5.9 - 24	8.3	7.7	19	ND	360000 N	No	BSL
108-90-7	CHLOROBENZENE	2/61	3 J	7 J	SD-27	SD-27-02	5.9 - 54	5.0	7.6	7	ND	72000 N	No	BSL
74-87-3	CHLOROMETHANE	1/61	13 J	13 J	SD-35	SD-35-SS	12 - 110	13.0	15.4	13	ND	NA	No	NTX
156-59-2	CIS-1,2-DICHLOROETHENE	1/61	2 J	2 J	SD-19	SD-19-02	5.9 - 54	2.0	7.7	2	ND	7200 N	No	BSL
98-82-8	ISOPROPYLBENZENE	4/61	3 J	38 K	SD-13	SD-13-02	5.9 - 54	13.5	8.2	38	ND	360000 N	No	BSL
1634-04-4	METHYL TERT-BUTYL ETHER	28/61	2 J	9 J	SD-18, SD-32, SD-23, SD-16	SD-18-SS, SD-32-SS, SD-32-SS, SD-16-SS	5.9 - 110	5.5	8.6	9	ND	4700 C	No	BSL
91-20-3	NAPHTHALENE	1/50	7 J	7 J	SD-13	SD-13-SS	6 - 54	7.0	8.1	7	NA	250000 N	No	BSL
135-98-8	SEC-BUTYLBENZENE	4/50	7 J	180 K	SD-13	SD-13-02	6 - 54	60.0	12.5	180	NA	NA	No	NTX
98-06-6	TERT-BUTYLBENZENE	1/50	2 J	2 J	SD-19	SD-19-01	6 - 54	2.0	8.1	2	NA	NA	No	NTX
108-88-3	TOLUENE	8/61	1 J	10	SD-19, SD-27	SD-19-02, SD-27-SS	5.9 - 54	5.3	7.7	10	ND	290000 N	No	BSL
Semivolatile Organics (ug/kg)														
95-50-1	1,2-DICHLOROBENZENE	1/57	260 J	260 J	SD-13	SD-13-01	390 - 1600	260	488	260	ND	330000 N	No	BSL
541-73-1	1,3-DICHLOROBENZENE	1/57	420 J	420 J	SD-27	SD-27-SS	390 - 1600	420	492	420	ND	NA	No	NTX
106-46-7	1,4-DICHLOROBENZENE	10/57	76 J	850 J	SD-27	SD-27-SS	74 - 1600	252	368	850	ND	1600 C	No	BSL
90-12-0	**1-METHYLNAPHTHALENE**	5/190	39 J	950	SD-58	SD-58-02	320 - 6400	273	439	950	ND	**290 C**	Yes	ASL
91-57-6	2-METHYLNAPHTHALENE	7/201	34 J	1100 J	SD-58	SD-58-02	320 - 6400	409	438	1100	30 J	1400 N	No	BSL
83-32-9	ACENAPHTHENE	71/291	1.2 J	11000 J	SD-58	SD-58-02	0.39 - 6400	361	352	11000	ND	75000 N	No	BSL
208-96-8	ACENAPHTHYLENE	60/291	2.4 J	790	SD-84	SD-84-SS	0.46 - 6400	105	320	790	180 J	75000 N[7]	No	BSL
120-12-7	ANTHRACENE	116/291	0.77 J	19000	SD-58	SD-58-02	0.4 - 6400	487	419	19000	490 J	370000 N	No	BSL
CALC055	**BAP EQUIVALENT-1/2 NON-DETECT**	173/291	3.4	38692	SD-58	SD-58-02	0.4 - 6400	1765	1165	38692	1978	**4.0 C**	Yes	ASL
CALC049	**BAP EQUIVALENT-POSITIVE RESULTS**	173/291	0.090	38387	SD-58	SD-58-02	0.4 - 6400	1309	894	38387	706	**4.0 C**	Yes	ASL
56-55-3	**BENZO(A)ANTHRACENE**	120/291	5.6 J	38000	SD-58	SD-58-02	0.51 - 6400	1356	774	38000	650	**40 C**	Yes	ASL
50-32-8	**BENZO(A)PYRENE**	127/291	5 J	30000	SD-58	SD-58-02	0.4 - 6400	1224	733	30000	530	**4.0 C**	Yes	ASL
205-99-2	**BENZO(B)FLUORANTHENE**	166/291	8.5 J	31000	SD-58	SD-58-02	0.64 - 6400	1401	922	31000	1200	**40 C**	Yes	ASL
191-24-2	BENZO(G,H,I)PERYLENE	116/291	22	11000 J	SD-58	SD-58-02	0.4 - 6400	882	563	11000	320	37000 N[8]	No	BSL
207-08-9	**BENZO(K)FLUORANTHENE**	94/291	8 J	25000	SD-58	SD-58-02	0.82 - 6400	1019	482	25000	1100	**400 C**	Yes	ASL
117-81-7	**BIS(2-ETHYLHEXYL)PHTHALATE**	48/57	78 J	3400 J	SD-13	SD-13-01	460 - 1500	811	745	3400	730	**600 C**	Yes	ASL
85-68-7	BUTYL BENZYL PHTHALATE	4/57	120 J	830 J	SD-13	SD-13-01	390 - 1600	325	485	830	2500	72000 N	No	BSL
86-74-8	CARBAZOLE	11/57	130 J	1000 J	SD-13	SD-13-01	390 - 1600	448	494	1000	ND	NA	No	NTX
218-01-9	**CHRYSENE**	168/291	7.3 J	37000	SD-58	SD-58-02	0.48 - 6400	1248	846	37000	1600	**4000 C**	Yes	ASL
53-70-3	**DIBENZO(A,H)ANTHRACENE**	59/291	4.7 J	1400	SD-86	SD-86-02	0.45 - 6400	337	355	1400	ND	**4.0 C**	Yes	ASL
132-64-9	**DIBENZOFURAN**	5/57	240 J	400 J	SD-13	SD-13-01	390 - 1600	316	479	400	ND	**360 N**	Yes	ASL
206-44-0	**FLUORANTHENE**	189/291	1.8 J	78000	SD-58	SD-58-02	0.43 - 1400	1882	1316	78000	3200	**50000 N**	Yes	ASL
86-73-7	FLUORENE	84/291	1 J	10000 J	SD-58	SD-58-02	0.53 - 6400	296	355	10000	210	50000 N	No	BSL
193-39-5	**INDENO(1,2,3-CD)PYRENE**	133/291	26	12000 J	SD-58	SD-58-02	0.42 - 6400	781	544	12000	550	**40 C**	Yes	ASL
91-20-3	NAPHTHALENE	70/291	2.8 J	2200 J	SD-58	SD-58-02	0.35 - 6400	161	320	2200	110	25000 N	No	BSL
85-01-8	**PHENANTHRENE**	163/291	1.2 J	76000	SD-58	SD-58-02	3.5 - 6400	1382	937	76000	2800	**37000 N**[8]	Yes	ASL
129-00-0	**PYRENE**	183/291	1.5 J	76000	SD-58	SD-58-02	0.41 - 6400	2303	1556	76000	4200	**37000 N**	Yes	ASL
TTNUS072	TOTAL PAHS	195/291	1.2	457300	SD-58	SD-58-02	0 - 0	11344	7602	457300	15350	NA	No	NTX
PCBs (ug/kg)														
12672-29-6	**AROCLOR-1248**	3/291	430 J	2300	SD-86	SD-86-01	0.96 - 11000	1093	89	2300	ND	**2.3 C**	Yes	ASL
11097-69-1	**AROCLOR-1254**	1/291	400 J	400 J	SD-43	SD-43-SS	1.4 - 11000	400	79	400	ND	**2.3 C**	Yes	ASL
11096-82-5	**AROCLOR-1260**	152/291	11 J	54000	SD-9	SD-9-031805	1.4 - 79	1250	659	54000	ND	**2.3 C**	Yes	ASL
1336-36-3	**TOTAL AROCLOR**	153/291	11	54000	SD-9	SD-9-031805	0 - 0	1265	665	54000	ND	**2.3 C**[9]	Yes	ASL

Table 5-14

Occurrence, Distribution, and Selection of Chemicals of Potential Concern - Human Health Risk Assessment - Sediment-to-Fish - Fish Consumption
Lockheed Martin, Middle River Complex
Middle River, Maryland

CAS Number	Parameter	Frequency of Detection[1]	Minimum Concentration[1]	Maximum Concentration[1]	Location of Maximum Concentration	Sample Containing Maximum Concentration	Range of Non-Detects	Average of Positive Concentrations[2]	Average of All Results[3]	Concentration Used for Screening[4]	Maximum Background Concentration	Sediment Preliminary Remediation Goal (PRG) for Fish Consumption[6]	Retained as a COPC?	Rationale
Inorganics (mg/kg)														
7440-36-0	**ANTIMONY**	135/295	0.048 J	2320 L	SD-84	SD-84-SS	0.03 - 2.1	19.9	9.2	2320	0.48	**9.5 N**	Yes	ASL
7440-38-2	**ARSENIC**	292/295	0.55	37.2 J	SD-105	SD-105-SS	0.75 - 1.46	7.0	6.9	37.2	13.5	**6.5 C**	Yes	ASL
7440-39-3	BARIUM	194/194	4.4	238	SD-58	SD-58-02	-	47.2	47.2	238	58.9	480 N	No	BSL
7440-41-7	**BERYLLIUM**	295/295	0.17	6.9	SD-69	SD-69-01, SD-69-SS-D	-	1.7	1.7	6.9	2	**4.8 N**	Yes	ASL
7440-43-9	**CADMIUM**	264/295	0.016	306	SD-46	SD-46-01	0.01 - 0.14	15.4	13.8	306	0.95	**40 N**	Yes	ASL
7440-47-3	CHROMIUM	295/295	6 J	2460	SD-46	SD-46-01	-	206	206	2460	90.9	36000 N[10]	No	BSL
7440-48-4	**COBALT**	194/194	0.76	70.8 J	SD-68	SD-68-04	-	15.0	15.0	70.8	7.4	**0.71 N**	Yes	ASL
7440-50-8	**COPPER**	295/295	1.6	183 J	SD-105	SD-105-SS	-	63.2	63.2	183	110	**61 N**	Yes	ASL
18540-29-9	**HEXAVALENT CHROMIUM**	6/61	0.53 J	13 J	SD-37	SD-37-SS	0.44 - 2.5	4.2	1.1	13	ND	**1.1 C[11]**	Yes	ASL
7439-92-1	LEAD	295/295	1.5	31500	SD-84	SD-84-SS	-	198	198	31500	151	NA	No	NTX
7439-97-6	**MERCURY**	254/295	0.0079	6.1 L	SD-16	SD-16-02	0.01 - 0.1	0.5	0.5	6.1	0.71	**0.21 N[12]**	Yes	ASL
7439-98-7	MOLYBDENUM	159/194	0.052	4.7	SD-75	SD-75-02-D	0.05 - 1.7	1.3	1.2	4.7	0.69	12 N	No	BSL
7440-02-0	**NICKEL**	295/295	0.67	103 L	SD-88	SD-88-04	-	30.3	30.3	103	69.4	**98 N**	Yes	ASL
7782-49-2	SELENIUM	214/295	0.33 J	3.1 J	SD-66	SD-66-SS	0.33 - 1.9	1.4	1.1	3.1	2.5	12 N	No	BSL
7440-22-4	**SILVER**	226/295	0.0088 J	55.8	SD-76	SD-76-02	0.07 - 3.4	5.1	3.9	55.8	2.5	**12 N**	Yes	ASL
7440-28-0	THALLIUM	97/295	0.049 J	20.3	SD-88	SD-88-04	0.2 - 4	0.5	0.39	20.3	0.39	NA	No	NTX
7440-62-2	**VANADIUM**	194/194	6.4 J	120 J	SD-28	SD-28-SS	-	46.1	46.1	120	14.5	**12 N**	Yes	ASL
7440-66-6	**ZINC**	295/295	2	4370	SD-88	SD-88-04	-	267	267	4370	327	**3700 N**	Yes	ASL
Metals (ug/kg)														
1002-53-5	**DIBUTYLTIN**	6/12	5	11 J	SD-40	SD-40-SS	2.8 - 5.6	7.6	4.7	11	NA	**7.1 N**	Yes	ASL
Miscellaneous Parameters (%)														
TTNUS291	PERCENT SOLIDS	166/166	20	85	SD-44, SD-3	SD-44-01, SD-3-031705	-	46.9	46.9	85	81	NA	No	NTX
Miscellaneous Parameters (mg/kg)														
TTNUS003	TOTAL ORGANIC CARBON	71/71	1400	58100	SD-87	SD-87-SS	-	25959	25959	58100	35200	NA	No	NTX

A shaded criterion indicates that the maximum detected concentration exceeds that value. A shaded chemical name indicates that the chemical was retained as a COPC.

1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum detected concentrations and as one sample when determining the frequency of detection.
2 - Average of positive analytical results only.
3 - Average of all analytical results are calculated using half of the detection limit for nondetects.
4 - The maximum concentration used for screening.
5 - The maximum background concentration is presented for informational purposes.
6 - Sediment preliminary remediation goals (PRGs) from the greater than 30" depth interval (i.e., the most conservative PRGs; see text for calculation methodology). Noncarcinogen (N) values are 1/10 original screening level value.
7 - The value for acenapthene is used as a surrogate for acenaphthylene.
8 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
9 - The value is for Aroclor-1260.
10 - The value is for trivalent chromium.
11 - The value is for hexavalent chromium.
12 - The value is for mercuric chloride (and other mercury salts).

Rationale Codes:
For selection as a COPC:
ASL = above screening level
For deletion as a COPC:
BSL = Below screening level
NTX = No toxicity criteria

Definitions:
BAP = Benzo(a)pyrene
C = Carcinogen
COPC = Chemical of potential concern
J = Estimated
K = Biased high
NA = Not applicable or not available
ND = Non-detected
N = Noncarcinogen
PCB = Polychlorinated biphenyl

TABLE 5-15

RISK CHARACTERIZATION OF FISH CONSUMPTION ESTIMATED FROM SURFACE SEDIMENT (0-6") USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	95% UCL or Maximum Concentration[1] (mg/kg)	Cancer PRG[2] (mg/kg)	Estimated ILCR	Primary Target Organs	Noncancer PRG[2] (mg/kg)	Estimated HQ
1-Methylnaphthalene	0.039	0.81	4.8E-08	Lungs	710	0.000055
BAP Equivalent-1/2 Non-detects	1.7	0.011	1.5E-04	NA	NA	NA
Bis(2-ethylhexyl)phthalate	1.2	1.7	7.1E-07	Liver	200	0.0060
Dibenzofuran	0.34	NA	NA	NA	10	0.034
Fluoranthene	1.7	NA	NA	Liver	1400	0.0012
Phenanthrene	1.2	NA	NA	Kidney	1000	0.0012
Pyrene	2.1	NA	NA	Kidney	1000	0.0021
Aroclor-1248	ND	0.0064	NA	NA	NA	NA
Aroclor-1254	0.4	0.0064	6.3E-05	Immune	0.11	3.6
Aroclor-1260	5	0.0064	7.8E-04	NA	NA	NA
Antimony	68.3	NA	NA	Blood	9.5	7.2
Arsenic	10	6.5	1.5E-06	Skin, CVS	1200	0.0083
Beryllium	1.8	NA	NA	GS	48	0.038
Cadmium	23.8	NA	NA	Kidney	40	0.60
Cobalt	17.5	NA	NA	Blood	7.1	2.5
Copper	112	NA	NA	GS	610	0.18
Hexavalent chromium	1.8	1.1	1.6E-06	None Reported	710	0.0025
Mercury	0.43	NA	NA	Autoimmune	2.1	0.20
Nickel	33.8	NA	NA	Body Weight	980	0.034
Silver	3.7	NA	NA	Skin	120	0.031
Vanadium	52	NA	NA	Hair Loss	120	0.43
Zinc	352	NA	NA	Blood	3700	0.095
Dibutyltin	0.0095	NA	NA	NA	0.071	0.13
		Total ILCR	**1E-03**		Total HI	**15**

Bolded totals exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 10 samples in a data set or if the 95% UCL is greater than the maximum concentration.
2 - Source: The sediment PRGs presented are estimated for the adult recreational user (see text).

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System
GS = Gastrointestinal

Individual Target Organ HIs

Total Autoimmune HI =	0.2
Total Blood HI =	**10**
Total Body Weight HI =	0.03
Total CVS HI =	0.008
Total GS HI =	0.2
Total Hair Loss HI =	0.4
Total Immune HI =	**4**
Total Kidney HI =	1
Total Liver HI =	0.007
Total Lungs HI=	0.00005
Total NA HI =	0.2
Total None Reported HI =	0.003
Total Skin HI =	0.04

TABLE 5-16

RISK CHARACTERIZATION OF FISH CONSUMPTION ESTIMATED FROM SUBSURFACE SEDIMENT (>6-18") USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**95% UCL or Maximum Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[2] (mg/kg)**	**Estimated HQ**
1-Methylnaphthalene	0.15	0.65	2.3E-07	Lungs	570	0.00026
BAP Equivalent-1/2 Non-detects	1.8	0.009	2.0E-04	NA	NA	NA
Bis(2-ethylhexyl)phthalate	1.5	1.4	1.1E-06	Liver	160	0.0094
Dibenzofuran	0.4	NA	NA	NA	8.1	0.0494
Fluoranthene	3.6	NA	NA	Liver	1100	0.0033
Phenanthrene	2.4	NA	NA	Kidney	840	0.0029
Pyrene	4.5	NA	NA	Kidney	840	0.0054
Aroclor-1248	2.3	0.0051	4.5E-04	NA	NA	NA
Aroclor-1254	ND	0.0051	NA	Immune	0.088	NA
Aroclor-1260	1.5	0.0051	2.9E-04	NA	NA	NA
Antimony	4.8	NA	NA	Blood	9.5	0.51
Arsenic	7.6	6.5	1.2E-06	Skin, CVS	1200	0.0063
Beryllium	2	NA	NA	GS	48	0.042
Cadmium	52.4	NA	NA	Kidney	40	1.3
Cobalt	17.2	NA	NA	Blood	7.1	2.4
Copper	93.6	NA	NA	GS	610	0.15
Hexavalent chromium	1.6	1.1	1.5E-06	None Reported	710	0.0023
Mercury	0.82	NA	NA	Autoimmune	2.1	0.39
Nickel	37.2	NA	NA	Body Weight	980	0.038
Silver	9.7	NA	NA	Skin	120	0.081
Vanadium	60	NA	NA	Hair Loss	120	0.50
Zinc	411	NA	NA	Blood	3700	0.11
Dibutyltin	0.005	NA	NA	NA	0.071	0.070
		Total ILCR	**9E-04**		Total HI	**6**

Bolded totals exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 10 samples in a data set or if the 95% UCL is greater than the maximum concentration.
2 - Source: The sediment PRGs presented are estimated for the adult recreational user (see text).

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
ND = Not Detected
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
GS = Gastrointestinal

Individual Target Organ HIs

Total Autoimmune HI =	0.4
Total Blood HI =	**3**
Total Body Weight HI =	0.04
Total CVS HI =	0.006
Total GS HI =	0.2
Total Hair Loss HI =	0.5
Total Immune HI =	NA
Total Kidney HI =	1
Total Liver HI =	0.01
Total Lungs HI=	0.0003
Total NA HI =	0.1
Total None Reported HI =	0.002
Total Skin HI =	0.09

TABLE 5-17

RISK CHARACTERIZATION OF FISH CONSUMPTION ESTIMATED FROM SUBSURFACE SEDIMENT (>18-30") USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	95% UCL or Maximum Concentration[1] (mg/kg)	Cancer PRG[2] (mg/kg)	Estimated ILCR	Primary Target Organs	Noncancer PRG[2] (mg/kg)	Estimated HQ
1-Methylnaphthalene	0.19	0.64	3.0E-07	Lungs	560	0.00034
BAP Equivalent-1/2 Non-detects	3.0	0.0088	3.4E-04	NA	NA	NA
Bis(2-ethylhexyl)phthalate	0.9	1.3	6.9E-07	Liver	160	0.0056
Dibenzofuran	0.33	NA	NA	NA	8.0	0.041
Fluoranthene	9.9	NA	NA	Liver	1100	0.0090
Phenanthrene	8.9	NA	NA	Kidney	820	0.011
Pyrene	10.1	NA	NA	Kidney	820	0.012
Aroclor-1248	0.43	0.005	8.6E-05	NA	NA	NA
Aroclor-1254	ND	0.005	NA	Immune	0.086	NA
Aroclor-1260	0.22	0.005	4.4E-05	NA	NA	NA
Antimony	6.8	NA	NA	Blood	9.5	0.72
Arsenic	6.8	6.5	1.0E-06	Skin, CVS	1200	0.0057
Beryllium	1.9	NA	NA	GS	48	0.040
Cadmium	53	NA	NA	Kidney	40	1.3
Cobalt	18.1	NA	NA	Blood	7.1	2.5
Copper	67.3	NA	NA	GS	610	0.11
Hexavalent chromium	ND	1.1	NA	None Reported	710	NA
Mercury	1.5	NA	NA	Autoimmune	2.1	0.71
Nickel	34.3	NA	NA	Body Weight	980	0.035
Silver	13.8	NA	NA	Skin	120	0.12
Vanadium	50.3	NA	NA	Hair Loss	120	0.42
Zinc	508	NA	NA	Blood	3700	0.14
Dibutyltin	0.0085	NA	NA	NA	0.071	0.12
		Total ILCR	**5E-04**		Total HI	**6**

Bolded totals exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 10 samples in a data set or if the 95% UCL is greater than the maximum concentration.
2 - Source: The sediment PRGs presented are estimated for the adult recreational user (see text).

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
ND = Not Detected
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
GS = Gastrointestinal

Individual Target Organ HIs

Total Autoimmune HI =	0.7
Total Blood HI =	**3**
Total Body Weight HI =	0.04
Total CVS HI =	0.006
Total GS HI =	0.1
Total Hair Loss HI =	0.42
Total Kidney HI =	1
Total Liver HI =	0.01
Total Lungs HI=	0.0003
Total NA HI =	0.2
Total Skin HI =	0.1

TABLE 5-18

RISK CHARACTERIZATION OF FISH CONSUMPTION ESTIMATED FROM SUBSURFACE SEDIMENT (>30-52") USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	95% UCL or Maximum Concentration[1] (mg/kg)	Cancer PRG[2] (mg/kg)	Estimated ILCR	Primary Target Organs	Noncancer PRG[2] (mg/kg)	Estimated HQ
1-Methylnaphthalene	ND	0.29	NA	Lungs	250	NA
BAP Equivalent-1/2 Non-detects	0.18	0.004	4.5E-05	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA	0.6	NA	Liver	72	NA
Dibenzofuran	NA	NA	NA	NA	3.6	NA
Fluoranthene	0.15	NA	NA	Liver	500	0.00030
Phenanthrene	0.11	NA	NA	Kidney	370	0.00030
Pyrene	0.16	NA	NA	Kidney	370	0.00043
Aroclor-1248	ND	0.0023	NA	NA	NA	NA
Aroclor-1254	ND	0.0023	NA	Immune	0.039	NA
Aroclor-1260	0.02	0.0023	8.7E-06	NA	NA	NA
Antimony	1.6	NA	NA	Blood	9.5	0.17
Arsenic	6.6	6.5	1.0E-06	Skin, CVS	1200	0.0055
Beryllium	2.2	NA	NA	GS	48	0.046
Cadmium	10	NA	NA	Kidney	40	0.25
Cobalt	16.4	NA	NA	Blood	7.1	2.3
Copper	22.1	NA	NA	GS	610	0.036
Hexavalent chromium	NA	1.1	NA	None Reported	710	NA
Mercury	0.23	NA	NA	Autoimmune	2.1	0.11
Nickel	25.3	NA	NA	Body Weight	980	0.026
Silver	2.6	NA	NA	Skin	120	0.022
Vanadium	32.9	NA	NA	Hair Loss	120	0.27
Zinc	144	NA	NA	Blood	3700	0.039
Dibutyltin	NA	NA	NA	NA	0.071	NA
		Total ILCR	**5E-05**		Total HI	**3**

Bolded totals exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 10 samples in a data set or if the 95% UCL is greater than the maximum concentration.
2 - Source: The sediment PRGs presented are estimated for the adult recreational user (see text).

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
ND = Not Detected
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Individual Target Organ HIs

Total Autoimmune HI =	0.1
Total Blood HI =	**3**
Total Body Weight HI =	0.03
Total CVS HI =	0.006
Total GS HI =	0.08
Total Hair Loss HI =	0.27
Total Kidney HI =	0.3
Total Liver HI =	0.0003
Total Skin HI =	0.03

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

CVS = Cardiovascular System
GS = Gastrointestinal

TABLE 5-19

RISK CHARACTERIZATION OF FISH CONSUMPTION ESTIMATED FROM SURFACE SEDIMENT (0-6") USING AREA-WEIGHTED AVERAGE
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	Area-Weighted Average Concentration[1] (mg/kg)	Cancer PRG[2] (mg/kg)	Estimated ILCR	Primary Target Organs	Noncancer PRG[2] (mg/kg)	Estimated HQ
1-Methylnaphthalene	NA[3]	0.81	NA	Lungs	710	NA
BAP Equivalent-1/2 Non-detects	1.1	0.011	1.0E-04	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA[3]	1.7	NA	Liver	200	NA
Dibenzofuran	NA[3]	NA	NA	NA	10	NA
Fluoranthene	NA[3]	NA	NA	Liver	1400	NA
Phenanthrene	NA[3]	NA	NA	Kidney	1000	NA
Pyrene	NA[3]	NA	NA	Kidney	1000	NA
Aroclor-1248	ND	0.0064	NA	NA	NA	NA
Aroclor-1254	0.086	0.0064	1.3E-05	Immune	0.11	0.8
Aroclor-1260	0.947	0.0064	1.5E-04	NA	NA	NA
Antimony	4.6	NA	NA	Blood	9.5	0.5
Arsenic	NA[3]	6.5	NA	Skin, CVS	1200	NA
Beryllium	NA[3]	NA	NA	GS	48	NA
Cadmium	NA[3]	NA	NA	Kidney	40	NA
Cobalt	16.3	NA	NA	Blood	7.1	2.3
Copper	NA[3]	NA	NA	GS	610	NA
Hexavalent chromium	NA[3]	1.1	NA	None Reported	710	NA
Mercury	NA[3]	NA	NA	Autoimmune	2.1	NA
Nickel	NA[3]	NA	NA	Body Weight	980	NA
Silver	NA[3]	NA	NA	Skin	120	NA
Vanadium	NA[3]	NA	NA	Hair Loss	120	NA
Zinc	NA[3]	NA	NA	Blood	3700	NA
Dibutyltin	NA[3]	NA	NA	NA	0.071	NA
		Total ILCR	**3E-04**		Total HI	**4**

Area-weighted average concentrations were calculated for primary risk drivers only.

Bolded totals exceed the risk target.

1 - One-half the deteciton limit was used for non-detected results in the area-weighted average calculation.
2 - Source: The sediment PRGs presented are estimated for the adult recreational user (see text).
3 - Not a primary risk driver.

Individual Target Organ HIs

Total Blood HI =	**3**
Total Immune HI =	1

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
PRG = Preliminary Remediation Goal

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System
GS = Gastrointestinal

TABLE 5-20

RISK CHARACTERIZATION OF FISH CONSUMPTION ESTIMATED FROM SUBSURFACE SEDIMENT (>6-18") USING THE AREA-WEIGHTED AVERAGE
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**Area-Weighted Average Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[2] (mg/kg)**	**Estimated HQ**
1-Methylnaphthalene	NA[3]	0.65	NA	Lungs	570	NA
BAP Equivalent-1/2 Non-detects	0.96	0.009	1.1E-04	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA[3]	1.4	NA	Liver	160	NA
Dibenzofuran	NA[3]	NA	NA	NA	8.1	NA
Fluoranthene	NA[3]	NA	NA	Liver	1100	NA
Phenanthrene	NA[3]	NA	NA	Kidney	840	NA
Pyrene	NA[3]	NA	NA	Kidney	840	NA
Aroclor-1248	0.090	0.0051	1.8E-05	NA	NA	NA
Aroclor-1254	ND	0.0051	NA	Immune	0.088	NA
Aroclor-1260	0.45	0.0051	8.8E-05	NA	NA	NA
Antimony	1.6	NA	NA	Blood	9.5	0.17
Arsenic	NA[3]	6.5	NA	Skin, CVS	1200	NA
Beryllium	NA[3]	NA	NA	GS	48	NA
Cadmium	NA[3]	NA	NA	Kidney	40	NA
Cobalt	16.5	NA	NA	Blood	7.1	2.3
Copper	NA[3]	NA	NA	GS	610	NA
Hexavalent chromium	NA[3]	1.1	NA	None Reported	710	NA
Mercury	NA[3]	NA	NA	Autoimmune	2.1	NA
Nickel	NA[3]	NA	NA	Body Weight	980	NA
Silver	NA[3]	NA	NA	Skin	120	NA
Vanadium	NA[3]	NA	NA	Hair Loss	120	NA
Zinc	NA[3]	NA	NA	Blood	3700	NA
Dibutyltin	NA[3]	NA	NA	NA	0.071	NA
		Total ILCR	**2E-04**		Total HI	**2**

Area-weighted average concentrations were calculated for primary risk drivers only.

Bolded totals exceed the risk target.

1 - One-half the deteciton limit was used for non-detected results in the area-weighted average calculation.
2 - Source: The sediment PRGs presented are estimated for the adult recreational user (see text).
3 - Not a primary risk driver.

Individual Target Organ HIs

Total Blood HI = **2**

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
ND = Not Detected
PRG = Preliminary Remediation Goal

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System
GS = Gastrointestinal

TABLE 5-21

RISK CHARACTERIZATION OF FISH CONSUMPTION ESTIMATED FROM SUBSURFACE SEDIMENT (>18-30") USING THE AREA-WEIGHTED AVERAGE
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**Area-Weighted Average Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[2] (mg/kg)**	**Estimated HQ**
1-Methylnaphthalene	NA[3]	0.64	NA	Lungs	560	NA
BAP Equivalent-1/2 Non-detects	1.2	0.0088	1.4E-04	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA[3]	1.3	NA	Liver	160	NA
Dibenzofuran	NA[3]	NA	NA	NA	8.0	NA
Fluoranthene	NA[3]	NA	NA	Liver	1100	NA
Phenanthrene	NA[3]	NA	NA	Kidney	820	NA
Pyrene	NA[3]	NA	NA	Kidney	820	NA
Aroclor-1248	0.044	0.005	8.8E-06	NA	NA	NA
Aroclor-1254	ND	0.005	NA	Immune	0.086	NA
Aroclor-1260	0.17	0.005	3.4E-05	NA	NA	NA
Antimony	1.1	NA	NA	Blood	9.5	0.12
Arsenic	NA[3]	6.5	NA	Skin, CVS	1200	NA
Beryllium	NA[3]	NA	NA	GS	48	NA
Cadmium	NA[3]	NA	NA	Kidney	40	NA
Cobalt	15.0	NA	NA	Blood	7.1	2.1
Copper	NA[3]	NA	NA	GS	610	NA
Hexavalent chromium	NA[3]	1.1	NA	None Reported	710	NA
Mercury	NA[3]	NA	NA	Autoimmune	2.1	NA
Nickel	NA[3]	NA	NA	Body Weight	980	NA
Silver	NA[3]	NA	NA	Skin	120	NA
Vanadium	NA[3]	NA	NA	Hair Loss	120	NA
Zinc	NA[3]	NA	NA	Blood	3700	NA
Dibutyltin	NA[3]	NA	NA	NA	0.071	NA
		Total ILCR	**2E-04**		Total HI	**2**

Area-weighted average concentrations were calculated for primary risk drivers only.

Bolded totals exceed the risk target.

1 - One-half the deteciton limit was used for non-detected results in the area-weighted average calculation.
2 - Source: The sediment PRGs presented are estimated for the adult recreational user (see text).
3 - Not a primary risk driver.

Individual Target Organ HIs

Total Blood HI = **2**

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
ND = Not Detected
PRG = Preliminary Remediation Goal

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System
GS = Gastrointestinal

TABLE 5-22

RISK CHARACTERIZATION OF FISH CONSUMPTION ESTIMATED FROM SUBSURFACE SEDIMENT (>30-52") USING THE AREA-WEIGHTED AVERAGE
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**Area-Weighted Average Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[2] (mg/kg)**	**Estimated HQ**
1-Methylnaphthalene	NA[3]	0.29	NA	Lungs	250	NA
BAP Equivalent-1/2 Non-detects	0.18	0.004	4.5E-05	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA[3]	0.6	NA	Liver	72	NA
Dibenzofuran	NA[3]	NA	NA	NA	3.6	NA
Fluoranthene	NA[3]	NA	NA	Liver	500	NA
Phenanthrene	NA[3]	NA	NA	Kidney	370	NA
Pyrene	NA[3]	NA	NA	Kidney	370	NA
Aroclor-1248	ND	0.0023	NA	NA	NA	NA
Aroclor-1254	ND	0.0023	NA	Immune	0.039	NA
Aroclor-1260	0.0095	0.0023	4.1E-06	NA	NA	NA
Antimony	0.22	NA	NA	Blood	9.5	0.02
Arsenic	NA[3]	6.5	NA	Skin, CVS	1200	NA
Beryllium	NA[3]	NA	NA	GS	48	NA
Cadmium	NA[3]	NA	NA	Kidney	40	NA
Cobalt	11.2	NA	NA	Blood	7.1	1.6
Copper	NA[3]	NA	NA	GS	610	NA
Hexavalent chromium	NA[3]	1.1	NA	None Reported	710	NA
Mercury	NA[3]	NA	NA	Autoimmune	2.1	NA
Nickel	NA[3]	NA	NA	Body Weight	980	NA
Silver	NA[3]	NA	NA	Skin	120	NA
Vanadium	NA[3]	NA	NA	Hair Loss	120	NA
Zinc	NA[3]	NA	NA	Blood	3700	NA
Dibutyltin	NA[3]	NA	NA	NA	0.071	NA
		Total ILCR	**5E-05**		Total HI	**2**

Area-weighted average concentrations were calculated for primary risk drivers only.

Bolded totals exceed the risk target.

1 - One-half the deteciton limit was used for non-detected results in the area-weighted average calculation.
2 - Source: The sediment PRGs presented are estimated for the adult recreational user (see text).
3 - Not a primary risk driver.

Individual Target Organ HIs

Total Blood HI = **2**

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
ND = Not Detected
PRG = Preliminary Remediation Goal

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System
GS = Gastrointestinal

TABLE 5-23

DIRECT CONTACT RISK CHARACTERIZATION OF SURFACE SEDIMENT (0-6") IN SHALLOW WATER (<6 FT) USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**95% UCL or Maximum Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[3] (mg/kg)**	**Estimated HQ**
BAP Equivalent-1/2 Non-detects	2.6	0.07	3.7E-05	NA	NA	NA
Aroclor-1248	ND	1.0	NA	NA	NA	NA
Aroclor-1260	0.75	1.0	7.5E-07	NA	NA	NA
Antimony including SD-84[4]	413	NA	NA	Blood	132	3.1
Antimony excluding SD-84[4]	0.98	NA	NA	Blood	132	0.0074
Antimony - adolescent PRG[5]	413	NA	NA	Blood	694	0.60
Arsenic	6.6	1.8	3.7E-06	Skin, CVS	108	0.061
Cadmium	62.4	NA	NA	Kidney	352	0.18
Cobalt	14.4	NA	NA	Blood	114	0.13
Hexavalent chromium	3.3	1.4	2.4E-06	None Reported	550	0.006
		Total ILCR	**4E-05**	Total HI with antimony including SD-84		**3**
				Total HI with antimony excluding SD-84		0.4
				Total HI with antimony PRG for adolescent		1

Bolded totals exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL is greater than the maximum concentration.
2 - The cancer PRGs presented are for the lifelong recreational user receptor.
3 - The noncancer PRGs presented are for the child recreational user receptor.
4 - The maximum concentration of antimony was at location SD-84 and was 2,320 mg/kg, which is orders of magnitude greater than the second greatest concentration, 4.6 mg/kg. Therefore, the antimony 95% UCL and risk results excluding the maximum concentration from SD-84 are also presented.
5 - Adolescents are more likely receptors for exposure to sediments in the study area than children; therefore, HQ and HI results for antimony for adolescent receptor exposure (i.e., calculated using the adolescent PRG) are also presented for informational purposes.

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System

Individual Target Organ HIs

Total Blood HI with antimony including SD-84 =	**3**
Total Blood HI with antimony excluding SD-84 =	0.1
Total Blood HI with antimony PRG for adolescent =	0.7
Total CVS HI =	0.06
Total Kidney HI =	0.2
Total Skin HI =	0.06

TABLE 5-24
BACKGROUND CONCENTRATIONS FOR COPC COMPARED TO SCREENING LEVELS - SEDIMENT DIRECT CONTACT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Units	Maximum Background Concentration - All Depths	COPC Screening Level[(1)]		Above Screening Level?
BAP Equivalents-1/2 Nondetects	ug/kg	1978	**150**	**C**	**Yes**
Aroclor-1248	ug/kg	ND	2200	C	No
Aroclor-1260	ug/kg	ND	2200	C	No
Antimony	mg/kg	0.48	310	N	No
Arsenic	mg/kg	13.5	**3.9**	**C**	**Yes**
Cadmium	mg/kg	0.95	700	N	No
Cobalt	mg/kg	7.4	230	N	No
Hexavalent Chromium	mg/kg	ND	2.9	C	No
Lead	mg/kg	151	400		No

1 - USEPA, November 2010. Carcinogens (C) based on a lifetime cancer risk of 1E-06. Noncarcinogens (N) based on a hazard index of 1. Screening levels adjusted for sediment exposures (i.e., multiplied by 10 - see text).

ND = Not detected.

TABLE 5-25
BACKGROUND CONCENTRATIONS FOR COPC COMPARED TO SCREENING LEVELS - FISH CONSUMPTION ESTIMATED FROM SEDIMENT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Units	Maximum Background Concentration - All Depths	Range of COPC Screening Levels[(1)]				Above Screening Level Range?
1-Methylnaphthalene	ug/kg	ND	290	-	815	C	No
BAP Equivalents-1/2 Nondetects	ug/kg	1978	**4.0**	**-**	**11.0**	**C**	**Yes**
Bis(2-ethylhexyl)phthalate	ug/kg	730	600	-	1700	C	No
Dibenzofuran	ug/kg	ND	3600	-	10000	N	No
Fluoranthene	ug/kg	3200	500000	-	1400000	N	No
Phenanthrene	ug/kg	2800	370000	-	1000000	N	No
Pyrene	ug/kg	4200	370000	-	1000000	N	No
Aroclor-1248	ug/kg	ND	2.3	-	6.4	C	No
Aroclor-1254	ug/kg	ND	2.3	-	6.4	C	No
Aroclor-1260	ug/kg	ND	2.3	-	6.4	C	No
Antimony	mg/kg	0.48	95			N	No
Arsenic	mg/kg	13.5	**6.5**			**C**	**Yes**
Beryllium	mg/kg	2	48			N	No
Cadmium	mg/kg	0.95	40			N	No
Cobalt	mg/kg	7.4	**7.1**			**N**	**Yes**
Copper	mg/kg	110	610			N	No
Hexavalent Chromium	mg/kg	ND	1.1			C	No
Mercury	mg/kg	0.71	2.1			N	No
Nickel	mg/kg	69.4	980			N	No
Silver	mg/kg	2.5	120			N	No
Vanadium	mg/kg	14.5	120			N	No
Zinc	mg/kg	327	3700			N	No
Dibutyltin	mg/kg	NA	7.1			N	No

1 - Sediment PRG for fish consumption for surface sediment and subsurface sediment 30-52" (see Section 5).
Screening levels for inorganics do not vary by depth. Carcinogens (C) based on a lifetime cancer risk of 1E-06. Noncarcinogens (N) based on a hazard index of 1.

TABLE 5-26
RISK CHARACTERIZATION OF COPC BACKGROUND CONCENTRATIONS EXCEEDING SCREENING LEVELS - SEDIMENT DIRECT CONTACT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Units	Maximum Background Concentration	Cancer Sediment PRG[1]	Estimated ILCR	Noncancer Sediment PRG[2]	Estimated HQ
BAP Equivalents-1/2 Nondetects[3]	mg/kg	1.978	0.07	2.83E-05	NA	NA
Arsenic	mg/kg	13.5	1.8	7.50E-06	108	0.13
			Total ILCR	**4E-05**	Total HI	0.13

1 - The cancer sediment PRG is for the lifetime recreational user.
2 - The noncancer sediment PRG is for the child recreational user.
3 - For informational purposes, the maximum BAP Equivalents concentration calculated with positive results only is 0.70 mg/kg.
The estimated ILCR for BAP Equivalents- positive results only would be 1E-05.

PRG = Preliminary remediation goal.

TABLE 5-27
RISK CHARACTERIZATION OF COPC BACKGROUND CONCENTRATIONS EXCEEDING SCREENING LEVELS - FISH CONSUMPTION ESTIMATED FROM SEDIMENT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Units	Maximum Background Concentration	Cancer Sediment PRG[1]	Estimated ILCR	Target Organ	Noncancer Sediment PRG[1]	Estimated HQ
BAP Equivalents-1/2 Nondetects[2]	mg/kg	1.978	0.011	1.8E-04	NA	NA	NA
Arsenic	mg/kg	13.5	6.5	2.1E-06	Skin, CVS	1200	0.011
Cobalt	mg/kg	7.4	NA	NA	Kidney	7.1	1.0
			Total ILCR	**2E-04**		Total HI	1

Total CVS =	0.011
Total Kidney =	1.0
Total Skin =	0.011

1 - The PRG is for surface sediment (0-6 in.).
2 - For informational purposes, the maximum BAP Equivalents concentration calculated with positive results only is 0.70 mg/kg.
The estimated ILCR for BAP Equivalents- positive results only would be 6E-05.

PRG = Preliminary remediation goal.

Table 5-28

Exposure Point Concentrations - Reference Fish Tissue
Lockheed Martin, Middle River Complex
Middle River, Maryland

Chemical of Potential Concern	Exposure Point Concentration (EPC)[1] (mg/kg)	
	Maximum Concentration	EPC - 95% UCL or Maximum Concentration[2]
Total PCBs	0.217	0.15
Antimony	0.27	0.27[3]
Chromium[4]	2	2[3]
Mercury	0.055	0.046

1 - Risk was estimated using the 95% upper confidence limit (UCL) recommended by ProUCL 4.00.05 as appropriate.
2 - The maximum concentration was used in place of the 95% UCL if there were fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL was greater than the maximum concentration.
3 - The maximum concentration was used.
4 - Chromium was not selected as a COPC in fish tissue; however, the EPC is presented here for informational purposes. Chromium in fish tissue is further discussed in Section 5 of the text.

Note: All 7 available reference sample results were used in UCL calculation.

TABLE 5-29

RISK CHARACTERIZATION OF REFERENCE FISH TISSUE CONCENTRATIONS USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**95% UCL or Maximum Concentration[(1)(2)] (mg/kg)**	**Cancer PRG[(3)] (mg/kg)**	**Estimated ILCR[(7)]**	**Primary Target Organs**	**Noncancer PRG[(4)] (mg/kg)**	**Estimated HQ[(7)]**
Total PCBs[(5)]	0.15	0.0044	3.4E-05	Immune	0.076	2
Antimony	0.27	NA	NA	Blood	1.5	0.18
Mercury[(6)]	0.046	NA	NA	Developmental	0.38	0.12
		Total ILCR	**3E-05**		Total HI	**2**

Bolded values exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL is greater than the maximum concentration.
2 - UCLs were calculated using all 7 reference sample results.
3 - The cancer PRGs presented are for the lifelong recreational user receptor.
4 - The noncancer PRGs presented are for the child recreational user receptor.
5 - The toxicity criteria for Aroclor-1254 were used for Total PCBs.
6 - The toxicity criteria for methyl mercury were used for mercury.
7 - Total chromium was not selected as a COPC for fish tissue because the maximum total chromium site concentration did not exceed the trivalent chromium screening level. However, the maximum site total chromium concentration exceeded the hexavalent chromium screening level, though it is unlikely all chromium is present in the hexavalent state. For informational purposes, the 95% UCL for total chromium in reference samples (2 mg/kg) would result in an ILCR of 1.1E-04 using the cancer PRG for hexavalent chromium (0.018 mg/kg). If 5% of the total chromium in the reference samples was assumed to be present in the hexavalent state (i.e., the EPC for hexavalent chromium in reference samples was 0.012 mg/kg), the resulting ILCR would be 6.7E-07. The HQs for hexavalent chromium would be less than 1 in both of these scenarios if the noncancer PRG for hexavalent chromium (11 mg/kg) was used in the risk ratio equation.

Individual Target Organ HIs

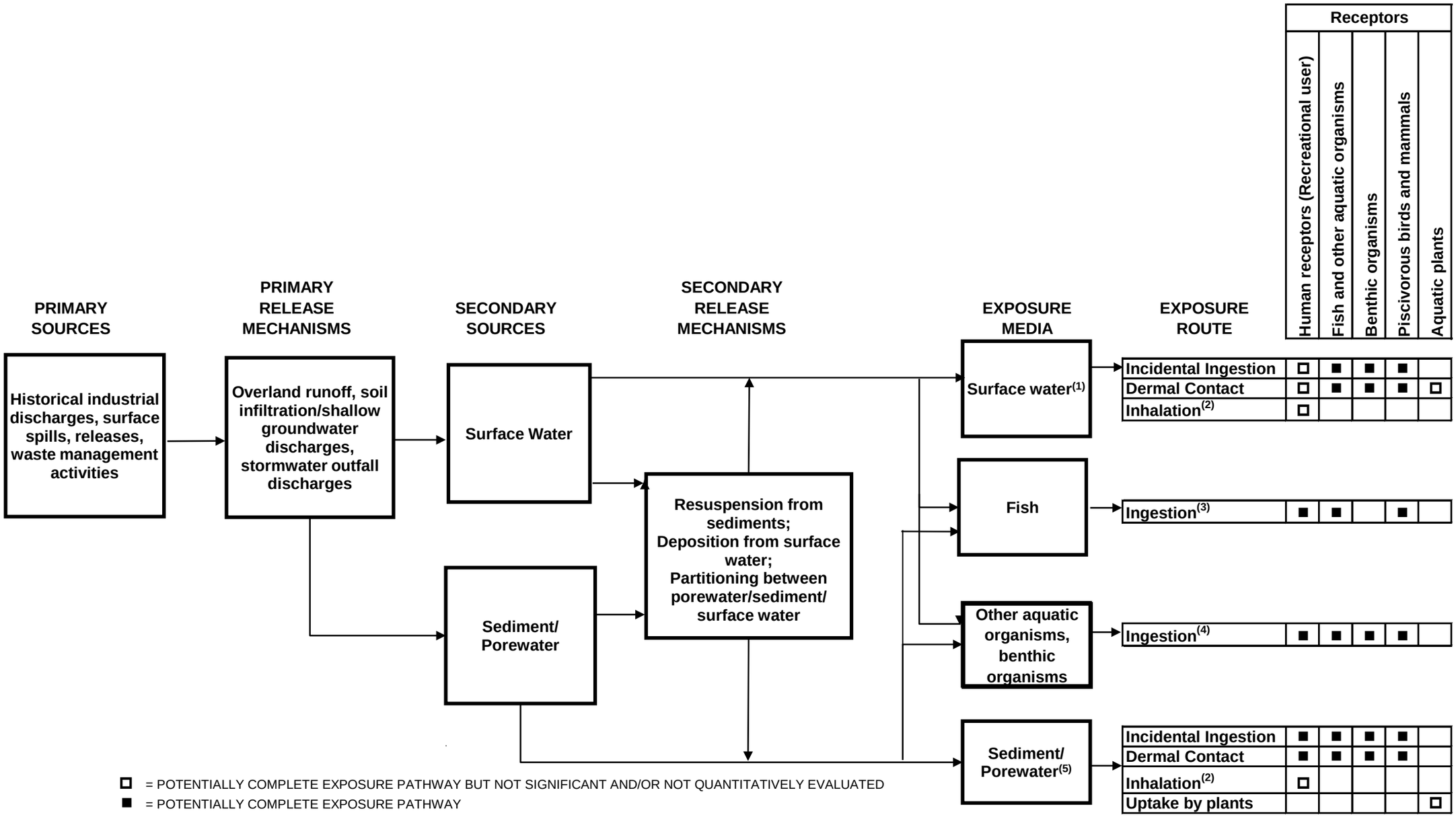
Total Blood HI =	0.2
Total Developmental HI =	0.1
Total Immune HI =	**2**

HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PCB = Polychlorinated biphenyl
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Figure 5-1

Conceptual Site Model
Lockheed Martin, Middle River Complex
Middle River, Maryland



1 - Direct contact with surface water is a complete exposure pathway but is not significant for the recreational user because contaminant concentrations in surface water did not result in unacceptable risks in the previous (2006) HHRA, and no contaminant concentrations in available 2010 surface water samples exceeded human health screening levels.
2 - Inhalation of volatile organic chemicals in surface water/sediment is not considered a significant pathway because of the low concentrations detected in surface water/sediment samples and because the sediments are submerged.
3 - Ingestion of fish that have accumulated chemicals from surface water, sediment, or porewater.
4 - Ingestion of other aquatic organisms and benthic organisms that have accumulated chemicals from surface water, sediment, or pore water.
5 - Only benthic invertebrates are expected to be exposed to chemicals in porewater.
MRC = Middle River Complex.

Section 6
Ecological Risk Assessment

6.1 INTRODUCTION

This ecological risk assessment (ERA) evaluates the potential for adverse ecological effects due to exposure to chemicals released to the environment through historical activities at the Middle River Complex (MRC), to assist in risk management decisions. It will enable risk managers to conclude whether, as expected, ecological risks at the site are probably negligible, or if further information is necessary to better characterize potential ecological risks at the site, or if potential ecological risks are sufficiently high to warrant remediation. The ERA methodology follows these U.S. Environmental Protection Agency (USEPA) guidance documents:

- *Final Guidelines for Ecological Risk Assessment* (USEPA, 1998)
- *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (USEPA, 1997a)

Appendix C presents a figure summarizing the USEPA (1998) framework for ecological risk assessment and a figure summarizing the eight step ecological risk assessment process described by USEPA (1997a). Section 6.2 describes the problem formulation step. Sections 6.3 and 6.4 describe the ecological-effects evaluation and exposure assessment steps, respectively, which comprise the "Analysis" phase described in the USEPA (1998) framework. Section 6.5 is the "Risk Characterization" step. Sections 6.2 through 6.5 are analogous to the phases described in the USEPA (1998) framework. Uncertainties inherent in the ERA are discussed in Section 6.6, and the summary and conclusions are provided in Section 6.7.

A screening level ERA consists of the first two steps of this eight step ecological risk assessment (USEPA, 1997a). A baseline ERA incorporates the remaining six steps of an ecological risk assessment (Appendix C, second figure). This ERA contains steps 1 and 2 of these eight steps, but it also contains some aspects of a baseline ERA. For example, a screening level ERA typically does not have access to site-specific lines of evidence such as acid volatile sulfides

(AVS)/simultaneously extracted metals (SEM) data, fish tissue concentrations, pore water data, and benthic-community diversity and abundance data, all of which are available for the MRC ERA. On the other hand, a baseline ERA typically has gone through several scientific management decision points (SMDPs) in which risk assessors and risk managers have agreed on various issues and remaining steps in the ERA process; this has not been done for the MRC ERA.

6.2 PROBLEM FORMULATION

Problem formulation addresses the environmental setting, ecological receptors, contaminant fate and transport, mechanisms of ecotoxicity, complete exposure pathways, and selection of assessment and measurement endpoints. The goal of problem formulation is to develop the framework to complete the ecological risk assessment.

6.2.1 Environmental Setting

The MRC is an industrial facility within the broader Chesapeake Industrial Park. It consists of an active industrial area, perimeter parking lots, an athletic field, a vacant concrete lot, a trailer and parts storage lot, and numerous grassy areas along the facility perimeter. The site is bounded by Eastern Boulevard (Route 150) to the north, Martin State Airport to the east, Dark Head Cove to the south and southeast, and Cow Pen Creek to the west and southwest (Figure 2-2). Water bodies near the MRC have salinities ranging from 2.4–3.9 parts per trillion (ppt), which characterizes them as oligohaline (i.e., low salinity, brackish). Property surrounding the MRC consists primarily of light industrial establishments. Residential developments lie on the opposite shores of Cow Pen Creek and Dark Head Cove and north of Eastern Boulevard.

Dark Head Cove is an estuarine tidal water body, one of many inlets associated with Chesapeake Bay. Salinity measured at three locations in Dark Head Cove during August 2010 ranges from 3.3–3.9 ppt. The MRC shoreline of Dark Head Cove consists of concrete rubble and riprap debris along most of the northern shore, and deteriorating wooden bulkhead along the eastern shore. Habitat near Dark Head Cove landward of the shoreline consists of mowed grass at the MRC, and residential areas on the opposite side (south and southwest) of the cove.

Cow Pen Creek originates north of Eastern Boulevard as a small stream and is only a few feet wide where it crosses under Eastern Boulevard. Although called a creek, its reach along most of the MRC shoreline is tidally influenced and it is part of the Chesapeake Bay estuary. Tidal

influence appears to extend to a point approximately 750 feet south of Eastern Boulevard. The salinity measured at two locations in Cow Pen Creek during August 2010 was 2.4 and 3.0 ppt. A narrow strip of trees stands along most of the shoreline of Cow Pen Creek, with scrub and shrub marsh vegetation along the portion of Cow Pen Creek immediately south of Eastern Boulevard. Cow Pen Creek and Dark Head Cove merge at the southern tip of the MRC to form Dark Head Creek, which merges into Middle River approximately 0.6 mile from the MRC. Middle River drains approximately two miles into the Chesapeake Bay. Both Dark Head Creek and Middle River are tidal estuarine water bodies that are inlets of Chesapeake Bay.

Tetra Tech Inc. (Tetra Tech) biologists visited the MRC to identify habitats and ecological receptors at the site. Terrestrial habitats at the site consist of grassy areas and a narrow band of riparian forest along Cow Pen Creek. Small mammals such as moles, mice, shrews, rabbits, and squirrels occur in the upland habitats. Various reptiles and amphibians, small rodents such as mice and muskrats, and larger mammals such as raccoons, mink, and otters may inhabit the wetlands along Cow Pen Creek. The larger mammals are, to a lesser extent, found along the shorelines of Dark Head Cove and Dark Head Creek, since these shorelines are in residential areas and provide less cover.

Numerous resident and migratory bird species use the aquatic and wetland habitats associated with Cow Pen Creek, Dark Head Cove, and Dark Head Creek. These include waterfowl such as geese and numerous duck species, wading birds such as the great blue herons, green heron, little blue heron, tricolored heron, great egret, and snowy egret, diving birds such as the belted kingfisher and double crested cormorant, and various gull species. A previous surface water and sediment report (Tetra Tech, 2006) documented that no state or federal endangered or threatened species had been observed or were known to be present at the MRC. No additional information that would alter the 2006 conclusion regarding the absence of endangered or threatened species at the site has been identified.

6.2.2 Contaminant Fate and Transport

MRC operations could potentially transport contaminants to surface water and sediment. Facilities currently or formerly on the MRC site near the adjacent surface water bodies include a maintenance garage, sewage treatment plant, engine test facilities, a wind tunnel, barracks, a boat fueling and launch area, a seaplane ramp, and large parking areas. The MRC has nine stormwater

outfalls discharging into Cow Pen Creek and Dark Head Cove (Figure 2-1 shows these outfalls). Some sediment contaminants in water bodies adjacent to the MRC presumably originated from the stormwater outfalls that drain the facility. Heavy recreational use of these water bodies and runoff from Martin State Airport, residential properties, and roadways has probably adversely affected sediment quality.

Most surface water runoff from rainfall discharges from the MRC to Cow Pen Creek and Dark Head Cove through the nine outfalls mentioned above. Some surface water runoff presumably discharges to these water bodies as overland sheet flow. Some precipitation infiltrates the ground in unpaved areas. Infiltrating precipitation could transport contamination in surface soil to subsurface soil and groundwater at the facility. Groundwater beneath the MRC flows into Cow Pen Creek and Dark Head Cove at very low flux rates.

The MRC facility is covered with structures, pavement, and gravel, so volatilization of contaminants is insignificant. The surface cover material largely prevents soil in unpaved areas from eroding into Cow Pen Creek and Dark Head Cove and prevents soil erosion due to wind. Erosion from wind and stormwater runoff may have been significant contaminant transport mechanisms in the past. Current stormwater discharge from MRC outfalls is regulated through a "National Pollution Discharge Elimination System" (NPDES) permit (see Section 2.1.1.3). Under current conditions, stormwater runoff from the MRC and the entire surrounding area is probably the major contaminant transport mechanism in the surface water bodies.

Chemicals detected in sediment in Cow Pen Creek, Dark Head Cove, and Dark Head Creek include semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and metals. The remainder of this section provides a brief review of these contaminant groups as related to migration pathways associated with plants and animals.

6.2.2.1 SVOCs

The primary SVOCs detected in sediment at the MRC are polycyclic aromatic-hydrocarbons (PAHs) and phthalates. PAHs are ubiquitous in the modern environment and are common constituents of coal tar, soot, vehicle exhaust, smoke, certain petroleum products, road tar, mineral oils, and creosote. PAHs are transferred from surface water by volatilization and sorption

to settling particles. The compounds are transformed in surface water by photooxidation, chemical oxidation, and microbial metabolism.

In soil and sediments, microbial metabolism is the major degradation process for PAHs (ATSDR, 1997). High molecular weight PAHs tend to be immobile and insoluble, binding strongly to organic matter (reducing the potential for leaching to groundwater), and they are resistant to volatilization, photolysis, and biodegradation (Eisler, 2000). Upper trophic-level wildlife are exposed to PAHs primarily through the diet, but most wildlife can metabolize and excrete PAHs.

Vertebrates can readily metabolize PAHs, but lower forms (insects and worms) cannot metabolize them as quickly. Food-chain uptake does not appear to be a major exposure source to PAHs for aquatic animals, and food chain biomagnification of PAHs is typically minimal (ATSDR, 1997). PAHs may be absorbed by plants but are expected to be translocated, metabolized, and potentially photodegraded. Accumulation in plants is likely to occur only in heavily polluted locations where uptake exceeds metabolism and degradation (Edwards, 1983).

Phthalates are used in plastics production and are relatively persistent in the environment. Although numerous studies have demonstrated that phthalates undergo biodegradation, it is a slow process. Some microorganisms have been shown to excrete products that increase the solubility of phthalates and enhance their biodegradation (Gibbons and Alexander, 1989). Most phthalates are expected to sorb to soil or sediment particles after their release because of their high organic-carbon absorption-coefficient (K_{oc}) values (Howard, 1991). Biomagnification of phthalates does not occur.

6.2.2.2 PCBs

PCBs consist of a variety of mixtures of individual biphenyl isomers, each having two joined benzene rings and one to 10 chlorine atoms. PCBs were produced commercially in the United States from 1929 until 1977 and marketed under trade names such as Aroclor. PCBs were used in a wide variety of applications, including dielectric fluids in capacitors and transformers, heat-transfer fluids, hydraulic fluids, lubricating and cutting oils, and as additives in pesticides, paints, copying paper, carbonless copy paper, adhesives, sealants, and plastics. Federal

legislation has prohibited virtually all uses of PCBs and their manufacture in the United States since 1979 (Eisler, 2000).

PCBs adsorb strongly to soil and sediment particles, and adsorption generally increases with the degree of chlorination. PCBs released into water adsorb to sediments and other organic matter. PCB concentrations are typically greater in sediment and suspended material than in the water column. Aquatic sediments can act as an environmental reservoir from which PCBs may be released slowly over a long period (ATSDR, 1989). Factors that determine biodegradability include the amount of chlorination, concentration, microbial population type, available nutrients, and temperature (ATSDR, 1989). Biodegradation of higher chlorinated PCBs (such as Aroclors -1254 and -1260) occurs very slowly (HSDB, 2010). PCBs can significantly bioconcentrate in aquatic organisms.

6.2.2.3 Metals

Many metals occur naturally at various concentrations in soil, surface water, and sediment due primarily to chemical weathering of rocks. Most metals are toxic to biota above certain concentrations, with some metals being more toxic at lower concentrations than others. Different chemical forms of metals are more toxic than others. For example, hexavalent chromium is typically more toxic than trivalent chromium. Factors such as pH, clay content, and organic-matter content influence the bioavailability of metals to invertebrates in sediment. In water, most metals tend to adsorb to sediment or to suspended particles in the water column. Metals are often detected in surface water because of dissolution, complexation, and sediment resuspension. Some metals have the potential to accumulate in biota (USEPA, 2000).

6.2.3 Ecotoxicity

PAHs in most animal species are metabolized by a mixed function oxidase-enzyme system into intermediates that may be toxic, mutagenic, or carcinogenic to the host. Some invertebrate species cannot efficiently metabolize PAHs (Eisler, 2000), and PAHs can be chronically toxic to invertebrates, but overall very little is known about the toxicological mechanisms of PAHs in invertebrates (Erstfield and Snow-Ashbrook, 1999). PAHs can bind to cellular macromolecules and thereby disrupt their function in higher-level organisms such as mammals and birds.

Biological macromolecules include polymers of carbohydrates (e.g., starch), amino acids (proteins), and nucleotides (e.g., deoxyribonucleic acid [DNA]). The cellular functions of these polymers include structure, energy storage, energy transfer, material transport, and storing and transmitting genetic information. Adverse effects on plants from PAHs are rare. PAHs show little tendency to biomagnify in the food web (Eisler, 2000). Microbial metabolism is the major process for degradation of PAHs in soil (ATSDR, 1997).

In general, phthalates pose a low acute-toxicity to animals (Amdur, et al., 1991). Chronic oral exposures, however, have been shown to result in liver toxicity in mammals. Ingested phthalates metabolize to monoesters in the gut and are subsequently absorbed. Following absorption, phthalates distribute primarily to the liver and kidneys and, in some species, concentrate in the testes (Rhodes, et al., 1986). Liver carcinogenesis has been observed (ATSDR, 1997). Many receptors can metabolize and excrete phthalate esters, so their ability to bioaccumulate varies among species.

PCBs are highly lipophilic, and can bioaccumulate in animals. PCBs can accumulate in offspring through placental transfer in mammals and accumulation in bird eggs, and can accumulate in upper trophic-level animals such as carnivorous birds and mammals that feed on contaminated prey (Eisler, 2000). In animals, the primary effect associated with PCB exposure is the induction of liver enzyme systems. These enzymes are associated with detoxification mechanisms and with the metabolism of hormones. Adverse reproductive effects observed with PCB exposure are associated with induction of the enzyme systems. The toxicity of PCBs to mammals and birds varies, depending on the particular PCB and the animal species. PCBs are not water-soluble and accumulate to a much greater degree in animals than in plants. Nevertheless, plant related effects of PCB exposure can include slower growth, reduced chlorophyll content, and diminished photosynthesis.

Generalizing about the toxic actions of metals is difficult because of diverse affinities for organic molecules in biologic structures, a wide array of biological effects, and a multiplicity of target organs and systems (Amdur, et al., 1991). At the molecular level, metals can manifest toxicity in many ways, including selectively accumulating in target organs (such as the kidneys), substituting for “essential” metals, and mimicking essential substrates (Clarkson, 1983). The reactions of metals at the molecular level typically affect enzyme systems, leading to disruption

of cellular transport, cellular respiration, cell division, and other physiological processes. Metal toxicity to aquatic organisms is manifested through a broad spectrum of effects that may range from a reduction in growth rate to death. Aquatic organisms are most sensitive to metal toxicity in the embryonic and larval stages of the life cycle.

6.2.4 Complete Exposure Pathways

A conceptual exposure-model in ERA problem formulation describes the relationships among ecological entities and the stressors to which they might be exposed (USEPA 1998). It describes the potentially exposed receptor-populations and applicable exposure pathways, based on the physical nature of the site and potential contaminant-source areas. The conceptual exposure-model for the MRC is provided in Figure 5-1. As shown in that figure, chemical contaminants originating from the site can enter surface water and sediment in Cow Pen Creek and Dark Head Cove through discharge from stormwater outfalls and groundwater discharge.

Benthic invertebrates (i.e., invertebrate organisms that live on or in sediment) and aquatic organisms such as fish in Cow Pen Creek, Dark Head Cove, and Dark Head Creek could be exposed to chemicals through direct contact with surface water and sediment, ingestion of surface water and sediment, and consumption of contaminated food items. Many benthic invertebrates serve as a food source for higher trophic-level organisms such as fish, blue crabs, birds, and mammals. Benthic invertebrates can accumulate contaminants that can be transferred to piscivorous animals when the invertebrates are consumed. The term “piscivorous” is used in this ERA in a broad sense to describe birds and mammals that prey upon not only fish, but also on a variety of aquatic and benthic organisms.

Aquatic plants could be exposed to contaminants through direct contact and root translocation. This applies especially to shallow-water areas along Cow Pen Creek. Water depth in most of Dark Head Cove, however, is too deep for many aquatic plant species. Toxicity data for rooted, submerged vegetation are sparse, so aquatic plant toxicity was not quantitatively evaluated. Airborne transport of dust and inhalation of contaminants at the MRC are negligible pathways for ecological receptors because the sediment is covered with water.

6.2.5 Assessment and Measurement Endpoints

Assessment and measurement endpoints were selected for this ERA based on the habitats present and the migration pathways and routes of exposure (see Table 6-1), described below.

***Assessment endpoint 1*:** Protection of benthic invertebrates from adverse effects on their survival, reproduction, and growth.

***Measurement endpoint 1*:** Adverse effects on the survival, reproduction, and growth of benthic invertebrates were evaluated by comparing chemical concentrations in sediment to toxicity-threshold values designed to protect these receptors. In addition, adverse effects were evaluated by considering AVS/SEM results, pore water data, and benthic macroinvertebrate-community data.

***Assessment endpoint 2*:** Protection of fish from adverse effects on their survival, reproduction, and growth.

***Measurement endpoint 2*:** Adverse effects on the survival, reproduction, and growth of fish were evaluated by comparing chemical concentrations in fish collected from Cow Pen Creek and Dark Head Cove to fish tissue concentrations considered protective of fish health.

***Assessment endpoint 3*:** Protection of piscivorous birds from adverse effects on their survival, reproduction, and growth.

Measurement endpoint 3: Mortality, reproduction, and growth of piscivorous birds were evaluated by comparing estimated ingested doses of chemicals in sediment and food items (which have accumulated chemicals from sediment) to no observed adverse effect levels (NOAELs) and lowest observed adverse effect levels (LOAELs) for representative avian species. As mentioned in Section 6.2.1, piscivorous bird species in the area of the MRC include the belted kingfisher, double crested cormorant, and wading birds such as herons and egrets.

***Assessment endpoint 4*:** Protection of piscivorous mammals from effects adverse to their survival, reproduction, and growth. Piscivorous mammals at MRC include the river otter and mink. The raccoon is often thought of as piscivorous, and it does consume aquatic organisms, but most of its diet typically consists of non-aquatic animal and plant tissues (USEPA, 1993).

The developed nature of much of the shoreline along Dark Head Cove and Dark Head Creek makes it unlikely that river otter and mink forage there except only rarely. The shoreline along Cow Pen Creek provides suitable habitat for mink and otter so, as a conservative measure, piscivorous mammals are retained as an assessment endpoint.

Measurement endpoint 4: Mortality, reproduction, and growth of piscivorous mammals were evaluated by comparing estimated ingested doses of chemicals in sediment and food items (which have accumulated chemicals from sediment) to NOAELs LOAELs for representative mammal species.

As indicated in USEPA guidance (USEPA, 1997), directly evaluating risks to all individual components of the ecosystem is not practical. Instead, assessment endpoints focus the ERA on particular ecosystem components that will tend to yield the highest risks; this should protect endpoints posing lower risks. With this in mind, amphibians and reptiles were not selected as assessment endpoints. Instead, potential risk from bioaccumulation and biomagnification of contaminants will be assessed in the following sections for piscivorous birds and piscivorous mammals.

6.3 ECOLOGICAL EFFECTS EVALUATION

The ecological effects assessment investigates the relationship between exposure to a chemical and the potential for adverse effects resulting from that exposure. Chemical concentrations that represent toxicity thresholds for adverse ecological effects are established in this step.

6.3.1 Benthic Invertebrates

Potential risk to benthic invertebrates was evaluated primarily by comparing chemical concentrations in whole sediment to ecological toxicity-benchmark values. The initial comparison of sediment chemical concentrations to ecological toxicity-benchmark values is a "screening" step used to select sediment chemicals of potential concern (COPC). Accordingly, conservative ecological benchmarks were used in the initial comparison. Note that ecological benchmarks are also known by terms such as screening values, sediment-quality guidelines, screening levels, toxicity thresholds, and toxicity reference-values.

The initial sediment screening step used the ecological benchmarks presented in Table 4-1A. The primary sources of ecological benchmark values in Table 4-1A are USEPA Region III freshwater sediment-screening benchmarks (USEPA, 2006a) and USEPA Region III marine-sediment screening benchmarks (USEPA, 2006b). As a second choice for initial screening values (for chemicals without screening benchmarks from USEPA Region III), Screening Quick Reference Tables derived for the National Oceanic and Atmospheric Administration (NOAA) by Buchman (Buchman, 2008) were used.

The NOAA chronic values were created to be used as preliminary screening values for environmental concentrations of contaminants, and were taken from numerous federal, state, and international regulatory agencies (Buchman, 2008). A few volatile organic compounds (VOCs) lack screening benchmarks from either USEPA Region III or Buchman (Buchman, 2008). For those VOCs, ecological screening values from the Texas Council on Environmental Quality (TCEQ, 2006) were used.

The salinity of surface water in Cow Pen Creek, Dark Head Cove, and Dark Head Creek during August 2010 ranged from 2.4–3.9 parts per trillion (ppt). USEPA guidelines state that when the surface water salinity is between 1–10 ppt, the more stringent of fresh or salt-water screening values should be used as ecological screening values. Thus, the sediment data were compared to the lower of the freshwater sediment and marine-sediment screening values shown in Table 41A.

The preceding paragraph discusses sediment benchmarks values used in the initial screening step. Subsequent comparisons of sediment data to benchmark values use less conservative benchmarks, referred to herein as “higher effects” values. Whereas many USEPA Region III sediment-screening benchmarks (USEPA 2006a; 2006b) are freshwater-sediment threshold effects concentrations (TECs) and marine-sediment threshold-effects levels (TELs), the higher effects benchmarks include freshwater-sediment probable effects concentrations (PECs) derived by MacDonald, et al. (2000a) and marine-sediment probable-effects levels (PELs), also derived by MacDonald, et al. (1996). The TEC and TEL are the concentrations below which effects on sediment invertebrates are not expected, whereas PECs and PELs are defined as concentrations above which adverse effects to sediment invertebrates are probable (MacDonald, et al., 1996, 2000a).

Pore water data were evaluated by comparing chemical concentrations in pore water to surface water ecological-benchmark values shown in Table 4-1B. The primary sources of the values in Table 4-1B are USEPA Region III freshwater screening-benchmarks (USEPA, 2006c) and USEPA Region III marine screening-benchmarks (USEPA, 2006d). As a second choice for surface water values (for chemicals without screening values from USEPA Region III), chronic values from Buchman (Buchman, 2008) were used. A few PAHs had no screening benchmarks from USEPA Region III or from Buchman (Buchman, 2008). For those PAHs, values from USEPA (2003) were used, along with AVS/SEM data and benthic macroinvertebrate-community data to evaluate effects to benthic invertebrates. These are discussed in Sections 6.4.1.1 ("AVS/SEM") and 6.4.1.3 ("Macroinvertebrates").

6.3.2 Fish

The effects of fish exposure to sediment contamination were evaluated by comparing fish tissue concentrations in channel catfish samples from Dark Head Cove and Cow Pen Creek to fish toxicity benchmarks considered protective of fish (Table 4-27). These benchmarks consist of 10th percentile values, i.e., they protect 90% of all test species (Windward Environmental LLC, 2009). The LOAEL was used if a 10th percentile value was not available. Table 4-27 also presents freshwater and marine "critical-tissue levels" (CTLs) meant to protect 95% of all aquatic organisms (ODEQ, 2007).

6.3.3 Piscivorous Mammals and Birds

Risk to piscivorous wildlife from exposure to chemicals in sediment was evaluated by using a food-chain model to estimate chronic daily intakes of representative wildlife receptors and then comparing these to toxicity reference values (TRVs) representing regulatorily acceptable daily doses in milligrams per kilogram [body weight] per day (mg/kg/day). NOAEL-based values and LOAEL-based values from the literature for wildlife species or surrogates were used as TRVs in the ERA. USEPA's documents on ecological soil-screening levels (Eco-SSLs) were the first choice as a source of TRVs (NOAELs and LOAELs). Although the Eco-SSL documents were promulgated to generate *soil*- (not sediment-) screening levels, the NOAELs and LOAELs in the Eco-SSL documents are not medium dependent, and are therefore appropriate TRVs to use in this ERA. The geometric means of NOAEL and LOAEL data for growth and reproduction from the Eco-SSL documents were used as wildlife TRVs.

The Oak Ridge National Laboratory (ORNL) publication *Toxicological Benchmarks for Wildlife: 1996 Revision* (Sample, et al., 1996) was the second choice as a source of wildlife TRVs. Other sources were used when necessary. If a subchronic study was used to develop the wildlife TRV, the final value was multiplied by a factor of 0.1 to account for uncertainty between subchronic and chronic effects. The LOAEL was multiplied by a factor of 0.1 to estimate a wildlife NOAEL TRV if only an LOAEL study was available. Only chemicals considered important bioaccumulative chemicals by USEPA (USEPA, 2000a) were included in the food chain model. Appendix C presents the TRVs and the sources used for TRVs in this ERA.

6.4 EXPOSURE ASSESSMENT

The exposure assessment, also known as exposure characterization, describes potential or actual contact of stressors (toxic chemicals in this case) with receptors. Exposure was assessed in the ERA as described below.

6.4.1 Benthic Invertebrates

Most benthic organisms have very small home ranges, and thus, the exposure unit for benthic invertebrates is represented by individual sediment-sampling locations. Nevertheless, as a conservative approach, the initial exposure concentrations for benthic organisms were maximum chemical concentrations in sediment. After the initial screening, the exposure unit for benthic invertebrates was narrowed to individual sampling locations where needed to identify contamination "hot spots."

The history of data collection at the MRC was described in Section 2. Sediment samples evaluated in the ERA consist of surface (0–6 inches) sediment samples collected in 2005, 2008, and 2010; subsurface (>6–18 inches) sediment samples collected in 2005, 2008, and 2010; subsurface (>18–30 inches) sediment samples collected in 2005, 2008, and 2010; and subsurface (>30–52 inches) sediment samples collected in 2008 and 2010. Each sediment depth interval was evaluated separately because of the potential for sediment from different depths to be exposed in the future, due to deliberate actions (i.e., dredging). However, under current conditions, the surficial sediment (0–6 inches) is considered the primary biologically active zone for sediment invertebrates. The exposure of benthic invertebrates to contamination was primarily assessed by using whole-sediment chemical concentrations, but AVS/SEM data, pore water data, and benthic

macroinvertebrate-community data were also used in the assessment. The following sections briefly describe the AVS/SEM data, the pore water data, and the benthic-macroinvertebrate data.

6.4.1.1 AVS/SEM

AVS/SEM analysis assessed the bioavailability of certain inorganics using sediment samples collected from seven locations across the study area. At each location, all four depth intervals were analyzed for AVS and SEM. The metals included in the SEM analysis consist of cadmium, chromium, copper, lead, nickel, silver, and zinc. AVS binds, on a molar basis, certain cationic metals of environmental concern (cadmium, copper, lead, nickel, silver, and zinc) (USEPA, 2005e). In sediment samples where the AVS molar concentrations are greater than SEM molar concentrations, the SEM metals are not expected to be bioavailable or directly toxic to benthic invertebrates. However, in sediment samples where the AVS molar concentrations are less than SEM molar concentrations, the SEM metals are not necessarily bioavailable or directly toxic to benthic invertebrates because other parameters (such as total organic carbon [TOC]) can reduce the bioavailability and toxicity of metals in sediment. Sediments that are anoxic typically have greater AVS concentrations than sediments that are well aerated. To account for the additional binding of metals to organic carbon, USEPA (2005e) suggests the following formula to normalize AVS and SEM to the fraction of organic carbon (f_{OC}):

$$SEM = (\Sigma SEM\text{-}AVS)/f_{OC}$$

where:

ΣSEM = the sum of the 1M HCl simultaneously extractable metals (micromoles(s) per gram [µmol/g])

AVS = acid volatile sulfide (µmol/g)

f_{OC} = fraction organic carbon (unitless)

USEPA (2005) states that toxicity is unlikely when the (ΣSEM-AVS)/f_{OC} concentration is less than 130 µmol/g, toxicity is uncertain when the concentration is between 130 and 3000 µmol/g, and toxicity is likely when the concentration is greater than 3000 µmol/g.

6.4.1.2 *Ex situ* Porewater

Ex situ pore water data were collected from three sediment depths at seven sampling locations. Pore water samples were analyzed for metals, PCBs, and PAHs, and were collected from the

same seven locations from which AVS/SEM data were collected. Comparisons of pore water data for the seven *ex situ* pore water samples to surface-water ecological-screening values are provided in Tables 4-12 through 4-17. Comparisons of pore water data to corresponding whole-sediment concentrations at the same sampling locations are provided in Tables 4-18, 4-19, and 4-20 for the 0–6 inch, >6–18 inch, and >18–30 inch intervals, respectively. Pore water data reflect dissolved potentially bioavailable concentrations, whereas the sediment concentrations reflect both dissolved and bound forms.

6.4.1.3 Benthic Macroinvertebrate Investigation

Benthic macroinvertebrate samples were collected from two locations in Cow Pen Creek, five in Dark Head Cove, and three reference locations to help evaluate potential risks to benthic invertebrates. Macroinvertebrate sampling results are in Appendix H (Benthic Invertebrate Assessment) of the *Additional Characterization and Sediment Sampling Data-Summary Report, Middle River Complex* (Tetra Tech, 2011a). Five sediment samples were collected at each location. Samples were sieved and sorted at a laboratory and benthic macroinvertebrates were identified and counted. A suite of benthic assemblage-level characteristics (i.e., metrics) were calculated for each of the 10 sampling locations. Biological metrics from the seven MRC sampling locations were compared to those from the reference locations to determine the relative health (i.e., biological condition) of the different MRC locations. The metrics are based on the *Chesapeake Bay Benthic Index of Biotic Integrity* (CB-B-IBI) for oligohaline estuaries.

All 10 samples (seven from near MRC and three reference samples) had high percentages of pollution indicative taxa, and all 10 samples had low percentages of pollution tolerant taxa. Nevertheless, one reference site (Marshy Point) had good benthic conditions according to the CB-B-IBI. The other two reference sites (Bowleys Quarters and Middle River Downstream) had values indicating some type of stressful conditions for benthic macroinvertebrates. All seven sites near MRC in Cow Pen Creek and Dark Head Cove had CB-B-IBI scores indicating stress to benthic organisms. The evaluation of benthic data suggests that habitat or nutrient conditions (such as a high levels of detritus) or some other type of background disturbances or inputs are negatively affecting benthic organisms in the general study area (in MRC samples as well as background samples). Even so, one local reference site had somewhat better benthic conditions than the MRC sites.

6.4.2 Fish

Fish exposure to sediment contamination was evaluated through fish tissue concentrations in channel catfish samples collected from Dark Head Cove and Cow Pen Creek (see Section 4.6).

6.4.3 Piscivorous Mammals and Birds

A food-chain model was used to calculate the estimated ingestion of food items and the incidental ingestion of sediment to approximate the exposure of piscivorous birds and mammals to bioaccumulative chemicals. Species must be selected to represent piscivorous birds and mammals so that intake through ingestion can be evaluated for the exposure assessment. For this ERA, the belted kingfisher (*Ceryle alcyon*) represents piscivorous diving birds, the green heron (*Butorides virescens*) represents piscivorous wading birds, and the mink (*Mustela vison*) represents piscivorous mammals. All three have been observed, or are expected to occur, in water bodies adjacent to the MRC.

The belted kingfisher is commonly observed along inlets of the Chesapeake Bay and its range includes most of North America. The belted kingfisher is the only kingfisher found in the eastern U.S. and, for brevity, this species is hereafter referred to as the kingfisher. Kingfishers typically forage over water free of thick vegetation and overhanging trees. Fish are their preferred prey, commonly comprising about 90–95% of the diet, and are usually less than 18 cm in length. Kingfishers will also consume crustaceans and other aquatic organisms when fish are sparse. Kingfishers nest beside rivers, streams, ponds, and lakes in burrows excavated on steep earthen banks devoid of vegetation. They sometimes nest in slopes created by human excavations, such as road cuts and landfills (USEPA, 1993).

The green heron is a common bird in wetland thickets throughout the eastern United States. It is typically a bird of swampy thickets, where it forages in both fresh and salt water, especially along forested margins of ponds, lakes, rivers, streams, marshes, and swamps. It prefers thick vegetation, but will feed in the open when food is available. Small fish are the primary prey, but green herons also consume insects and a variety of aquatic invertebrates. The green heron is typically a solitary bird, but it nests in colonies with other green herons or with other species (Davis and Kushlan, 1994).

The mink is the most widespread carnivorous mammal in North America. Mink are found in freshwater and brackish coastal marshes, wetlands, swamps, and along the edges of rivers, streams, lakes, lakes, and ditches (USEPA, 1993c). They are never found far from water (Lowery, 1974). Mink prefer irregular shorelines and tend to use brushy or wooded cover adjacent to the water, where prey is abundant and downfall and debris provide den sites. Mink den in cavities in tree roots, brush piles, rock piles, logjams, or bank burrows of other animals, particularly muskrats. Mink are largely nocturnal, but may move or feed during crepuscular (twilight) periods or during cloudy daylight conditions (USEPA, 1993c). Mink are carnivorous, opportunistic predators, taking whatever prey is abundant. They feed on fish, crustaceans, and amphibians in aquatic habitats. Mammals are the most important prey in nearby terrestrial habitats (Lowery, 1974; USEPA, 1993).

Risk via the food chain was evaluated using two scenarios. The initial "conservative" scenario used maximum-detected chemical concentrations and conservative assumptions for body weight, food consumption, and sediment ingestion. The second scenario typically used average chemical concentrations and, when available, less conservative values for body weight, food consumption, and sediment ingestion. For brevity, the first food-chain model scenario is referred to as the conservative scenario, and the second scenario is referred to as the average scenario. For each scenario, ingested dry-weight doses for birds and mammals were calculated using the following equation:

$$CDI = \frac{[(Cf * If) + (Cs * Is)] * AUF}{BW} \qquad \text{(Equation 1)}$$

where:

CDI	=	chronic daily intake (mg/kg/day)
Cf	=	chemical concentration in food (mg/kg)
If	=	food ingestion rate (kg/day)
Cs	=	chemical concentration in sediment (mg/kg)
Is	=	incidental sediment ingestion rate (kg/day)
AUF	=	area-use factor; portion of food intake from contaminated area (unitless)
BW	=	body weight of receptor (kg)

The area where sediment samples were collected (Figure 3-1) encompasses approximately 80 acres. Piscivorous birds and mammals typically forage over a considerably larger area, so the exposure unit in the food-chain model for piscivorous birds and mammals in the conservative scenario is the entire 80-acre area. In other words, food items are conservatively assumed to have been obtained from water bodies near the MRC, and the area-use factor (AUF) was assigned a value of 1.0 in Equation 1.

As mentioned in Section 6.4.1, sediment data were collected for the MRC investigation from four different depths. Although the uppermost sediment level (0–6 inches) better reflects the depth to which piscivorous receptors and their food items would be exposed, food-chain modeling used sediment data from all depths. Each sediment depth interval was evaluated separately.

For the exposure assessment, chemical concentrations in food items of piscivorous birds and mammals (the "Cf" term in Equation 1) are preferentially represented in the food-chain model by measured tissue concentrations in channel catfish samples collected from Dark Head Cove and Cow Pen Creek (see Section 4.6). The fish samples analyzed by the lab were fillets rather than whole-body samples. Piscivorous wildlife would be expected to typically consume whole fish, and concentrations of some contaminants (especially lipid soluble chemicals such as PCBs) would probably be higher in the whole body than in fillets. Concentrations of some metals, on the other hand, would probably be higher in fillets than in whole-body samples. Uncertainty is thus inherent in using fillet data to represent concentrations in food items of piscivorous receptors.

PCBs, chromium, copper, lead, mercury, selenium, and zinc were detected in one or more channel catfish collected in Dark Head Cove and Cow Pen Creek near MRC. Measured tissue concentrations of these chemicals were used to represent chemical concentrations in food items of the mink, green heron, and kingfisher. The fish tissue concentrations were reported by the lab (and provided in Section 4) on a wet basis. Concentrations were converted to dry-weight values for use in the food-chain models by dividing them by 0.25, based on a 75% moisture content in fish (USEPA, 1993; Sample, et al., 1997). For chemicals detected in fish tissue, the same fish tissue concentrations are used in the food-chain model for all four sediment depths.

All chemicals identified as bioaccumulative by USEPA (2000a,b) and that were detected in sediment were evaluated in the food-chain model. The catfish samples collected from Dark Head Cove and Cow Pen Creek were analyzed for metals and PCBs. They were not analyzed for PAHs, dichlorobenzene, hexavalent chromium, or dibutyl tin; these chemicals were detected in some sediment samples, and can be bioaccumulative in fish tissue (USEPA, 2000a,b).

PAHs and dichlorobenzene are typically metabolized in fish relatively rapidly and are not detected in fish tissue. However, as a conservative measure, concentrations of PAHs, dichlorobenzene, hexavalent chromium, or dibutyl tin in food items of piscivorous birds and mammals were estimated using biota sediment accumulation factors (BSAFs). The BSAFs are provided in Table C-1 of Appendix C and were obtained primarily from the following sources:

- ***Inorganic chemicals:*** *Biota Sediment Accumulation Factors for Invertebrates: Review and Recommendations for the Oak Ridge Reservation* (ORNL, 1998)
- ***Organic compounds:*** *The Incidence and Severity of Sediment Contamination in Surface Waters of the United States, National Sediment Quality Survey* (USEPA, 2004)

A default BSAF value of 1.0 was used if a chemical specific BSAF was not available from the two sources above or other literature.

Dry-weight concentrations of hexavalent chromium and dibutyl tin in food items of the mink, green heron, and kingfisher were estimated using the following equation (USEPA, 2004b):

$$C_f = BSAF \times C_s \qquad \text{(Equation 2)}$$

where:

C_f = chemical concentration in food (mg/kg)

C_s = chemical concentration in sediment (mg/kg)

BSAF = biota sediment accumulation factor

Arsenic, cadmium, nickel, and silver, which are identified by USEPA (2000a,b) as bioaccumulative chemicals, were not detected in fish collected from Dark Head Cove and Cow Pen Creek. These four metals were detected in sediment, so they were evaluated in the food-chain model, but BSAFs were not used to calculate their concentrations in food items. Instead,

intake of these four metals was limited to incidental ingestion of sediment. Thus, BSAFs for arsenic, cadmium, nickel, and silver are not shown in Table C-1 of Appendix C.

Dry-weight concentrations of dichlorobenzenes and PAH compounds in food items of the mink, green heron, and kingfisher were estimated using the following equation (USEPA, 2004b):

$$C_f = BSAF(C_s/f_{oc})f_l \quad \text{(Equation 3)}$$

where:

C_f = chemical concentration in food (mg/kg)

C_s = chemical concentration in sediment (mg/kg)

BSAF = biota sediment accumulation factor

f_{oc} = % TOC content of sediment

f_l = percent lipids content

The average TOC in each of the four sediment depth intervals was used in Equation 3. Average TOC values were 3.19% in surface sediment, 2.56% in >6–18 inch sediment, 2.51% in >18-30 inch sediment, and 1.14% in >30–52 inch sediment. The average wet-weight lipid content in fish tissue collected from Dark Head Cove and Cow Pen Creek during the MRC investigation was 1.2%; this value was divided by 0.25 to convert it to a dry-weight value.

Table 6-2 summarizes the exposure factors used in the food chain model; see Appendix C for details on their derivation. Food ingestion rates are on a dry weight basis. The two incidental sediment-ingestion rates for the mink in Table 6-2 (0.005703 kilograms per day [kg/day] and 0.004234 kg/day) were calculated by multiplying the two food-ingestion rates by incidentally ingested sediment (9.4% of diet). The 9.4% value is based on the incidental soil/sediment-ingestion rate of the raccoon (Beyer, et al., 1994), because sediment-ingestion data for mink are not available.

Sediment ingestion data for piscivorous birds were not available in the literature. Since kingfishers capture prey primarily from the water column, rather than by probing on or near the sediment substrate, they would be expected to ingest negligible amounts of sediment. Therefore, incidental ingestion of sediment is assumed negligible for the kingfisher and was not incorporated in the food-chain model. A sediment-ingestion rate of 5% was used in Equation 1

for the green heron. Unlike shorebirds, herons do not probe the sediment. Green herons and other wading birds typically capture prey with a darting stroke, grasping or spearing with the bill (Davis and Kushlan, 1994). Therefore, an assumed value of 5% for incidental sediment-ingestion is probably a very conservative estimate for the green heron and for other piscivorous wading birds. The two sediment-ingestion rates for the green heron in Table 6-2 (0.0016 kg/day and 0.0015 kg/day) were calculated by multiplying the two food-ingestion rates (0.031 kg/day and 0.030 kg/day) by 0.05, assuming that incidentally ingested sediment is 5% of the diet.

6.5 RISK CHARACTERIZATION

Risk characterization compares the results of the exposure assessment to the ecological effects evaluation. Risk is characterized below for benthic invertebrates (Section 6.5.1), fish (Section 6.5.2) and piscivorous birds and mammals (Section 6.5.3). This section incorporates what is known as an eight-step ERA process called "Refinement of Preliminary Contaminants of Concern" (USEPA, 1997).

6.5.1 Benthic Invertebrates

Potential risks to benthic invertebrates were evaluated using multiple lines of evidence. Sediment chemistry is the primary measure by which potential risks were evaluated, but AVS/SEM data, pore water data, and benthic macroinvertebrate-community data were also used in the evaluation. Sediment concentrations were initially compared to the ecological screening values in Table 4-1A. The result is an ecological-effects quotient (EEQ), which is derived by dividing the exposure concentration by the ecological screening value. Chemicals in sediment were retained as ecological COPC for benthic invertebrates if they met either of the following criteria:

- the maximum detected concentration exceeded the applicable ecological-screening value (i.e., EEQ greater than 1.0)
- no ecological screening value was available

Tables 6-3 through 6-6 summarize the sediment data and selection of ecological COPC in sediment for the 0–6 inch, 6–18 inch, 18–30 inch, and >30–52 inch intervals, respectively. Chemical concentrations are generally lower in sediment samples from the deepest interval. VOCs are absent from Table 6-6. Sediment samples at the >30–52 inch interval were not analyzed for VOCs.

The analytical program and the sediment depth intervals selected for the 2008 and 2010 sampling events are based on a review of data from previous (historical) sampling events. Historical data in the *Surface Water and Sediment Sampling Report, Lockheed Martin Middle River Complex* (Tetra Tech, 2006) indicate that VOCs are not significant study-area contaminants. As mentioned in Section 6.3.1, the salinity of surface water in Cow Pen Creek, Dark Head Cove, and Dark Head Creek ranges from 2.4–3.9 ppt, so the sediment screening values in Tables 6-3 through 6-6 are the lower of freshwater-sediment versus marine sediment screening values. When relevant, the following discussion of sediment data differentiates between freshwater and marine screening values.

Tables 6-7 through 6-10 summarize the sediment data for ecological COPC, and compare the MRC sediment data to maximum background reference concentrations and higher effects sediment benchmarks. The background data set is described in Section 4.2.1 and consists of samples collected from four locations: Bowleys Quarters, Marshy Point, and sampling locations SD-1 and SD-78. The higher effects benchmarks in Tables 6-7 through 6-10 include PELs derived by MacDonald, et al., (1996) and PECs derived by MacDonald, et al., (2000a). In most cases, the higher effects values were selected from the same documents used as primary sources for the ecological screening values shown in Tables 6-3 through 6-6.

USEPA Region III Biological Technical Assistance Group (BTAG) regards comparison with background as a risk management function and not part of the risk assessment process. Therefore, background data were not used to determine or eliminate chemicals as ecological COPC. Instead, background data were used in the COPC refinement step only, to evaluate the possibility of whether contamination was site related, and as such, background comparisons are included to assist risk managers. Similarly, the discussion of MRC sediment data relative to higher-effects benchmarks (such as PELs and PECs) is included only to aid risk managers in making informed decisions. Risk management is beyond the scope of this ERA.

6.5.1.1 Inorganics

USEPA (2005) states that toxicity is unlikely when the $(\Sigma SEM\text{-}AVS)/f_{OC}$ concentration is less than 130 µmol/g, toxicity is uncertain when the concentration is between 130–3,000 µmol/g, and toxicity is likely when the concentration is greater than 3,000 µmol/g. The AVS and SEM data are presented in Tables 4-2 through 4-9 and summarized in Table 6-11. The data for surface

sediment and for sediment in the >30–52 inch interval indicate that toxicity due to cadmium, chromium, copper, lead, nickel, silver, and zinc are not likely in the seven samples in which AVS/SEM was analyzed, because ΣSEM-AVS/f_{OC} concentrations were less than 130 µmol/g (Table 6-11). However, the AVS/SEM samples do not correspond to sediment samples with the highest whole sediment concentrations of these metals. In the >6–18 inch depth interval, the ΣSEM-AVS/f_{OC} concentration is greater than 130 µmol/g in sample SD-87, and in the >18–30 inch depth interval, ΣSEM-AVS/f_{OC} concentrations are greater than 130 µmol/g in samples SD-87 and SD-89 (Table 6-11). Thus, toxicity from these metals at the middle depths is in the "uncertain" range (USEPA, 2005) for samples SD-87 and SD-89.

The maximum antimony concentration in surface sediment is 2,320 mg/kg at location SD-84. This value is greatly elevated relative to the 0.63 milligram per kilogram (mg/kg) screening value and the higher effects benchmark of 25 mg/kg (Table 6-7), which is the effects range median (ER-M) value from Long and Morgan (1991). SD-84 is in the upper portion of Cow Pen Creek (Figure 3-1). The next highest antimony concentration in surface sediment is 4.6 mg/kg.

As shown in Tables 6-8 through 6-10, antimony concentrations in deeper intervals are generally low. The antimony concentration was 132 mg/kg in the >18–30 inch sample at location SD-58 (near Outfall 6), but the next highest concentration in that depth interval was 5.4 mg/kg. Pore water concentrations of antimony are less than surface-water screening values, but pore water was not collected at location SD-84 or SD-58. Overall potential risk from antimony appears to be limited to only a few sampling locations.

The maximum screening EEQ for arsenic in surface sediment is 5.1 (Table 6-3). Arsenic in surface sediment exceeds the maximum background value and the PEC in only one sample (Table 6-7). Concentrations of arsenic in most pore water samples exceed the 5 micrograms per liter (µg/L) freshwater surface-water ecological screening-value but tend to be less than the 12.5 µg/L marine surface-water ecological screening-value. Risks posed by arsenic in all four sediment depths is similar to risk posed by background conditions and/or is limited to a relatively few sampling locations.

Barium is not a COPC in surface sediment or in >30–52 inch sediment. Its concentrations exceeded the maximum background value in only one sample (SD-58) in the other two depth

intervals. Barium was not analyzed in pore water. Potential risks from barium are probably minor. Beryllium, molybdenum, and thallium have not been evaluated for ecological toxicity in sediments to the extent that most other metals have, and no ecological screening values were found for these three metals. Beryllium and thallium were not detected in pore water, while molybdenum was not analyzed in pore water. Beryllium has limited solubility and mobility in sediment (USEPA, 1980). None of these metals were detected in pore water.

Cadmium concentrations in several samples at all four depth intervals exceed the 4.21 mg/kg PEL. The AVS/SEM data for surface sediment indicate that cadmium toxicity is not likely in the seven samples in which AVS/SEM was analyzed because ΣSEM-AVS/f_{OC} concentrations were less than 130 µmol/g (Table 6-11), but the AVS/SEM samples do not correspond to sediment samples with the highest cadmium concentrations. Pore water concentrations of cadmium exceed the surface-water ecological screening-value in samples co-located with sediment samples SD-85, SD-87, SD-88, and SD-89 in surface sediments; SD-85 and SD-87 in >6–18 inch sediment; and SD-85 in >18–30 inch sediment (Tables 4-11, 4-14, and 4-16). Cadmium concentrations in surface sediment are highest in Cow Pen Creek and along the shoreline of the MRC in Dark Head Cove near Outfalls 05 and 08 (Figure 4-9). Cadmium concentrations in Dark Head Cove sediments tend to be higher in the >6–18 inch and >18–30 inch intervals than in surface sediments.

Chromium concentrations in samples at all four depth intervals exceed the 111 mg/kg PEC. All pore water concentrations of chromium are less than the surface-water ecological screening value, even though the sediment concentrations in some corresponding sediment samples were quite high. For example, the pore water concentration in PW-02 in the >18-30 inch interval was 17.5 µg/L (compared to the surface-water screening value of 57.5 µg/L) even though the concentration in the co-located sediment sample at the same depth was 1530 mg/kg (Table 4-20). Thus, chromium in pore water was not toxic up to a collocated sediment chromium concentration of 1,530 mg/kg. This was the highest whole sediment chromium concentration at any sample location where pore water was analyzed. Only one of 69 samples in the >18-30 inch interval had a sediment concentration greater than 1,530 mg/kg (specifically, 2,060 mg/kg in SD-86). In surface sediment, the maximum sediment chromium concentration in 103 samples analyzed was 699 mg/kg, which is less than 1,530 mg/kg. In the 6-18 inch interval, sediment chromium

concentrations exceeded 1,530 mg/kg at two sample locations; SD-84 at 1750 mg/kg and SD-46 at 2410 mg/kg (average of SD-46 and its duplicate). Pore water was not analyzed in samples SD46 and SD-86. In summary, chromium in pore water was not toxic up to a collocated sediment chromium concentration of 1,530 mg/kg, and sediment concentrations of chromium exceeded 1,530 mg/kg in only two samples.

Chromium is found in sediments primarily in two oxidation states: trivalent chromium, which is relatively insoluble and nontoxic, and hexavalent chromium, which is much more soluble and toxic. Hexavalent chromium is thermodynamically unstable in anoxic sediments, and AVS is formed only in anoxic sediments; therefore sediments with measurable AVS concentrations are not likely to contain toxic hexavalent chromium (USEPA, 2005e). Thus, the AVS/SEM data in Table 6-11 suggest that chromium in the seven samples analyzed for AVS/SEM is not toxic. Sediment chromium concentrations in a few samples exceed those in the samples tested for AVS/SEM. Overall, the pore water and AVS/SEM data indicate that potential risks posed by chromium is limited to a few sampling locations.

Cobalt concentrations exceed the 10-mg/kg ecological screening-value (a marine-sediment value from Buchman [2008]) in several samples at all depths, but EEQs are relatively low (Tables 6-3 through 6-6). USEPA Region III BTAG does not have a marine-sediment ecological screening-value for cobalt, but the USEPA Region III BTAG ecological screening-value for cobalt in freshwater sediment is 50 mg/kg (Table 4-1A). All cobalt concentrations in the upper three sediment-intervals are less than 50 mg/kg. In the deepest interval, only the maximum concentration exceeds 50 mg/kg; the next highest cobalt concentration in the deepest interval is 39.7 mg/kg. Cobalt was not analyzed in sediment samples collected in 2010 or in pore water samples.

Copper concentrations in samples from all four depth intervals exceed the 108 mg/kg PEL. The AVS/SEM data for surface sediment indicate that copper toxicity is not likely in the seven samples in which AVS/SEM was analyzed (Table 6-11), but the AVS/SEM samples do not correspond to sediment samples with the highest copper concentrations. Pore water concentrations of copper exceed the surface-water ecological screening-value in one sample in each depth interval, but pore water concentrations do not appear correlated with co-located sediment concentrations. Copper concentrations tend to decrease with increasing depth

(Figure 4-11). Most samples with concentrations exceeding the PEL were collected from surface sediments either south of Outfall 05 or in Dark Head Cove.

The highest sediment-lead concentration is greatly elevated, at 31,500 mg/kg in surface sample SD-84; this is the same sample from upper Cow Pen Creek that had the highest antimony concentration. The next highest lead concentration in surface sediment is 249 mg/kg in SD-46. Lead concentrations in samples at all four depth intervals exceed the 112 mg/kg PEL. Lead toxicity is not likely in the seven surface samples analyzed for AVS/SEM (Table 6-11), but lead concentrations in some sediment samples are much higher than in the samples where AVS/SEM samples were collected. Similarly, although pore water concentrations of lead exceed the surface-water ecological screening-value in only one sample, the pore water data were not collected at the locations where sediment concentrations were highest.

The concentration of lead in pore water does not appear correlated with sediment concentrations. Most of the elevated (i.e., greater than the PEL and background) lead concentrations were in the two middle depth intervals, and tend to be in Dark Head Cove and Dark Head Creek (Figure 4-12). In the deepest interval, lead concentrations exceed the PEL in one sample (SD-105 at 163 mg/kg).

Mercury concentrations in samples at all four depth intervals exceed the 0.7 mg/kg PEL. Mercury was not detected in any pore water sample. The pore water data were collected at some locations where sediment concentrations were high, but pore water samples were not collected at locations where mercury concentrations in sediment are highest. Most mercury concentrations are less than background in surface-sediment samples (Figure 4-13). Mercury concentrations are highest in the >6–18 inch and >18–30 inch intervals, with some concentrations in the >18–30 inch interval in Dark Head Cove more than twice the PEL. In the deepest interval (>30–52 inches), mercury concentrations exceed the PEL in only one sample, SD-105, which is the same sample in which lead was highest at this depth.

Nickel concentrations in a few samples at all four depth intervals exceed the 42.8 mg/kg PEL. Average nickel concentrations in all four depth intervals are less than the PEL. Nickel concentrations in all surface-sediment samples are less than the background value for surface sediment. Concentrations at deeper depths tend to be similar to those in surface sediment, but

background values are lower at deeper depths, so nickel concentrations in several samples in the three lower depth samples exceed their respective background values (Tables 6-7 through 6-9). Nickel was not detected in pore water in >6–18 inch samples, and all pore water samples in the other two intervals had concentrations less than surface-water ecological screening-values. The AVS/SEM data suggest that nickel toxicity is not likely in most samples in which AVS/SEM was analyzed. Potential risks posed by nickel in all four sediment depths is similar to risk posed by background conditions, or is limited to a relatively few sampling locations.

Selenium concentrations exceed the 1-mg/kg ecological screening value (a marine-sediment value from Buchman [2008]) in several samples at all depths. The EEQs are relatively low, however, with maximum EEQs ranging from 2.1–3.1 in the four depth intervals (Tables 6-3 through 6-6). USEPA Region III BTAG does not have a marine-sediment ecological screening-value for selenium, but the USEPA Region III BTAG ecological screening-value for selenium in freshwater sediment is 2 mg/kg (Table 4-1A). Maximum selenium concentrations only slightly exceed 2 mg/kg; maximum concentrations are 3.1 mg/kg, 2.6 mg/kg, 2.8 mg/kg, and 2.1 mg/kg in the 0–6 inch, 6–18 inch, 18–30 inch, and >30–52 inch intervals, respectively. All pore water concentrations exceed the 1-µg/L freshwater surface-water ecological screening-value, but all are well below the 71-µg/L marine surface-water ecological screening-value.

Silver concentrations in samples at all four depth intervals exceed the 1.77 mg/kg PEL. Silver was not detected in any pore water sample and, as shown in Tables 4-18 through 4-20, the pore water data were collected at some locations where silver concentrations in sediment are high, although not as high as the maximum sediment-silver concentrations. The AVS/SEM data suggest that silver toxicity is unlikely in most samples in which AVS/SEM was analyzed.

USEPA Region III BTAG does not have an ecological screening value for vanadium in freshwater or marine sediments. The ecological screening-value for vanadium shown in sediment-screening tables (57 mg/kg) is from Buchman (2008). All vanadium concentrations in the deepest sediment interval are less than 57 mg/kg (Table 6-6). Vanadium concentrations in the upper three sediment-intervals are relatively low compared to the 57 mg/kg screening value, with maximum EEQs of 1.9 and 2.1 (Tables 6-3 through 6-5). Vanadium was not analyzed in pore water samples. The paucity of sediment toxicity-thresholds results in uncertainty regarding the potential risk to benthic receptors posed by vanadium.

Zinc concentrations in samples at all four depth intervals exceed the 459 mg/kg PEC. All pore water concentrations of zinc are less than the surface-water ecological screening-value. Although some pore water samples were collected at the locations where sediment concentrations were high (up to 762 mg/kg zinc in SD-87 in the >18–30 inch interval, which was co-located with PW-02), sediment concentrations in some samples are considerably higher. Similarly, the AVS/SEM samples were not co-located with maximum sediment concentrations of zinc. Zinc concentrations in surface sediment are similar to those in the >6–18 inch interval; concentrations in these two intervals exceed the PEC in few samples, with PEC exceedances being in samples collected near the MRC shoreline (Figure 4-14). More samples exceed the zinc PEC in the >18-30 inch interval than in the shallower intervals. The deepest interval (>30–52 inches) had the fewest PEC exceedances but the highest overall zinc concentration (4,370 mg/kg in SD-88).

Summary and conclusions: risks to benthic invertebrates posed by metals— Based on the lines of evidence from sediment data, benthic invertebrate data, pore water data, and AVS/SEM data, risks to benthic invertebrates from inorganics in sediment are possible. The greatest likelihood of those effects occurring would be in areas where the PECs and PELs were exceeded. Concentrations of metals at some of those locations are similar to background concentrations. However, concentrations at many locations, especially for cadmium, copper, lead, mercury, and zinc, are greater than PECs and background values. Generally, the highest concentrations of inorganics are in the >6–18 inch and >18–30 inch intervals, with much lower concentrations in the >30–52 inch interval.

6.5.1.2 PCBs

PCBs were detected in more than half of the sediment samples from the first two depth intervals (0-6 inches and >6–18 inches), in approximately 40% of samples in the >18–30 inch interval, and in 12% of samples in the deepest interval. Total Aroclors, defined as the sum of individual detected Aroclors, exceed the 40 µg/kg ecological screening value in the upper three depth intervals in most samples in which PCBs were detected. In the deepest interval, only two samples had total Aroclor concentrations greater than 40 µg/kg. The 40 µg/kg ecological screening value is the TEC from MacDonald, et al., (2000b). The midrange-effects concentration (MEC) is 400 µg/kg and the extreme-effects concentration (EEC) is 1700 µg/kg (MacDonald, et al., 2000b).

Total Aroclor concentrations exceed the MEC in several samples in the upper three intervals (Figure 4-15). The EEC is exceeded in six samples in surface sediment and six samples in the >6-18 inch interval; all concentrations are less than the EEC in the >18–30 inch interval. Total Aroclor concentrations in surface sediment are highest in Dark Head Cove, particularly near Outfall 05 (Figures 2-2 and 4-15), where the five highest concentrations are 54,000 µg/kg in SD-9, 20,000 µg/kg in SD-27, 6,600 µg/kg in SD-88, 6,300 µg/kg in SD-58, and 4,200 µg/kg in SD-59. Total Aroclor concentrations in the >6–18 inch interval are highest in Dark Head Cove and in Cow Pen Creek (Figure 4-15). The benthic data do not conclusively indicate whether contaminants such as PCBs in sediment near MRC are adversely affecting sediment invertebrates. The sediment data indicate that PCBs pose potential risks to benthic invertebrates, especially in Dark Head Cove.

6.5.1.3 SVOCs

SVOCs that were initially COPC because their maximum concentrations exceeded ecological screening values or ecological screening values were not available consist of 1,2-dichlorobenzene 1,4-dichlorobenzene, bis(2-ethylhexyl)phthalate, carbazole, and several PAHs, discussed below. Dichlorobenzenes were not detected in the two deepest sediment intervals. In the two upper intervals, these compounds were either infrequently detected or their maximum EEQs are relatively low. Potential risks from dichlorobenzenes are probably minor.

Bis(2-ethylhexyl)phthalate (BEHP) concentrations exceed its ecological screening value in some samples in each of the upper three sediment intervals. It was not detected in the deepest sediment interval. In the upper two intervals, only the maximum detected concentration exceeds the PEL. In the >18–30 inch interval, all concentrations are less than the PEL. BEHP is a common environmental contaminant due to its use in plastics. It can also be an artifact of the sampling and/or analytical methods. Potential risks from BEHP are probably minor. Carbazole was detected in the upper three depth intervals. The absence of an ecological screening-value or other toxicity threshold prevents evaluation of any risk posed by carbazole.

Total PAHs in this ERA is the sum of individual detected PAHs. The toxicity of PAHs is often assumed to be additive, so evaluating PAH toxicity in sediment by examining total PAH concentrations is especially useful when, as in MRC sediments, several PAHs are detected at concentrations exceeding their respective screening values. Total PAH concentrations in samples

at all four depth intervals exceed the 1,610 µg/kg ecological screening-value. The highest concentrations of total PAHs are in samples along the shoreline in Dark Head Cove and Cow Pen Creek (Figure 4-17), especially near Outfall 05 and at the eastern end of Dark Head Cove.

Elevated PAH concentrations (greater than the PEC of 22,800 µg/kg for total PAHs) were detected in four surface sediment samples, nine samples from the >6–18 inch interval, eight samples from the >18–30 inch interval, and in no samples from the >30–52 inch interval. PAH concentrations tend to be higher in the middle two depth intervals (>6–18 inches and >18-30 inches) than in surface sediment. PAH concentrations in most samples from the top two intervals are less than the maximum respective background-concentration, as indicated in Figure 4-17. In surface sediment, total PAH concentrations exceed the background value in only eight samples.

Nineteen sediment samples were collected from Cow Pen Creek and Dark Head Cove for analyses of alkylated PAHs to forensically evaluate potential sources of PAH compounds. One stormwater-sediment sample collected from the upper reach of Cow Pen Creek (upgradient of the MRC facility's first outfall in Cow Pen Creek), slightly south of Eastern Boulevard, was also analyzed for alkylated PAHs. The results of the alkylated PAH analyses are reported in Appendix D (Environmental Forensic Report) of *Additional Characterization and Sediment Sampling Data Summary Report, Middle River Complex* (Tetra Tech, 2011a). The forensic analyses concluded that the hydrocarbon fingerprints are consistent with general background PAHs in urban sediments, although PAH concentrations in two samples were higher than expected for typical urban background. Analysis of the single stormwater-sediment data suggests that PAHs in that sample originated from urban runoff.

The sediment data indicate that PAHs pose potential risks to benthic invertebrates, especially in Dark Head Cove near Outfall 05 and at the eastern end of the cove. However, the background data indicate that potential risks in most samples near MRC are similar to risks throughout the region. The PAH forensic data suggest that PAHs in most MRC samples are probably due to typical urban runoff.

6.5.1.4 VOCs

VOCs that were initial sediment COPC (because maximum concentrations in sediment exceed ecological screening values or ecological screening values are not available) consist of carbon disulfide and methyl tert-butyl ether (MTBE). Carbon disulfide was detected in two of 40 surface sediment samples, in six of 10 samples at >6–18 inch, and in four of 10 samples at >18-30 inches. Its maximum concentration (all three sediment intervals combined) is 19 µg/kg. Carbon disulfide occurs naturally in sediments since it is a natural product of anaerobic biodegradation. Worldwide, at least 40% and possibly as much as 80% of releases are a result of natural or biogenic activity (IPCS, 2002).

Three pore water samples were collected from Cow Pen Creek and five pore water samples were collected from Dark Head Cove and analyzed for VOCs. Pore water data from these eight samples are summarized in Tables 4-21 through 4-24. The carbon disulfide concentration in one sample from Cow Pen Creek (PW-1 at 0.95 µg/L) slightly exceeds the 0.92 µg/L ecological screening-value for freshwater. Carbon disulfide concentrations in all other pore water samples are less than the ecological screening-value. Except for carbon disulfide in PW-1, all VOCs in the eight pore water samples are less than ecological screening-values.

MTBE was detected in 24 of 41 surface sediment samples, in two of 10 samples at >6–18 inches, and in two of 10 samples at >18–30 inches. The absence of an ecological screening value or other toxicity threshold prevents a complete evaluation of risk posed by MTBE. However, its maximum concentration in all sediment intervals is only 9 µg/kg. Such low MTBE concentrations probably do not pose significant risks to sediment invertebrates, considering that the USEPA Region III ecological screening value for surface water is 11,070 µg/L for this compound. Sediment and pore water data indicate that VOCs pose negligible risks to benthic invertebrates in Cow Pen Creek, Dark Head Cove, and Dark Head Creek.

6.5.2 Fish

Fish tissue concentrations of lead, mercury, selenium, Aroclor-1262, and total PCBs exceed one or more tissue residue values in one or more fish samples collected from MRC water bodies (Table 4-27). Lead concentrations exceed the 0.12 mg/kg CTL in two Dark Head Cove samples (0.17–0.19 mg/kg) (Table 4-27). However, all lead concentrations in fish are less than the marine

CTL for lead of 0.4 mg/kg and the lead LOAEL of 4 mg/kg. Concentrations in fish samples from Dark Head Cove and Cow Pen Creek are similar to those collected from Bowleys Quarters and Marshy Point (reference locations). Thus, significant risks to fish from lead at the site are not expected, and any risks are similar to those in the region.

The mercury concentration in one site sample (0.12 mg/kg) exceeds the freshwater CTL of 0.088 mg/kg; however, it does not exceed the marine CTL of 0.18 mg/kg and the 10th percentile TRV of 0.44 mg/kg. Therefore, significant risks to fish from mercury at the site are not expected. Selenium was detected in all fish samples from the site and reference areas, and all detected concentrations exceed the freshwater and marine CTLs. Selenium concentrations in fish from the site (0.3–0.57 mg/kg) are within concentrations detected in fish from reference locations (0.36-0.57 mg/kg), except for one site sample (0.68 mg/kg). Therefore, any risks to fish from selenium are similar to those in the region.

Total PCB concentrations in two site samples (1630 µg/kg and 478 µg/kg) exceed the freshwater CTL (430 µg/kg). The highest concentration exceeds the marine CTL and 10th percentile TRV. All other fish samples collected from Dark Head Cove and Cow Pen Creek had much lower concentrations of total PCBs (32 µg/kg to 368 µg/kg), which are less than the lowest available TRV or CTL (Table 4-27). Significant risks to fish from PCBs at the site are unclear using the limited fish data set available, but PCBs were elevated in only one sample.

6.5.3 Piscivorous Birds and Mammals

Tables 6-3 through 6-6 indicate whether each detected chemical is considered bioaccumulative and was therefore carried through to the food-chain model. Tables 6-12 through 6-15 present the EEQs from the conservative scenario food-chain model for chemicals in sediment for the 0-6 inch, >6–18 inch, >18–30 inch, and >30–52 inch intervals, respectively. Calculation spreadsheets for the kingfisher, green heron, and mink are in Appendix C. PAHs, PCBs, and inorganics (metals) in the top three sediment depth intervals have EEQs greater than 1.0 using maximum chemical concentrations and conservative exposure assumptions (Tables 6-12 through 6-14). In the deepest interval (see Table 6-15), PCBs and metals (but no PAHs) have EEQs greater than 1.0 using maximum chemical concentrations and conservative exposure assumptions. Mercury and PCBs tend to have the highest EEQs in the four depth intervals, but lead EEQs are also elevated in surface sediment (Table 6-12).

Tables 6-16 through 6-19 present the EEQs from the average food-chain scenario for chemicals in each of the four depth intervals. Chemicals with EEQs less than 1.0 in the conservative scenario (Tables 6-12 through 6-15) were excluded from Tables 6-16 through 6-19. In other words, if the food-chain EEQ was less than 1.0 in the average scenario and, using the NOAEL as the TRV, the chemical is assumed to pose only minor risk to wildlife, and the chemical was not further evaluated for risks to piscivorous receptors. The following chemicals were retained for further evaluation, based on the average scenario (see Tables 6-16 through 6-19):

- surface sediment: total Aroclor, lead and mercury
- >6–18 inch interval: total Aroclor and mercury
- >18–30 inch interval: total Aroclor and mercury
- >30-52 inch interval: total Aroclor and mercury

6.5.3.1 Mercury

In the average scenario, food-chain EEQs for mercury exceed 1.0 for the kingfisher and green heron, whereas mink EEQs for mercury are less than 1.0 (Tables 6-16 through 6-19). Further, although kingfisher and green heron NOAEL-based EEQs for mercury exceed 1.0, LOAEL-based EEQs are less than 1.0 for the kingfisher and green heron. Kingfisher EEQs for mercury are the same value (3.9) for all depth intervals, whereas green heron and mink EEQs for mercury vary by interval.

As discussed in Section 6.4.3, the dietary intake of contaminants for the kingfisher is assumed to consist of fish or benthic invertebrates; sediment ingestion was not included in the dose equation for the kingfisher. The green heron and mink, on the other hand, are assumed to consume fish or benthic invertebrates, plus incidentally ingested sediment. The average mercury concentration in fish tissue collected from Dark Head Cove and Cow Pen Creek was used to represent mercury concentrations in food items of the kingfisher, green heron, and mink. This single value was used for all four sediment intervals evaluated in the food-chain model. Therefore, the estimated dose for the kingfisher is the same for all four intervals (since the dose is based on the same average mercury fish tissue value) but the estimated dose for the mink and green heron vary by interval (the dose is based on one average fish tissue value plus a different average sediment concentration at each interval).

The average food-chain scenario provides a less conservative evaluation of risk compared to the maximum (conservative) food-chain scenario, but it is nevertheless conservative. For example, the EEQs in Tables 6-16 through 6-19 still assume that piscivorous birds and mammals derive 100% of their diet from water bodies at MRC. Piscivorous birds and mammals, however, would undoubtedly derive only a portion of their total diet from this area, and thus, the EEQs in Tables 6-16 through 6-19 are conservative. The precise area use factor (AUF) for piscivorous birds such as the kingfisher and green heron foraging near MRC cannot be determined, and any assigned AUF is speculative, but the mercury EEQs in Tables 6-16 through 6-19 are not particularly elevated with this in mind. Mercury poses negligible risk to piscivorous birds and mammals in MRC water bodies at all sediment depth intervals because the NOAEL-based EEQs for mercury are relatively low (3.9 for the kingfisher and 4.5–5.3 for the green heron) and LOAEL-base EEQs are less than 1.0, and the EEQs (improbably) assume that piscivorous birds will obtain all of their food from water bodies near MRC. Further, mercury concentrations in fish collected near MRC are similar to mercury concentrations in fish collected from reference areas (Table 4-27). Therefore, any risk posed by mercury via bioaccumulation in fish near MRC appears similar to risk present throughout the region.

6.5.3.2 Lead

In the average scenario, the NOAEL-based food chain EEQ for lead is 1.8 for the green heron in surface sediment, whereas mink and kingfisher EEQs for lead are less than 1.0 in surface sediment (Table 6-16). All LOAEL-based EEQs for surface sediment are less than 1.0 (Table 6-16). Lead NOAEL-based EEQs in other sediment depth intervals are less than 1.0 for all three representative receptors (Tables 6-17 through 6-19). An EEQ of 1.8 is not particularly elevated considering that piscivorous birds forage over much larger areas than the area represented by the MRC. In addition, lead concentrations in fish collected near the MRC are similar to lead concentrations in fish from reference areas (Table 4-27). Therefore, any risk posed by lead via bioaccumulation in fish near MRC appears similar to risk present throughout the region.

6.5.3.3 PCBs

In the average scenario for all four sediment depth intervals, food-chain NOAEL EEQs for total Aroclor exceed 1.0 only for the green heron, kingfisher, and mink. EEQs for total Aroclor are less than 1.0 (Tables 6-16 through 6-19). The green heron NOAEL-based EEQ for total Aroclor

is relatively low, however (EEQ = 1.2). The LOAEL-based EEQs are less than 1.0 for the kingfisher. With this in mind, PCBs pose negligible risk to piscivorous birds and mammals in MRC water bodies at all sediment depth intervals.

6.6 UNCERTAINTY

Uncertainty is associated with several aspects of the ecological assessment methodology. Some uncertainties were discussed in Section 6.6. This section provides a summary of the uncertainties, and focuses on those not previously mentioned.

6.6.1 Problem Formulation

Chemical data collected at the site entails uncertainty. Many sampling locations were deliberately biased toward areas of known or suspected high concentrations, so predicted doses are probably higher than actual doses. Although this is a conservative approach in predicting exposure concentrations, actual exposure of ecological receptors to chemical concentrations is probably overestimated.

Organochlorine chemicals (such as PCBs) are known to adversely affect bird eggs. However, effects on bird eggs were not evaluated in the ERA, resulting in some uncertainty regarding this potential endpoint.

6.6.2 Ecological Effects Evaluation

Laboratory derived NOAELs and LOAELs might not adequately represent toxicity thresholds for piscivorous receptors under field conditions. NOAELs and LOAELs for species used in toxicity tests and reported in the literature might not adequately represent toxicity thresholds for other species. These uncertainties may overestimate or underestimate potential risks.

The chemical dose for terrestrial wildlife is calculated using an equation that incorporates ingestion rates, body weights, BSAFs, and other exposure factors. These exposure factors are obtained from literature studies or predicted using various equations. Ingestion rates and body weights vary among species, especially among species inhabiting different areas. PAH TRVs for birds are based on 7,12-dimethylbenz(a)anthracene. Using this TRV for all PAH calculations for birds results in uncertainty.

6.6.3 Exposure Assessment

The choice of representative receptors for food-chain modeling results in some uncertainty. The developed nature of much of the shoreline along Dark Head Cove and Dark Head Creek makes it unlikely that piscivorous mammals such as mink would forage there except only rarely, and the extent to which such receptors use the area is uncertain. Under current habitat conditions, the food chain EEQs are believed to overestimate risk to piscivorous mammals represented by the mink.

The water depth along most of the shoreline at and near MRC is too deep for wading birds such as herons and egrets to forage. Similarly, mudflats favored by shore birds such as sandpipers are largely absent. Thus, diving birds such as the kingfisher would probably forage much more than wading birds and shorebirds.

Fish were collected from Dark Head Cove and Cow Pen Creek, and the resulting tissue data were used to represent chemical concentrations of detected COPC in food items of the mink and kingfisher. However, the fish samples analyzed by the lab were fillets rather than whole-body samples. Piscivorous wildlife would be expected to typically consume whole fish, and concentrations of some contaminants (such as PCBs) would probably be higher in whole bodies than in fillets. This would underestimate risk.

Channel catfish (a bottom-dwelling species) were collected from Dark Head Cove and Cow Pen Creek. Channel catfish probably do not comprise a significant portion of the diet for piscivorous birds and mammals; instead, birds and mammals probably consume other species that tend to be found near the water's surface. A further uncertainty regarding the channel catfish tissue is that channel catfish typically travel about 6,000 meters, or roughly 4 miles, in the course of a year. Thus, tissue concentrations of contaminants in catfish samples collected near MRC might not be representative of MRC contaminants. Finally, the metals and PCB tissue data from the fish samples represent current conditions, whereas sediment data from the three subsurface-sediment intervals are more representative of future conditions resulting from possible dredging.

Chemicals detected in fish samples were reported by the lab on a wet-weight basis. The concentrations were converted to dry-weight values for use in the food-chain models by dividing

by 0.25, based on assumed 75% moisture content in fish. Actual moisture content was not reported, and the resulting uncertainty could overestimate or underestimate potential risks.

Actual incidental sediment-ingestion rates for birds (represented by the kingfisher, and for mammals as represented by the mink) are unknown and, thus, the ERA used estimated sediment ingestion rates. Sediment-ingestion data are not available for the kingfisher and are assumed to be negligible. This is probably realistic for piscivorous birds like the kingfisher, osprey, and eagle, but not for wading birds such as egrets and herons, which tend to obtain prey by probing on or near the sediment substrate. Sediment ingestion by the green heron was assumed to be 5% of the diet. Sediment ingestion by the mink was assumed to be 9.4% of the diet, which is based on sediment-ingestion data for the raccoon. The resulting uncertainty could overestimate or underestimate potential risks.

6.6.4 Risk Characterization

Uncertainty in risk characterization results from the lack of data regarding the toxicity of multiple chemicals. For example, sediment concentrations of COPC are elevated at several locations. The extent to which these concentrations might contribute to cumulative toxicity is uncertain.

Many years of anthropogenic activities (especially industrial and commercial activities) near the MRC have contributed metals, pesticides, PAHs, and other chemical compounds to Dark Head Cove, Cow Pen Creek, and the entire Chesapeake Bay. As a result, and since many metals occur naturally in sediment to varying degrees, concentrations of several COPC near MRC are similar to background concentrations. Comparing background data to MRC data is useful in determining attribution, but the ERA does not use background comparisons to eliminate chemicals as COPC. Instead, background data are mentioned only in Section 6 as a tool for stakeholders to use in risk management, which is beyond the scope of this ERA. The ERA makes no risk management suggestions.

6.7 ERA SUMMARY AND CONCLUSIONS

Under current conditions, ecological receptors would be exposed to surface sediment (0-6 inches) rather than to the three deeper intervals from which sediment was collected (>6-18 inches, >18–30 inches, and >30–52 inches). However, sediment from all four depth

intervals was evaluated because of the potential that deeper sediments at MRC could be exposed in the future by dredging. Several chemicals detected in sediment were initially retained as COPC because their chemical concentrations exceed ecological screening-values or screening values were not available. These chemicals were then re-evaluated using less conservative assumptions and benchmark values to identify which pose the greatest potential for causing risks to ecological receptors. Ecological endpoints evaluated in this ERA consist of benthic invertebrates, fish, and birds and mammals that consume fish and benthic invertebrates. Conclusions regarding ecological risk are summarized below and in Tables 6-20 and 6-21, and are based on sediment data, fish tissue data, benthic-invertebrate data, pore water data, and AVS/SEM data. Sufficient data are available to identify COC (as shown in Table 6-21) that should be evaluated in a feasibility study.

6.7.1 Risks to Benthic Invertebrates

Risks to benthic invertebrates from metals in sediment are possible, with the greatest likelihood of those effects occurring in the areas where the PECs and PELs are exceeded. Concentrations of metals at some locations are similar to background concentrations. However, concentrations at many locations, especially for cadmium, copper, lead, mercury, and zinc, are greater than PECs, PELs, and background values. Generally, the highest concentrations of inorganics are in the >6-18 inch and >18–30 inch intervals, with much lower concentrations in the >30–52 inch interval.

PCBs pose potential risks to benthic invertebrates, especially in Dark Head Cove surface sediment near Outfall 05. PAHs pose potential risks to benthic invertebrates, especially in Dark Head Cove near Outfall 05 and at the eastern end of the cove. However, background data indicate that potential PAH-related risks in most samples near the MRC are similar to PAH risks throughout the region. Of 101 surface sediment samples analyzed for PAHs, total PAH concentrations exceed the background value in only eight surface-sediment samples. The PAH forensic data suggest that PAHs in most MRC samples are probably due to typical urban runoff. Therefore, PAHs are not retained for further evaluation.

Some measure of uncertainty exists as to whether chemicals in sediment are bioavailable and significantly affecting the benthic community, based on evaluations of AVS/SEM data, *ex situ* pore water data, and benthic macroinvertebrate-community data. At most locations where

AVS/SEM and *ex situ* pore water samples were collected, chemical bioavailability is low, but locations with the greatest whole-sediment chemical concentrations were not sampled. The benthic-macroinvertebrate community is stressed in all MRC samples, but is also stressed in background reference samples.

Although uncertainty exists with regard to whether the benthic community is being significantly affected, cadmium, copper, lead, mercury, zinc, and total Aroclor concentrations pose the highest potential risks to benthic invertebrates; these chemicals are therefore retained as final ecological COPC in sediments near MRC. In surface sediment, which under current conditions is the primary biologically active zone for sediment invertebrates, and based on sediment data relative to higher-effects benchmarks (such as PELs and PECs), cadmium and total Aroclors pose the greatest risk to benthic receptors, based on sediment data relative to higher effects benchmarks (such as PELs and PECs).

6.7.2 Risks to Fish

Fish do not appear to be at risk from sediment contamination, and/or risks are similar to risks throughout the region, based on concentrations in fish tissue collected from Cow Pen Creek and Dark Head Cove.

6.7.3 Risks to Piscivorous Birds and Mammals

Piscivorous birds and mammals forage over large areas rather than solely within the area represented by a single MRC sediment sample. Bioaccumulative chemicals in sediment at all four depth intervals pose negligible risks to piscivorous birds and mammals via the food chain, based on the average food-chain scenarios (see Tables 6-16 through 6-19).

TABLE 6-1

ASSESSMENT AND MEASUREMENT ENDPOINTS
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Assessment Endpoint	Measurement Endpoint (Measures of Effects)
Protection of benthic invertebrates from adverse effects on their survival, reproduction, and growth	• Measured concentrations of chemicals in sediment were compared to sediment toxicity threshold values (1) • Porewater concentrations were compared to surface water toxicity threshold values (1) • AVS/SEM data were evaluated • Benthic macroinvertebrate community data were evaluated
Protection of fish from adverse effects on their survival, reproduction, and growth.	Tissue chemical concentrations in fish collected from Cow Pen Creek and Dark Head Cove were compared to fish tissue concentrations considered to be protective of fish health.
Protection of piscivorous birds from adverse effects on their survival, reproduction, and growth	Estimated doses (through ingestion) of chemicals in sediment and food items were compared to No Observed Adverse Effects Levels (NOAELs) and Lowest Observed Adverse Effects Levels (LOAELs) for representative avian species.
Protection of piscivorous mammals from adverse effects on their survival, reproduction, and growth	Estimated doses (through ingestion) of chemicals in sediment and food items were compared to NOAELs and LOAELs for representative mammal species.

(1) Toxicity threshold values were are discussed in Section 6.3.1.

TABLE 6-2

EXPOSURE PARAMETERS USED IN THE FOOD CHAIN MODEL
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Species/Exposure Inputs	Conservative Inputs		Average Inputs	
	Values	Units	Values	Units
Mink				
Body Weight = BW	0.55	kg	1.103	kg
Food Ingestion Rate = If	0.0607	kg/day	0.04504	kg/day
Sediment Ingestion Rate(1) = Is	0.005703	kg/day	0.004234	kg/day
Home Range = HR	Assume 100% on site		Assume 100% on site	
Kingfisher				
Body Weight = BW	0.136	kg	0.1473	kg
Food Ingestion Rate = If	0.01975	kg/day	0.01842	kg/day
Sediment Ingestion Rate(1) = Is	0	kg/day	0	kg/day
Home Range = HR	Assume 100% on site		Assume 100% on site	
Green Heron				
Body Weight = BW	0.200	kg	0.212	kg
Food Ingestion Rate = If	0.031	kg/day	0.030	kg/day
Sediment Ingestion Rate(1) = Is	0.0016	kg/day	0.0015	kg/day
Home Range = HR	Assume 100% on site		Assume 100% on site	

Notes:

See Section 6.4.3 and Table C-2 of Appendix C for derivation of these exposure factors.

(1) Sediment ingestion rates were calculated by multiplying the food ingestion (kg/day) by the proportion

TABLE 6-3
ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN - SURFACE SEDIMENT (0-6")
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

PARAMETER	FREQUENCY OF DETECTION	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	SAMPLE CONTAINING MAXIMUM CONCENTRATION	MINIMUM NON-DETECT	MAXIMUM NON-DETECT	ECOLOGICAL SCREENING VALUE (ESV)[1]	ECOLOGICAL EFFECTS QUOTIENT[2]	RETAINED AS A COPC?	RATIONALE[3]
Volatile Organics (µg/kg)										
1,3-DICHLOROBENZENE	1/41	2 J	2 J	SD-22-SS	5.9	24	842	0.002	**YES**	BIO
1,4-DICHLOROBENZENE	4/41	1 J	3 J	SD-22-SS	5.9	24	460	0.007	**YES**	BIO
2-BUTANONE	3/18	17 J	23 J	SD-13-SS, SD-19-SS	12	120	25,710	0.0009	NO	BSL
ACETONE	6/38	7.1 J	150 J	SD-40-SS	13	240	60,030	0.002	NO	BSL
CARBON DISULFIDE	2/40	9.1 J	12 J	SD-29-SS	5.9	24	0.851	14.1	**YES**	ASL
CHLOROBENZENE	1/41	3 J	3 J	SD-22-SS	5.9	24	8.42	0.4	NO	BSL
CHLOROMETHANE	1/41	13 J	13 J	SD-35-SS	12	49	8,740	0.001	NO	BSL
METHYL TERT-BUTYL ETHER	24/41	3 J	9 J	SD-23-SS, SD-18-SS, SD-16-SS, SD-32-SS	5.9	36	NA	NA	**YES**	NSL
NAPHTHALENE	1/30	7 J	7 J	SD-13-SS	6	24	34.6	0.2	NO	BSL
TOLUENE	3/41	3 J	10 J	SD-27-SS	5.9	24	1090	0.009	NO	BSL
Semivolatile Organics (µg/kg)										
1,3-DICHLOROBENZENE	1/39	420 J	420 J	SD-27-SS	390	1600	842	0.5	**YES**	BIO
1,4-DICHLOROBENZENE	8/39	76 J	850 J	SD-27-SS	74	1600	460	1.8	**YES**	ASL, BIO
1-METHYLNAPHTHALENE	1/66	39 J	39 J	SD-44-SS	350	6400	20.2	1.9	**YES**	ASL
2-METHYLNAPHTHALENE	1/77	34 J	34 J	SD-4-031705	350	6400	20.2	1.7	**YES**	ASL
ACENAPHTHENE	21/101	3.9 J	790 J	SD-28-SS	1.2	6400	6.7	117.9	**YES**	ASL, BIO
ACENAPHTHYLENE	19/101	8.7 J	790	SD-84-SS	1.4	6400	5.87	134.6	**YES**	ASL, BIO
ANTHRACENE	44/101	2.6 J	2300	SD-84-SS	2.3	6400	46.9	49.0	**YES**	ASL, BIO
BENZO(A)ANTHRACENE	59/101	5.6 J	5200 J	SD-28-SS	11	6400	74.8	69.5	**YES**	ASL, BIO
BENZO(A)PYRENE	63/101	9.4 J	4400 J	SD-28-SS	2.4	6400	88.8	49.5	**YES**	ASL, BIO
BENZO(B)FLUORANTHENE	78/101	14	5800 J	SD-28-SS	3.7	6400	130	44.6	**YES**	ASL, BIO
BENZO(G,H,I)PERYLENE	48/101	29	3100 J	SD-28-SS	2.4	6400	67	46.3	**YES**	ASL, BIO
BENZO(K)FLUORANTHENE	47/101	9.7 J	2700 J	SD-28-SS	2.5	6400	70	38.6	**YES**	ASL, BIO
BIS(2-ETHYLHEXYL)PHTHALATE	37/39	78 J	2900 J	SD-32-SS	860	1500	180	16.1	**YES**	ASL
BUTYL BENZYL PHTHALATE	3/39	120 J	190 J	SD-34-SS	390	1600	10900	0.02	NO	BSL
CARBAZOLE	5/39	130 J	990 J	SD-28-SS	390	1600	NA	NA	**YES**	NSL
CHRYSENE	77/101	9.1 J	5400	SD-84-SS, SD-28-SS	2.8	6400	108	50.0	**YES**	ASL, BIO
DIBENZO(A,H)ANTHRACENE	16/101	41 J	720	SD-84-SS	1.4	6400	6.22	115.8	**YES**	ASL, BIO
DIBENZOFURAN	1/39	340 J	340 J	SD-28-SS	390	1600	415	0.8	NO	BSL
FLUORANTHENE	84/101	8 J	10000	SD-84-SS	9.3	1400	113	88.5	**YES**	ASL, BIO
FLUORENE	26/101	2.2 J	1400	SD-84-SS	3.1	6400	21.2	66.0	**YES**	ASL, BIO
INDENO(1,2,3-CD)PYRENE	54/101	33	3400 J	SD-28-SS	2.4	6400	17	200.0	**YES**	ASL, BIO
NAPHTHALENE	20/101	2.8 J	290 J	SD-28-SS	2	6400	34.6	8.4	**YES**	ASL
PHENANTHRENE	62/101	7.2 J	12000	SD-84-SS	3.8	6400	86.7	138.4	**YES**	ASL, BIO
PYRENE	82/101	6.2 J	13000 J	SD-28-SS	8.8	6400	153	85.0	**YES**	ASL, BIO
TOTAL PAHS	84/101	19.8	63660	SD-28-SS	--	--	1610	39.5	**YES**	ASL, BIO

TABLE 6-3
ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN - SURFACE SEDIMENT (0-6")
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

PARAMETER	FREQUENCY OF DETECTION	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	SAMPLE CONTAINING MAXIMUM CONCENTRATION	MINIMUM NON-DETECT	MAXIMUM NON-DETECT	ECOLOGICAL SCREENING VALUE (ESV)[1]	ECOLOGICAL EFFECTS QUOTIENT[2]	RETAINED AS A COPC?	RATIONALE[3]
PCBs (µg/kg)										
AROCLOR-1254	1/101	400 J	400 J	SD-43-SS	1.5	11000	59.8	6.7	**YES**	ASL, BIO
AROCLOR-1260	78/101	14 J	54000	SD-9-031805	1.7	79	40	1350.0	**YES**	ASL, BIO
TOTAL AROCLOR	79/101	14	54000	SD-9-031805	--	--	40	1350.0	**YES**	ASL, BIO
Metals (mg/kg)										
ANTIMONY	48/103	0.11 J	2320 L	SD-84-SS	0.099	2.1	0.63	3682.5	**YES**	ASL
ARSENIC	103/103	1.5	37.2 J	SD-105-SS	--	--	7.24	5.1	**YES**	ASL, BIO
BARIUM	68/68	6.2	112	SD-77-SS	--	--	130	0.9	NO	BSL
BERYLLIUM	103/103	0.19	6.9	SD-69-SS-D	--	--	NA	NA	**YES**	NSL
CADMIUM	100/103	0.03695	296	SD-43-SS	0.0078	0.069	0.68	435.3	**YES**	ASL, BIO
CHROMIUM	103/103	10.9	699 J	SD-43-SS	--	--	43.4	16.1	**YES**	ASL, BIO
COBALT	68/68	3 J	28.5	SD-69-SS-D	--	--	10	2.9	**YES**	ASL
COPPER	103/103	6.3	183 J	SD-105-SS	--	--	18.7	9.8	**YES**	ASL, BIO
HEXAVALENT CHROMIUM	5/41	0.53 J	13 J	SD-37-SS	0.44	2.5	43.4	0.3	**YES**	BIO
LEAD	103/103	3.9	31500	SD-84-SS	--	--	30.2	1043.0	**YES**	ASL, BIO
MERCURY	97/103	0.00925	3.5 J	SD-30-SS	0.0078	0.038	0.13	26.9	**YES**	ASL, BIO
MOLYBDENUM	56/68	0.55	2.3 J	SD-15-SS, SD-40-SS	0.05	1.6	NA	NA	**YES**	NSL
NICKEL	103/103	4.8	62.8 J	SD-28-SS	--	--	15.9	3.9	**YES**	ASL, BIO
SELENIUM	66/103	0.345 JL	3.1 J	SD-66-SS	0.37	1.9	1	3.1	**YES**	ASL, BIO
SILVER	81/103	0.029 J	28.6 J	SD-28-SS	0.081	3.4	0.73	39.2	**YES**	ASL, BIO
THALLIUM	26/103	0.049 J	2.1 J	SD-16-SS	0.22	4	NA	NA	**YES**	NSL
VANADIUM	68/68	6.5	120 J	SD-28-SS	--	--	57	2.1	**YES**	ASL
ZINC	103/103	22.4	636 J	SD-28-SS	--	--	121	5.3	**YES**	ASL, BIO
Metals (µg/kg)										
DIBUTYLTIN	3/6	5.5 J	11 J	SD-40-SS	3.3	5.6	NA	NA	**YES**	NSL, BIO

Shading indicates that chemical was retained as a COPC.

1 - See Table 4-1A for sources of sediment ESVs.
2 - The ecological effects quotient is the maximum detected concentration divided by the ESV.
3 - Rationale for COPC selection or for further evaluation.
ASL = Above ESV
BSL = Below ESV
NSL = ESV not available
BIO = Bioaccumulative chemical (retained for food chain modeling)

TABLE 6-4
ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN - SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

PARAMETER	FREQUENCY OF DETECTION	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	SAMPLE CONTAINING MAXIMUM CONCENTRATION	MINIMUM NON-DETECT	MAXIMUM NON-DETECT	ECOLOGICAL SCREENING VALUE (ESV)[1]	ECOLOGICAL EFFECTS QUOTIENT[2]	RETAINED AS A COPC?	RATIONALE[3]
Volatile Organics (µg/kg)										
2-BUTANONE	3/5	18 J	37 J	SD-19-01	52	64	25710	0.001	NO	BSL
ACETONE	3/10	36 J	220	SD-19-01	50	270	60030	0.004	NO	BSL
CARBON DISULFIDE	6/10	5 J	19 J	SD-14-01	13	15	0.851	22.3	**YES**	ASL
ISOPROPYLBENZENE	2/10	3 J	10 J	SD-19-01	9	54	86	0.1	NO	BSL
METHYL TERT-BUTYL ETHER	2/10	3 J	4 J	SD-16-01	21	110	NA	NA	**YES**	NSL
SEC-BUTYLBENZENE	2/10	20 L	33	SD-19-01	9	54	880	0.04	NO	BSL
TERT-BUTYLBENZENE	1/10	2 J	2 J	SD-19-01	9	54	1210	0.002	NO	BSL
TOLUENE	1/10	2 J	2 J	SD-31-01	9	54	1090	0.002	NO	BSL
Semivolatile Organics (µg/kg)										
1,2-DICHLOROBENZENE	1/9	260 J	260 J	SD-13-01	710	1000	16.5	15.8	**YES**	ASL
1,4-DICHLOROBENZENE	2/9	100 J	180 J	SD-13-01	100	1000	460	0.4	**YES**	BIO
1-METHYLNAPHTHALENE	1/47	150 J	150 J	SD-58-01	320	3900	20.2	7.4	**YES**	ASL
2-METHYLNAPHTHALENE	2/47	220 J	340 J	SD-13-01	320	3900	20.2	16.8	**YES**	ASL
ACENAPHTHENE	22/71	1.2 J	2400 J	SD-58-01	0.95	3900	6.7	358.2	**YES**	ASL, BIO
ACENAPHTHYLENE	14/71	18 J	280	SD-90-01	1.1	3900	5.87	47.7	**YES**	ASL, BIO
ANTHRACENE	29/71	35	4400 J	SD-58-01	0.97	1400	46.9	93.8	**YES**	ASL, BIO
BENZO(A)ANTHRACENE	26/71	150	12000	SD-58-01	1.2	3900	74.8	160.4	**YES**	ASL, BIO
BENZO(A)PYRENE	28/71	150	9000	SD-58-01	0.99	3900	88.8	101.4	**YES**	ASL, BIO
BENZO(B)FLUORANTHENE	43/71	120 J	10000 J	SD-13-01	1.6	1100	130	76.9	**YES**	ASL, BIO
BENZO(G,H,I)PERYLENE	33/71	59 J	4800 J	SD-13-01	0.99	1400	67	71.6	**YES**	ASL, BIO
BENZO(K)FLUORANTHENE	27/71	100 J	7300	SD-58-01	2	1100	70	104.3	**YES**	ASL, BIO
BIS(2-ETHYLHEXYL)PHTHALATE	6/9	340 J	3400 J	SD-13-01	710	850	180	18.9	**YES**	ASL
BUTYL BENZYL PHTHALATE	1/9	830 J	830 J	SD-13-01	710	1000	10900	0.08	NO	BSL
CARBAZOLE	4/9	310 J	1000 J	SD-13-01	710	940	NA	NA	**YES**	NSL
CHRYSENE	44/71	93 J	12000	SD-58-01	1.2	1100	108	111.1	**YES**	ASL, BIO
DIBENZO(A,H)ANTHRACENE	19/71	75	790 J	SD-13-01	1.1	3900	6.22	127.0	**YES**	ASL, BIO
DIBENZOFURAN	2/9	270 J	400 J	SD-13-01	710	1000	415	0.96	NO	BSL
FLUORANTHENE	51/71	1.8 J	20000 J	SD-58-01	1.1	1100	113	177.0	**YES**	ASL, BIO
FLUORENE	23/71	13 J	2000 J	SD-58-01	1.3	3900	21.2	94.3	**YES**	ASL, BIO
INDENO(1,2,3-CD)PYRENE	39/71	63 J	5600 J	SD-13-01	1	1100	17	329.4	**YES**	ASL, BIO
NAPHTHALENE	21/71	10 J	550 J	SD-13-01	0.85	3900	34.6	15.9	**YES**	ASL
PHENANTHRENE	46/71	2.4 J	15000 J	SD-58-01	3.5	1200	86.7	173.0	**YES**	ASL, BIO
PYRENE	50/71	1.5 J	24000 J	SD-13-01	1	1100	153	156.9	**YES**	ASL, BIO
TOTAL PAHS	52/71	2.4	118470	SD-58-01	--	--	1610	73.6	**YES**	ASL, BIO

TABLE 6-4
ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN - SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

PARAMETER	FREQUENCY OF DETECTION	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	SAMPLE CONTAINING MAXIMUM CONCENTRATION	MINIMUM NON-DETECT	MAXIMUM NON-DETECT	ECOLOGICAL SCREENING VALUE (ESV)[1]	ECOLOGICAL EFFECTS QUOTIENT[2]	RETAINED AS A COPC?	RATIONALE[3]
PCBs (µg/kg)										
AROCLOR-1248	2/71	550	2300	SD-86-01	1	3000	40	57.5	**YES**	ASL, BIO
AROCLOR-1260	42/71	17	14000	SD-58-01	1.6	57	40	350.0	**YES**	ASL, BIO
TOTAL AROCLOR	42/71	17	14000	SD-58-01	--	--	40	350.0	**YES**	ASL, BIO
Metals (mg/kg)										
ANTIMONY	38/72	0.076 J	55.1 J	SD-75-01	0.057	1.64	0.63	87.5	**YES**	ASL
ARSENIC	71/72	1.4	12.6	SD-31-01	1.46	1.46	7.24	1.7	**YES**	ASL, BIO
BARIUM	48/48	8.1	236	SD-58-01	--	--	130	1.8	**YES**	ASL
BERYLLIUM	72/72	0.34	6.9	SD-69-01	--	--	NA	NA	**YES**	NSL
CADMIUM	66/72	0.026	306	SD-46-01	0.0069	0.037	0.68	450.0	**YES**	ASL, BIO
CHROMIUM	72/72	8.9	2460	SD-46-01	--	--	43.4	56.7	**YES**	ASL, BIO
COBALT	48/48	1.6 J	33	SD-69-01	--	--	10	3.3	**YES**	ASL
COPPER	72/72	5.1	178 J	SD-65-01	--	--	18.7	9.5	**YES**	ASL, BIO
HEXAVALENT CHROMIUM	1/10	1.6	1.6	SD-42-01	1	1.6	43.4	0.04	**YES**	BIO
LEAD	72/72	2.9	1370	SD-75-01	--	--	30.2	45.4	**YES**	ASL, BIO
MERCURY	62/72	0.015	3.5 L	SD-16-01	0.0072	0.1	0.13	26.9	**YES**	ASL, BIO
MOLYBDENUM	38/48	0.18	3.3	SD-75-01	0.21	1.7	NA	NA	**YES**	NSL
NICKEL	72/72	4.1 J	70.4	SD-46-01	--	--	15.9	4.4	**YES**	ASL, BIO
SELENIUM	56/72	0.51	2.6	SD-66-01	0.38	1.44	1	2.6	**YES**	ASL, BIO
SILVER	61/72	0.02 J	37.2	SD-75-01	0.074	0.42	0.73	51.0	**YES**	ASL, BIO
THALLIUM	26/72	0.063 J	2.1	SD-16-01	0.2	2.45	NA	NA	**YES**	NSL
VANADIUM	48/48	11	110	SD-16-01	--	--	57	1.9	**YES**	ASL
ZINC	72/72	10.8	1300	SD-58-01	--	--	121	10.7	**YES**	ASL, BIO
Metals (µg/kg)										
DIBUTYLTIN	1/3	5	5	SD-40-01	3	3.5	NA	NA	**YES**	NSL, BIO

Shading indicates that chemical was retained as a COPC.

1 - See Table 4-1A for sources of sediment ESVs.
2 - The ecological effects quotient is the maximum detected concentration divided by the ESV.
3 - Rationale for COPC selection or for further evaluation.
ASL = Above ESV
BSL = Below ESV
NSL = ESV not available
BIO = Bioaccumulative chemical (retained for food chain modeling)

TABLE 6-5
ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN - SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

PARAMETER	FREQUENCY OF DETECTION	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	SAMPLE CONTAINING MAXIMUM CONCENTRATION	MINIMUM NON-DETECT	MAXIMUM NON-DETECT	ECOLOGICAL SCREENING VALUE (ESV)[1]	ECOLOGICAL EFFECTS QUOTIENT[2]	RETAINED AS A COPC?	RATIONALE[3]
Volatile Organics (µg/kg)										
2-BUTANONE	3/5	13 J	40 J	SD-16-02	43	74	25710	0.002	NO	BSL
ACETONE	4/10	110	240	SD-16-02, SD-40-02	21	140	60030	0.004	NO	BSL
CARBON DISULFIDE	4/10	5 J	11 J	SD-16-02	7	12	0.851	12.9	**YES**	ASL
CHLOROBENZENE	1/10	7 J	7 J	SD-27-02	7	16	8.42	0.8	NO	BSL
CIS-1,2-DICHLOROETHENE	1/10	2 J	2 J	SD-19-02	7	16	1050	0.002	NO	BSL
ISOPROPYLBENZENE	2/10	3 J	38 K	SD-13-02	7	16	86	0.4	NO	BSL
METHYL TERT-BUTYL ETHER	2/10	2 J	3 J	SD-31-02	14	27	NA	NA	**YES**	NSL
SEC-BUTYLBENZENE	2/10	7 J	180 K	SD-13-02	7	16	880	0.2	NO	BSL
TOLUENE	4/10	1 J	10	SD-19-02	10	16	1090	0.009	NO	BSL
Semivolatile Organics (µg/kg)										
1-METHYLNAPHTHALENE	3/46	88 J	950	SD-58-02	340	1100	20.2	47.0	**YES**	ASL
2-METHYLNAPHTHALENE	4/46	310 J	1100 J	SD-58-02	340	1100	20.2	54.5	**YES**	ASL
ACENAPHTHENE	18/68	20 J	11000 J	SD-58-02	0.39	1100	6.7	1641.8	**YES**	ASL, BIO
ACENAPHTHYLENE	16/68	8.1 J	460	SD-90-02	0.46	1100	5.87	78.4	**YES**	ASL, BIO
ANTHRACENE	29/68	0.77 J	19000	SD-58-02, SD-58-02	0.4	1100	46.9	405.1	**YES**	ASL, BIO
BENZO(A)ANTHRACENE	23/68	18	38000	SD-58-02	0.51	1100	74.8	508.0	**YES**	ASL, BIO
BENZO(A)PYRENE	24/68	14	30000	SD-58-02	0.4	1100	88.8	337.8	**YES**	ASL, BIO
BENZO(B)FLUORANTHENE	32/68	46	31000	SD-58-02	0.64	1100	130	238.5	**YES**	ASL, BIO
BENZO(G,H,I)PERYLENE	24/68	37	11000 J	SD-58-02	0.4	1100	67	164.2	**YES**	ASL, BIO
BENZO(K)FLUORANTHENE	17/68	8 J	25000	SD-58-02	0.82	1100	70	357.1	**YES**	ASL, BIO
BIS(2-ETHYLHEXYL)PHTHALATE	5/9	140 J	1700	SD-40-02	460	740	180	9.4	**YES**	ASL
CARBAZOLE	2/9	400 J	410 J	SD-16-02	460	1000	NA	NA	**YES**	NSL
CHRYSENE	32/68	20	37000	SD-58-02	0.48	1100	108	342.6	**YES**	ASL, BIO
DIBENZO(A,H)ANTHRACENE	17/68	4.7 J	1400	SD-86-02	0.45	1100	6.22	225.1	**YES**	ASL, BIO
DIBENZOFURAN	2/9	240 J	330 J	SD-13-02	460	1000	415	0.8	NO	BSL
FLUORANTHENE	36/68	3.6 J	78000	SD-58-02	0.43	1100	113	690.3	**YES**	ASL, BIO
FLUORENE	22/68	1 J	10000 J	SD-58-02	0.53	1100	21.2	471.7	**YES**	ASL, BIO
INDENO(1,2,3-CD)PYRENE	28/68	70 J	12000 J	SD-58-02	0.42	1100	17	705.9	**YES**	ASL, BIO
NAPHTHALENE	18/68	23 J	2200 J	SD-58-02	0.35	1100	34.6	63.6	**YES**	ASL
PHENANTHRENE	36/68	1.2 J	76000	SD-58-02	5.8	1100	86.7	876.6	**YES**	ASL, BIO
PYRENE	35/68	2.2 J	76000	SD-58-02	0.41	1100	153	496.7	**YES**	ASL, BIO
TOTAL PAHS	39/68	1.2	457300	SD-58-02	--	--	1610	284.0	**YES**	ASL, BIO

TABLE 6-5
ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN - SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

PARAMETER	FREQUENCY OF DETECTION	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	SAMPLE CONTAINING MAXIMUM CONCENTRATION	MINIMUM NON-DETECT	MAXIMUM NON-DETECT	ECOLOGICAL SCREENING VALUE (ESV)[1]	ECOLOGICAL EFFECTS QUOTIENT[2]	RETAINED AS A COPC?	RATIONALE[3]
PCBs (µg/kg)										
AROCLOR-1248	1/68	430 J	430 J	SD-86-02	0.96	6100	40	10.8	**YES**	ASL, BIO
AROCLOR-1260	26/68	28 J	1300	SD-89-02	1.4	56	40	32.5	**YES**	ASL, BIO
TOTAL AROCLOR	26/68	28	1300	SD-89-02	--	--	40	32.5	**YES**	ASL, BIO
Metals (mg/kg)										
ANTIMONY	33/69	0.048 J	132 L	SD-58-02	0.05	0.97	0.63	209.5	**YES**	ASL
ARSENIC	68/69	1.4	12.3	SD-50-02	0.77	0.77	7.24	1.7	**YES**	ASL, BIO
BARIUM	47/47	8	238	SD-58-02	--	--	130	1.8	**YES**	ASL
BERYLLIUM	69/69	0.22 J	2.9	SD-69-02	--	--	NA	NA	**YES**	NSL
CADMIUM	63/69	0.016	296	SD-86-02	0.0074	0.13	0.68	435.3	**YES**	ASL, BIO
CHROMIUM	69/69	9.4	2060 J	SD-86-02	--	--	43.4	47.5	**YES**	ASL, BIO
COBALT	47/47	1.1	37.9	SD-69-02	--	--	10	3.8	**YES**	ASL
COPPER	69/69	7.4 J	147 J	SD-86-02	--	--	18.7	7.9	**YES**	ASL, BIO
LEAD	69/69	4.1	316	SD-40-02	--	--	30.2	10.5	**YES**	ASL, BIO
MERCURY	60/69	0.0079	6.1 L	SD-16-02	0.0066	0.054	0.13	46.9	**YES**	ASL, BIO
MOLYBDENUM	43/47	0.059	4.7	SD-75-02-D	0.07	0.45	NA	NA	**YES**	NSL
NICKEL	69/69	0.67	66.2	SD-50-02	--	--	15.9	4.2	**YES**	ASL, BIO
SELENIUM	52/69	0.33 J	2.8	SD-54-02	0.33	1.04	1	2.8	**YES**	ASL, BIO
SILVER	54/69	0.0088 J	55.8	SD-76-02	0.074	0.46	0.73	76.4	**YES**	ASL, BIO
THALLIUM	25/69	0.059 J	2.3	SD-58-02	0.2	1.78	NA	NA	**YES**	NSL
VANADIUM	47/47	15.8	110 K	SD-76-02	--	--	57	1.9	**YES**	ASL
ZINC	69/69	2	2980	SD-58-02	--	--	121	24.6	**YES**	ASL, BIO
Metals (µg/kg)										
DIBUTYLTIN	2/3	5.5	8.5	SD-40-02	2.8	2.8	NA	NA	**YES**	NSL, BIO

Shading indicates that chemical was retained as a COPC.

1 - See Table 4-1A for sources of sediment ESVs.
2 - The ecological effects quotient is the maximum detected concentration divided by the ESV.
3 - Rationale for COPC selection or for further evaluation.
ASL = Above ESV
BSL = Below ESV
NSL = ESV not available
BIO = Bioaccumulative chemical (retained for food chain modeling)

TABLE 6-6
ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN - SUBSURFACE SEDIMENT (>30-52")
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

PARAMETER	FREQUENCY OF DETECTION	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	SAMPLE CONTAINING MAXIMUM CONCENTRATION	MINIMUM NON-DETECT	MAXIMUM NON-DETECT	ECOLOGICAL SCREENING VALUE (ESV)[1]	ECOLOGICAL EFFECTS QUOTIENT[2]	RETAINED AS A COPC?	RATIONALE[3]
Semivolatile Organics (µg/kg)										
ACENAPHTHENE	10/51	2.2 J	130 J	SD-76-04	0.47	870	6.7	19.4	**YES**	ASL, BIO
ACENAPHTHYLENE	11/51	2.4 J	58	SD-98-04	0.56	870	5.87	9.9	**YES**	ASL, BIO
ANTHRACENE	14/51	0.9 J	110 K	SD-76-04	1.5	870	46.9	2.3	**YES**	ASL, BIO
BENZO(A)ANTHRACENE	12/51	7.2 J	190	SD-98-04	0.61	870	74.8	2.5	**YES**	ASL, BIO
BENZO(A)PYRENE	12/51	5 J	170	SD-98-04	0.49	870	88.8	1.9	**YES**	ASL, BIO
BENZO(B)FLUORANTHENE	13/51	8.5 J	310	SD-98-04	0.76	870	130	2.4	**YES**	ASL, BIO
BENZO(G,H,I)PERYLENE	11/51	22	170	SD-98-04, SD-105-04	0.48	870	67	2.5	**YES**	ASL, BIO
BENZO(K)FLUORANTHENE	3/51	10.25 J	200 J	SD-50-04	0.98	870	70	2.9	**YES**	ASL, BIO
CHRYSENE	15/51	7.3 J	220 J	SD-50-04	0.58	870	108	2.0	**YES**	ASL, BIO
DIBENZO(A,H)ANTHRACENE	7/51	32	83	SD-98-04	0.54	870	6.22	13.3	**YES**	ASL, BIO
FLUORANTHENE	18/51	3.1 J	430	SD-98-04	1.6	870	113	3.8	**YES**	ASL, BIO
FLUORENE	13/51	1.2 J	180 J	SD-76-04	2	870	21.2	8.5	**YES**	ASL, BIO
INDENO(1,2,3-CD)PYRENE	12/51	26	160	SD-98-04	0.5	870	17	9.4	**YES**	ASL, BIO
NAPHTHALENE	11/51	4.7 J	83	SD-105-04	0.42	870	34.6	2.4	**YES**	ASL
PHENANTHRENE	19/51	2.4 J	700	SD-76-04	4.4	870	86.7	8.1	**YES**	ASL, BIO
PYRENE	16/51	3.5 J	480 J	SD-50-04	1.5	870	153	3.1	**YES**	ASL, BIO
TOTAL PAHS	20/51	2.4	2544	SD-98-04	--	--	1610	1.6	**YES**	ASL, BIO
PCBs (µg/kg)										
AROCLOR-1260	6/51	11 J	120	SD-105-04	1.7	44	40	3.0	**YES**	ASL, BIO
TOTAL AROCLOR	6/51	11	120	SD-105-04	--	--	40	3.0	**YES**	ASL, BIO
Metals (mg/kg)										
ANTIMONY	16/51	0.16 J	23.9 L	SD-76-04	0.027	0.27	0.63	37.9	**YES**	ASL
ARSENIC	50/51	0.55	35.9	SD-88-04	0.75	0.75	7.24	5.0	**YES**	ASL, BIO
BARIUM	31/31	4.4	54.1	SD-76-04	--	--	130	0.4	NO	BSL
BERYLLIUM	51/51	0.17	5.6	SD-67-04	--	--	NA	NA	**YES**	NSL
CADMIUM	35/51	0.017 J	33.6	SD-105-04	0.0069	0.14	0.68	49.4	**YES**	ASL, BIO
CHROMIUM	51/51	6 J	597 K	SD-105-04	--	--	43.4	13.8	**YES**	ASL, BIO
COBALT	31/31	0.76	70.8 J	SD-68-04	--	--	10	7.1	**YES**	ASL
COPPER	51/51	1.6	84.1	SD-105-04	--	--	18.7	4.5	**YES**	ASL, BIO
LEAD	51/51	1.5	163	SD-105-04	--	--	30.2	5.4	**YES**	ASL, BIO
MERCURY	35/51	0.0079	1.5	SD-105-04	0.0068	0.057	0.13	11.5	**YES**	ASL, BIO
MOLYBDENUM	22/31	0.052	2.4 J	SD-64-04	0.051	1	NA	NA	**YES**	NSL
NICKEL	51/51	2.7	103 L	SD-88-04	--	--	15.9	6.5	**YES**	ASL, BIO
SELENIUM	40/51	0.42 L	2.1	SD-105-04	0.37	0.86	1	2.1	**YES**	ASL, BIO
SILVER	30/51	0.021 J	9.1	SD-76-04	0.072	0.17	0.73	12.5	**YES**	ASL, BIO
THALLIUM	20/51	0.064 J	20.3	SD-88-04	0.2	0.46	NA	NA	**YES**	NSL
VANADIUM	31/31	6.4 J	48.1	SD-58-04	--	--	57	0.8	NO	BSL
ZINC	51/51	3.8	4370	SD-88-04	--	--	121	36.1	**YES**	ASL, BIO

Shading indicates that chemical was retained as a COPC.

1 - See Table 4-1A for sources of sediment ESVs.
2 - The ecological effects quotient is the maximum detected concentration divided by the ESV.
3 - Rationale for COPC selection or for further evaluation.
ASL = Above ESV
BSL = Below ESV
NSL = ESV not available
BIO = Bioaccumulative chemical (retained for food chain modeling)

TABLE 6-7
DATA SUMMARY FOR ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN IN SURFACE SEDIMENT (0-6")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Maximum Detected Concentration	Average of Positive Results[1]	Overall Average[2]	Ecological Screening Value (ESV)[3]	# Detects Greater Than ESV	Maximum Background Concentration	# Detects Greater Than Maximum Background	Higher Effects Sediment Benchmark	Source of Higher Effects Benchmark	# Detects Greater than Higher Effects Sediment Benchmark
Volatile Organics (µg/kg)										
CARBON DISULFIDE	12	11	8.2	0.851	2	NA	NA	NA		
METHYL TERT-BUTYL ETHER	9	6.0	6.9	NA	0	NA	NA	NA		
Semivolatile Organics (µg/kg)										
1,4-DICHLOROBENZENE	850	280	386	460	1	NA	NA	NA		
BIS(2-ETHYLHEXYL)PHTHALATE	2900	781	771	180	35	730	15	2,647	PEL[4]	1
CARBAZOLE	990	348	524	NA	0	NA	NA	NA		
TOTAL PAHs	63660	7260	6040	1610	63	15350	8	22,800	PEC[5]	4
PCBs (µg/kg)										
TOTAL AROCLORs	54000	1770	1380	40	73	NA	NA	400	MEC[6]	39
Metals (mg/kg)										
ANTIMONY	2320	49.4	23.2	0.63	35	0.48	41	25	ER-M[7]	1
ARSENIC	37.2	8.2	8.2	7.24	61	13.5	1	33.0	PEC[5]	1
BERYLLIUM	6.9	1.7	1.7	NA	0	1.7	56	NA		
CADMIUM	296	11.2	10.9	0.68	88	0.95	86	4.21	PEL[4]	66
CHROMIUM	699	147	147	43.4	85	90.9	70	111	PEC[5]	62
COBALT	28.5	16.4	16.4	10	56	6.3	64	NA		
COPPER	183	90.8	90.8	18.7	95	110	45	108	PEL[4]	45
HEXAVALENT CHROMIUM	13	4.7	1.3	43.4	0	NA	NA	NA		
LEAD	31500	407	407	30.2	88	151	15	112	PEL[4]	52
MERCURY	3.5	0.38	0.36	0.13	79	0.71	6	0.7	PEL[4]	6
MOLYBDENUM	2.3	1.4	1.2	NA	0	0.69	52	NA		
NICKEL	62.8	31.8	31.8	15.9	89	69.4	0	42.8	PEL[4]	14
SELENIUM	3.1	1.5	1.2	1	46	2.1	11	NA		
SILVER	28.6	2.7	2.2	0.73	69	0.59	69	1.77	PEL[4]	44
THALLIUM	2.1	0.27	0.43	NA	0	0.27	6	NA		
VANADIUM	120	48.4	48.4	57	24	14.2	67	NA		
ZINC	636	290	290	121	82	327	56	459	PEC[5]	7
Metals (µg/kg)										
DIBUTYLTIN	11	8.8	5.5	NA	0	NA	NA	NA		

Notes:

NA - Not available.

1 - Average of positive analytical results only.

2 - Average of all analytical results are calculated using half of the detection limit for nondetects.

3 - See Table 4-1A for sources of ESVs.

4 - Probable Effects Level for coastal and marine waters (MacDonald *et al* ., 1996)

5 - Consensus based Probable Effects Concentration for freshwater systems (MacDonald *et al* ., 2000a)

6 - Consensus-based Midrange Effect Concentration (MacDonald *et al.* , 2000b)

7 - Effects range-median (Long and Morgan, 1991)

TABLE 6-8
DATA SUMMARY FOR ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN IN SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Maximum Detected Concentration	Average of Positive Results[1]	Overall Average[2]	Ecological Screening Value (ESV)[3]	# Detects Greater Than ESV	Maximum Background Concentration	# Detects Greater Than Maximum Background	Higher Effects Sediment Benchmark	Source of Higher Effects Benchmark	# Detects Greater than Higher Effects Sediment Benchmark
Volatile Organics (µg/kg)										
CARBON DISULFIDE	19	8.0	7.6	0.851	6	NA	NA	NA		
METHYL TERT-BUTYL ETHER	4	3.5	15.5	NA	0	NA	NA	NA		
Semivolatile Organics (µg/kg)										
1,2-DICHLOROBENZENE	260	260	418	16.5	1	NA	NA	NA		
BIS(2-ETHYLHEXYL)PHTHALATE	3400	1080	848	180	6	NA	NA	2,647	PEL[4]	1
CARBAZOLE	1000	595	495	NA	0	NA	NA	NA		
TOTAL PAHs	118470	11657	8537	1610	40	5060	22	22,800	PEC[5]	9
PCBs (µg/kg)										
TOTAL AROCLOR	14000	1036	613	40	39	NA	NA	400	MEC[6]	19
Metals (mg/kg)										
ANTIMONY	55.1	2.7	1.5	0.63	28	0.32	33	25	ER-M[7]	1
ARSENIC	12.6	7.1	7.0	7.24	37	10.5	10	33.0	PEC[5]	0
BARIUM	236	53.8	53.8	130	1	58.9	19	NA		
BERYLLIUM	6.9	1.8	1.8	NA	0	2	26	NA		
CADMIUM	306	22.0	20.2	0.68	50	0.91	48	4.21	PEL[4]	45
CHROMIUM	2460	293	293	43.4	48	66.8	46	111	PEC[5]	45
COBALT	33	15.9	15.9	10	43	7.4	45	NA		
COPPER	178	70.1	70.1	18.7	56	54	43	108	PEL[4]	15
HEXAVALENT CHROMIUM	1.6	1.6	0.77	43.4	0	NA	NA	NA		
LEAD	1370	131	131	30.2	50	95.5	41	112	PEL[4]	38
MERCURY	3.5	0.60	0.52	0.13	48	0.29	43	0.7	PEL[4]	19
MOLYBDENUM	3.3	1.4	1.2	NA	0	0.51	35	NA		
NICKEL	70.4	34.2	34.2	15.9	63	42.5	26	42.8	PEL[4]	25
SELENIUM	2.6	1.5	1.2	1	39	2.5	1	NA		
SILVER	37.2	5.7	4.8	0.73	46	2.5	39	1.77	PEL[4]	43
THALLIUM	2.1	0.28	0.30	NA	0	0.39	2	NA		
VANADIUM	110	54.3	54.3	57	20	14.5	46	NA		
ZINC	1300	293	293	121	50	209	43	459	PEC[5]	8
Metals (µg/kg)										
DIBUTYLTIN	5	5	2.8	NA	0	NA	NA	NA		

Notes:

NA - Not available.

1 - Average of positive analytical results only.

2 - Average of all analytical results are calculated using half of the detection limit for nondetects.

3 - See Table 4-1A for sources of ESVs.

4 - Probable Effects Level for coastal and marine waters (MacDonald *et al* ., 1996)

5 - Consensus based Probable Effects Concentration for freshwater systems (MacDonald *et al* ., 2000a)

6 - Consensus-based Midrange Effect Concentration (MacDonald *et al.* , 2000b)

7 - Effects range-median (Long and Morgan, 1991)

TABLE 6-9
DATA SUMMARY FOR ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN IN SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Maximum Detected Concentration	Average of Positive Results[1]	Overall Average[2]	Ecological Screening Value (ESV)[3]	# Detects Greater Than ESV	Maximum Background Concentration	# Detects Greater Than Maximum Background	Higher Effects Sediment Benchmark	Source of Higher Effects Benchmark	# Detects Greater than Higher Effects Sediment Benchmark
Volatile Organics (µg/kg)										
CARBON DISULFIDE	11	7.8	5.9	0.851	4	NA	NA	NA		
METHYL TERT-BUTYL ETHER	3	2.5	8.7	NA	0	NA	NA	NA		
Semivolatile Organics (µg/kg)										
BIS(2-ETHYLHEXYL)PHTHALATE	1700	704	527	180	4	NA	NA	2,647	PEL[4]	0
CARBAZOLE	410	405	358	NA	0	NA	NA	NA		
TOTAL PAHs	457300	25090	14390	1610	29	NA	NA	22,800	PEC[5]	8
PCBs (µg/kg)										
TOTAL AROCLOR	1300	389	149	40	25	NA	NA	400	MEC[6]	9
Metals (mg/kg)										
ANTIMONY	132	5.5	2.7	0.63	23	0.096	32	25	ER-M[7]	1
ARSENIC	12.3	6.3	6.2	7.24	22	6.9	28	33.0	PEC[5]	0
BARIUM	238	52.4	52.4	130	1	NA	NA	NA		
BERYLLIUM	2.9	1.8	1.8	NA	0	1.5	50	NA		
CADMIUM	296	21.7	19.8	0.68	44	0.36	51	4.21	PEL[4]	32
CHROMIUM	2060	309	309	43.4	42	33.2	47	111	PEC[5]	32
COBALT	37.9	14.0	14.0	10	34	NA	NA	NA		
COPPER	147	47.5	47.5	18.7	49	16.2	53	108	PEL[4]	8
LEAD	316	89.4	89.4	30.2	37	18.7	44	112	PEL[4]	24
MERCURY	6.1	0.94	0.82	0.13	41	0.053	45	0.7	PEL[4]	24
MOLYBDENUM	4.7	1.4	1.3	NA	0	NA	NA	NA		
NICKEL	66.2	30.5	30.5	15.9	58	27.6	34	42.8	PEL[4]	18
SELENIUM	2.8	1.4	1.2	1	34	1.3	25	NA		
SILVER	55.8	10.0	7.8	0.73	40	0.078	46	1.77	PEL[4]	37
THALLIUM	2.3	0.37	0.29	NA	0	0.21	13	NA		
VANADIUM	110	45.2	45.2	57	9	NA	NA	NA		
ZINC	2980	288	288	121	35	95.9	38	459	PEC[5]	17
Metals (µg/kg)										
DIBUTYLTIN	8.5	7.0	5.1	NA	0	NA	NA	NA		

Notes:

NA - Not available.

1 - Average of positive analytical results only.

2 - Average of all analytical results are calculated using half of the detection limit for nondetects.

3 - See Table 4-1A for sources of ESVs.

4 - Probable Effects Level for coastal and marine waters (MacDonald *et al* ., 1996)

5 - Consensus based Probable Effects Concentration for freshwater systems (MacDonald *et al* ., 2000a)

6 - Consensus-based Midrange Effect Concentration (MacDonald *et al.* , 2000b)

7 - Effects range-median (Long and Morgan, 1991)

TABLE 6-10
DATA SUMMARY FOR ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN IN SUBSURFACE SEDIMENT (>30-52")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Maximum Detected Concentration	Average of Positive Results[1]	Overall Average[2]	Ecological Screening Value (ESV)[3]	# Detects Greater Than ESV	Maximum Background Concentration	# Detects Greater Than Maximum Background	Higher Effects Sediment Benchmark	Source of Higher Effects Benchmark	# Detects Greater than Higher Effects Sediment Benchmark
Semivolatile Organics (µg/kg)										
TOTAL PAHs	2544	894	351	1610	4	NA	NA	22,800	PEC[5]	0
PCBs (µg/kg)										
TOTAL AROCLOR	120	44.3	5.2	40	2	NA	NA	400	MEC[6]	0
Metals (mg/kg)										
ANTIMONY	23.9	1.8	0.63	0.63	2	0.079	16	25	ER-M[7]	0
ARSENIC	35.9	5.3	5.2	7.24	10	6.8	10	33.0	PEC[5]	1
BERYLLIUM	5.6	1.7	1.7	NA	0	1.4	32	NA		
CADMIUM	33.6	3.5	2.4	0.68	17	0.34	18	4.21	PEL[4]	8
CHROMIUM	597	59.7	59.7	43.4	16	32.9	18	111	PEC[5]	8
COBALT	70.8	12.2	12.2	10	14	NA	NA	NA		
COPPER	84.1	18.9	18.9	18.7	17	14	28	108	PEL[4]	0
LEAD	163	18.9	18.9	30.2	10	18.6	14	112	PEL[4]	1
MERCURY	1.5	0.13	0.10	0.13	9	0.051	15	0.7	PEL[4]	1
MOLYBDENUM	2.4	1.0	0.73	NA	0	NA	NA	NA		
NICKEL	103	21.7	21.7	15.9	31	27.3	10	42.8	PEL[4]	3
SELENIUM	2.1	1.0	0.80	1	11	1.1	8	NA		
SILVER	9.1	1.5	0.91	0.73	13	0.07	22	1.77	PEL[4]	10
THALLIUM	20.3	1.2	0.54	NA	0	0.19	5	NA		
ZINC	4370	159	159	121	9	94.7	12	459	PEC[5]	1

Notes:

NA - Not available.

1 - Average of positive analytical results only.

2 - Average of all analytical results are calculated using half of the detection limit for nondetects.

3 - See Table 4-1A for sources of ESVs.

4 - Probable Effects Level for coastal and marine waters (MacDonald *et al* ., 1996)

5 - Consensus based Probable Effects Concentration for freshwater systems (MacDonald *et al* ., 2000a)

6 - Consensus-based Midrange Effect Concentration (MacDonald *et al.* , 2000b)

7 - Effects range-median (Long and Morgan, 1991)

Table 6-11
Acid Volatile Sulfide And Simultaneously Extracted Metals Data
Lockheed Martin, Middle River Complex
Middle River, Maryland

Surface Sediment, 0-6 inches

Sample ID	**SD-85-SS**	**SD-87-SS**	**SD-88-SS**	**SD-89-SS**	**SD-90-SS**	**SD-99-SS**	**SD-101-SS**
Parameter							
Acid Volatile Sulfide (µmol/g)	1.5	18.4	3.3	11.9	22.6 J	0.41 U	44.6 J
Cadmium (µmol/g)	0.085 J	0.25	0.15	0.087	0.034 J	0.0035	0.033 J
Chromium (µmol/g)	0.61 J	1.6	2.5	1.7	0.71 J	0.064	1 J
Copper (µmol/g)	0.12	0.011 B	0.53	0.68	0.086 J	0.12	0.48 J
Lead (µmol/g)	0.16 J	0.52	0.63	0.5	0.36 J	0.037	0.44 J
Nickel (µmol/g)	0.096 J	0.14	0.19	0.16	0.17 J	0.077	0.2 J
Silver (µmol/g)	0.00072	0.00036 U	0.011	0.0093	0.0005 UJ	0.00035 U	0.0011 J
Zinc (µmol/g)	1.2 J	6.8	4.1	4	3.9 J	0.43	3.7 J
Total Organic Carbon (%)	0.989	5.81	3.16	2.86	2.8 J	3.13	5.03 J
Total SEM[(1)]	1.66	7.72	5.61	5.43	4.55	0.67	4.85
SEM - AVS	0.16	-10.68	2.31	-6.47	-18.05	0.46	-39.75
(SEM - AVS)/f_{oc}[(2)]	16.3	-184	73.0	-226	-645	14.8	-790

Subsurface Sediment, 6-18 inches

Sample ID	**SD-85-01**	**SD-87-01**	**SD-88-01**	**SD-89-01**	**SD-90-01**	**SD-99-01**	**SD-101-01**
Parameter							
Acid Volatile Sulfide (µmol/g)	0.23 U	2.4	8.8	4.6	19	0.38 U	10.5
Cadmium (µmol/g)	0.00026 J	0.48	0.12	0.12	0.085	0.0014 J	0.084
Chromium (µmol/g)	0.016 J	4.6	2.4	2.5	1.6	0.033	1.5
Copper (µmol/g)	0.044	0.18	0.52	0.41	0.037	0.06	0.41
Lead (µmol/g)	0.015 J	0.73	0.75	0.58	0.66	0.024	0.51
Nickel (µmol/g)	0.035 J	0.16	0.2	0.18	0.18	0.047	0.17
Silver (µmol/g)	0.0002 U	0.001 J	0.0083	0.0063	0.00095 J	0.00033 U	0.004
Zinc (µmol/g)	0.11 J	6.9	4.1	4	4.2	0.37	3.4
Total Organic Carbon (%)	2.55	2.88	3.25	2.73	3.59	3.49	2.6
Total SEM[(1)]	0.20	8.45	5.69	5.29	5.16	0.50	4.58
SEM - AVS	0.09	6.05	-3.11	0.69	-13.84	0.31	-5.92
(SEM - AVS)/f_{oc}[(2)]	3.5	**210**	-95.6	25.4	-385	9.0	-228

Subsurface Sediment, 18-30 inches

Sample ID	**SD-85-02**	**SD-87-02**	**SD-88-02**	**SD-89-02**	**SD-90-02**	**SD-99-02**	**SD-101-02**
Parameter							
Acid Volatile Sulfide (µmol/g)	0.29 U	4.4	5	0.74 J	18.7	0.41 U	4.4
Cadmium (µmol/g)	0.0007 J	1.4	0.25	0.19	0.22	0.0013 J	0.27
Chromium (µmol/g)	0.0089 J	15.4	5.6	3.9	5.9	0.032	4.9
Copper (µmol/g)	0.03	0.32	0.3	0.48	0.0021 U	0.023 J	0.43
Lead (µmol/g)	0.011 J	1	0.5	0.68	0.47	0.017	0.47
Nickel (µmol/g)	0.044 J	0.29	0.15	0.2	0.19	0.039 J	0.21
Silver (µmol/g)	0.00025 U	0.0048	0.0072	0.014	0.00066 J	0.00036 U	0.0067
Zinc (µmol/g)	0.35 J	9.3	6	4.1	5.3	0.43	4.2
Total Organic Carbon (%)	2.55	2.87	3.59	3.71	3.59	3.49	2.84
Total SEM[(1)]	0.44	12.31	7.20	5.66	6.18	0.51	5.58
SEM - AVS	0.29	7.91	2.20	4.92	-12.52	0.31	1.18
(SEM - AVS)/f_{oc}[(2)]	11.4	**276**	61.4	**133**	-349	8.8	41.7

Table 6-11
Acid Volatile Sulfide And Simultaneously Extracted Metals Data
Lockheed Martin, Middle River Complex
Middle River, Maryland

Subsurface Sediment, 30-52 inches

Sample ID	**SD-85-04**	**SD-87-04**	**SD-88-04**	**SD-89-04**	**SD-90-04**	**SD-99-04**	**SD-101-04**
Parameter							
Acid Volatile Sulfide (µmol/g)	0.26 U	0.38 U	0.31 U	0.32 U	0.27 U	5.7	0.33 J
Cadmium (µmol/g)	0.00062 J	0.035	0.012	0.025	0.0068	0.0014 J	0.012
Chromium (µmol/g)	0.0057 J	0.52	0.19	0.48	0.18	0.038	0.29
Copper (µmol/g)	0.013 J	0.26	0.11	0.11	0.064	0.042	0.053
Lead (µmol/g)	0.0071 J	0.2	0.065	0.087	0.033	0.019	0.057
Nickel (µmol/g)	0.03 J	0.13	0.052	0.042	0.024 J	0.049	0.035
Silver (µmol/g)	0.00022 U	0.0022 J	0.0019 J	0.0038	0.0055	0.00032 U	0.001 J
Zinc (µmol/g)	0.24 J	1.2	0.48	0.7	0.42	0.49	0.46
Total Organic Carbon (%)[3]	2.55	2.87	3.25	2.73	3.59	3.49	2.6
Total SEM[1]	0.29	1.83	0.72	0.97	0.55	0.60	0.62
SEM - AVS	0.16	1.64	0.56	0.81	0.42	-5.10	0.29
(SEM - AVS)/f_{oc}[2]	6.3	57.0	17.4	29.5	11.6	-146	11.1

Abbreviations:
AVS - Acid Volatile Sulfide
SEM - Simultaneously extracted metal
TOC - Total organic carbon
B - Blank contamination
J - Estimated
f_{oc} - Fraction of organic carbon in sediment = %TOC / 100

Notes;
1 - One-half the detection limit for nondetected results was used in the calculation of total SEM. B-qualified data were treated as non-detects; i.e., one-half the value was used in the calculation of total SEM. In accordance with USEPA (2005), chromium was not included in the calculation total SEM, and the molar concentration of silver was divided by 2.
2 - Toxicity is not likely when the (ΣSEM-AVS)/f_{OC} is less than 130 µmol/g (USEPA, 2005); cells above are shaded where (SEM - AVS)/foc value is greater than 130 µmol/g.
3 - TOC not available for 30-52 inch interval, so the lowest TOC value from depths of 6-18 inches and 18-30 inches was used for each sample location.

TABLE 6-12

TERRESTRIAL FOOD CHAIN MODEL - CONSERVATIVE SCENARIO
PISCIVOROUS RECEPTORS, SURFACE SEDIMENT (0-6")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Piscivorous Receptor EEQs[1]					
	Kingfisher		Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Volatile Organics						
1,3-DICHLOROBENZENE	NV	NV	NV	NV	NV	NV
1,4-DICHLOROBENZENE	NV	NV	NV	NV	1.8E-05	1.8E-06
Semivolatile Organics						
1,3-DICHLOROBENZENE	NV	NV	NV	NV	NV	NV
1,4-DICHLOROBENZENE	NV	NV	NV	NV	1.8E-05	1.8E-06
ACENAPHTHENE	2.5E-02	2.5E-03	3.0E-02	3.0E-03	7.0E-04	1.3E-04
ACENAPHTHYLENE	2.5E-02	2.5E-03	3.0E-02	3.0E-03	7.0E-04	1.3E-04
ANTHRACENE	7.3E-02	7.3E-03	8.7E-02	8.7E-03	2.1E-03	3.8E-04
BENZO(A)ANTHRACENE	1.6E-01	1.6E-02	2.0E-01	2.0E-02	4.9E-01	7.9E-03
BENZO(A)PYRENE	1.4E-01	1.4E-02	1.7E-01	1.7E-02	4.2E-01	6.7E-03
BENZO(B)FLUORANTHENE	1.8E-01	1.8E-02	2.2E-01	2.2E-02	5.5E-01	8.8E-03
BENZO(G,H,I)PERYLENE	9.8E-02	9.8E-03	1.2E-01	1.2E-02	2.9E-01	4.7E-03
BENZO(K)FLUORANTHENE	8.6E-02	8.6E-03	1.0E-01	1.0E-02	2.6E-01	4.1E-03
CHRYSENE	1.7E-01	1.7E-02	2.0E-01	2.0E-02	5.1E-01	8.2E-03
DIBENZO(A,H)ANTHRACENE	2.3E-02	2.3E-03	2.7E-02	2.7E-03	6.8E-02	1.1E-03
FLUORANTHENE	3.2E-01	3.2E-02	3.8E-01	3.8E-02	8.9E-03	1.6E-03
FLUORENE	4.4E-02	4.4E-03	5.3E-02	5.3E-03	1.2E-03	2.3E-04
INDENO(1,2,3-CD)PYRENE	1.1E-01	1.1E-02	1.3E-01	1.3E-02	3.2E-01	5.2E-03
PHENANTHRENE	3.8E-01	3.8E-02	4.5E-01	4.5E-02	1.1E-02	2.0E-03
PYRENE	4.1E-01	4.1E-02	4.9E-01	4.9E-02	1.2E+00	2.0E-02
PCBs						
AROCLOR-1254	NA	NA	1.8E-02	1.8E-03	6.1E-02	6.1E-03
AROCLOR-1260	NA	NA	2.4E+00	2.4E-01	8.2E+00	8.2E-01
AROCLOR-1262	4.8E+00	4.8E-01	5.2E+00	5.2E-01	9.7E+00	9.7E-01
AROCLOR-1268	4.2E-01	4.2E-02	4.5E-01	4.5E-02	8.4E-01	8.4E-02
TOTAL AROCLOR	5.3E+00	5.3E-01	8.0E+00	8.0E-01	1.9E+01	1.9E+00
Metals						
ARSENIC	NA	NA	1.3E-01	6.6E-02	3.7E-01	8.5E-02
CADMIUM	NA	NA	1.6E+00	3.7E-01	4.0E+00	4.4E-01
CHROMIUM	9.0E-02	1.5E-02	2.2E+00	3.7E-01	3.1E+00	1.3E-01
COPPER	2.9E-01	3.3E-02	6.7E-01	7.8E-02	5.0E-01	3.4E-02
HEXAVALENT CHROMIUM	NV	NV	NV	NV	8.7E-02	2.1E-02
LEAD	6.8E-02	2.5E-03	1.5E+02	5.6E+00	7.0E+01	1.8E+00
MERCURY	1.1E+01	1.1E+00	1.6E+01	1.6E+00	2.8E+00	5.6E-01
NICKEL	NA	NA	7.5E-02	2.7E-02	3.8E-01	4.4E-02
SELENIUM	1.4E+00	4.8E-01	1.5E+00	5.5E-01	2.3E+00	5.0E-01
SILVER	NA	NA	1.1E-01	3.8E-03	4.9E-02	2.5E-03
ZINC	8.6E-02	3.3E-02	1.7E-01	6.5E-02	1.4E-01	3.7E-02
DIBUTYLTIN	2.4E-03	9.5E-04	2.5E-03	1.0E-03	5.2E-04	3.5E-04

Cells are shaded if the value is greater than 1.0.
NV - No value; EEQ could not be calculated because NOAEL and LOAEL not avaliable.
NA - EEQ not applicable. Chemical was not detected in fish tissue, and sediment ingestion was assumed to be negligible for piscivorous birds represented by the kingfisher.
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient
1 - Ecological effects quotients (EEQs) shown in this table are based on NOAELs and LOAELs.

TABLE 6-13

TERRESTRIAL FOOD CHAIN MODEL - CONSERVATIVE SCENARIO
PISCIVOROUS RECEPTORS, SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Piscivorous Receptor EEQs[(1)]					
	Kingfisher		Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Semivolatile Organics						
1,2-DICHLOROBENZENE	NV	NV	NV	NV	4.7E-04	4.7E-05
1,4-DICHLOROBENZENE	NV	NV	NV	NV	1.3E-03	1.3E-04
ACENAPHTHENE	9.5E-02	9.5E-03	1.1E-01	1.1E-02	2.6E-03	4.7E-04
ACENAPHTHYLENE	1.1E-02	1.1E-03	1.3E-02	1.3E-03	3.0E-04	5.5E-05
ANTHRACENE	1.7E-01	1.7E-02	2.0E-01	2.0E-02	4.7E-03	8.7E-04
BENZO(A)ANTHRACENE	4.7E-01	4.7E-02	5.5E-01	5.5E-02	1.4E+00	2.2E-02
BENZO(A)PYRENE	3.6E-01	3.6E-02	4.2E-01	4.2E-02	1.0E+00	1.6E-02
BENZO(B)FLUORANTHENE	3.9E-01	3.9E-02	4.6E-01	4.6E-02	1.1E+00	1.8E-02
BENZO(G,H,I)PERYLENE	1.9E-01	1.9E-02	2.2E-01	2.2E-02	5.5E-01	8.8E-03
BENZO(K)FLUORANTHENE	2.9E-01	2.9E-02	3.4E-01	3.4E-02	8.3E-01	1.3E-02
CHRYSENE	4.7E-01	4.7E-02	5.5E-01	5.5E-02	1.4E+00	2.2E-02
DIBENZO(A,H)ANTHRACENE	3.1E-02	3.1E-03	3.6E-02	3.6E-03	9.0E-02	1.4E-03
FLUORANTHENE	7.9E-01	7.9E-02	9.2E-01	9.2E-02	2.1E-02	4.0E-03
FLUORENE	7.9E-02	7.9E-03	9.2E-02	9.2E-03	2.1E-03	4.0E-04
INDENO(1,2,3-CD)PYRENE	2.2E-01	2.2E-02	2.6E-01	2.6E-02	6.4E-01	1.0E-02
PHENANTHRENE	5.9E-01	5.9E-02	6.9E-01	6.9E-02	1.6E-02	3.0E-03
PYRENE	9.5E-01	9.5E-02	1.1E+00	1.1E-01	2.7E+00	4.4E-02
PCBs						
AROCLOR-1248	NV	NV	NV	NV	2.4E+00	2.4E-01
AROCLOR-1260	NA	NA	6.2E-01	6.2E-02	2.1E+00	2.1E-01
AROCLOR-1262	4.8E+00	4.8E-01	5.2E+00	5.2E-01	9.7E+00	9.7E-01
AROCLOR-1268	4.2E-01	4.2E-02	4.5E-01	4.5E-02	8.4E-01	8.4E-02
TOTAL AROCLOR	5.3E+00	5.3E-01	6.2E+00	6.2E-01	1.3E+01	1.3E+00
Metals						
ARSENIC	NA	NA	4.5E-02	2.2E-02	1.3E-01	2.9E-02
CADMIUM	NA	NA	1.7E+00	3.9E-01	4.1E+00	4.6E-01
CHROMIUM	9.0E-02	1.5E-02	7.5E+00	1.3E+00	1.1E+01	4.4E-01
COPPER	2.9E-01	3.3E-02	6.6E-01	7.6E-02	4.9E-01	3.3E-02
HEXAVALENT CHROMIUM	NV	NV	NV	NV	1.1E-02	2.6E-03
LEAD	6.8E-02	2.5E-03	6.8E+00	2.5E-01	3.0E+00	7.7E-02
MERCURY	1.1E+01	1.1E+00	1.6E+01	1.6E+00	2.8E+00	5.6E-01
NICKEL	NA	NA	8.4E-02	3.0E-02	4.3E-01	4.9E-02
SELENIUM	1.4E+00	4.8E-01	1.5E+00	5.4E-01	2.3E+00	4.9E-01
SILVER	NA	NA	1.5E-01	4.9E-03	6.4E-02	3.3E-03
ZINC	8.6E-02	3.3E-02	2.5E-01	9.6E-02	2.4E-01	6.0E-02
DIBUTYLTIN	1.1E-03	4.3E-04	1.2E-03	4.6E-04	2.4E-04	1.6E-04

Cells are shaded if the value is greater than 1.0.
NV - No value; EEQ could not be calculated because NOAEL and LOAEL not avaliable.
NA - EEQ not applicable. Chemical was not detected in fish tissue, and sediment ingestion was assumed to be negligible for piscivorous birds represented by the kingfisher.
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient
1 - Ecological effects quotients (EEQs) shown in this table are based on NOAELs and LOAELs.

TABLE 6-14

TERRESTRIAL FOOD CHAIN MODEL - CONSERVATIVE SCENARIO
PISCIVOROUS RECEPTORS, SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Piscivorous Receptor EEQs[1]					
	Kingfisher		Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Semivolatile Organics						
ACENAPHTHENE	4.4E-01	4.4E-02	5.2E-01	5.2E-02	1.2E-02	2.2E-03
ACENAPHTHYLENE	1.9E-02	1.9E-03	2.2E-02	2.2E-03	5.0E-04	9.3E-05
ANTHRACENE	7.7E-01	7.7E-02	8.9E-01	8.9E-02	2.1E-02	3.8E-03
BENZO(A)ANTHRACENE	1.5E+00	1.5E-01	1.8E+00	1.8E-01	4.4E+00	7.1E-02
BENZO(A)PYRENE	1.2E+00	1.2E-01	1.4E+00	1.4E-01	3.5E+00	5.6E-02
BENZO(B)FLUORANTHENE	1.3E+00	1.3E-01	1.5E+00	1.5E-01	3.6E+00	5.8E-02
BENZO(G,H,I)PERYLENE	4.4E-01	4.4E-02	5.2E-01	5.2E-02	1.3E+00	2.1E-02
BENZO(K)FLUORANTHENE	1.0E+00	1.0E-01	1.2E+00	1.2E-01	2.9E+00	4.7E-02
CHRYSENE	1.5E+00	1.5E-01	1.7E+00	1.7E-01	4.3E+00	6.9E-02
DIBENZO(A,H)ANTHRACENE	5.6E-02	5.6E-03	6.6E-02	6.6E-03	1.6E-01	2.6E-03
FLUORANTHENE	3.1E+00	3.1E-01	3.7E+00	3.7E-01	8.5E-02	1.6E-02
FLUORENE	4.0E-01	4.0E-02	4.7E-01	4.7E-02	1.1E-02	2.0E-03
INDENO(1,2,3-CD)PYRENE	4.8E-01	4.8E-02	5.6E-01	5.6E-02	1.4E+00	2.2E-02
PHENANTHRENE	3.1E+00	3.1E-01	3.6E+00	3.6E-01	8.3E-02	1.5E-02
PYRENE	3.1E+00	3.1E-01	3.6E+00	3.6E-01	8.9E+00	1.4E-01
PCBs						
AROCLOR-1248	NV	NV	NV	NV	4.5E-01	4.5E-02
AROCLOR-1260	NA	NA	5.8E-02	5.8E-03	2.0E-01	2.0E-02
AROCLOR-1262	4.8E+00	4.8E-01	5.2E+00	5.2E-01	9.7E+00	9.7E-01
AROCLOR-1268	4.2E-01	4.2E-02	4.5E-01	4.5E-02	8.4E-01	8.4E-02
TOTAL AROCLOR	5.3E+00	5.3E-01	5.7E+00	5.7E-01	1.1E+01	1.1E+00
Metals						
ARSENIC	NA	NA	4.4E-02	2.2E-02	1.2E-01	2.8E-02
CADMIUM	NA	NA	1.6E+00	3.7E-01	4.0E+00	4.4E-01
CHROMIUM	9.0E-02	1.5E-02	6.3E+00	1.1E+00	9.0E+00	3.7E-01
COPPER	2.9E-01	3.3E-02	6.0E-01	6.9E-02	4.3E-01	2.9E-02
LEAD	6.8E-02	2.5E-03	1.6E+00	5.9E-02	7.2E-01	1.8E-02
MERCURY	1.1E+01	1.1E+00	1.9E+01	1.9E+00	3.6E+00	7.3E-01
NICKEL	NA	NA	7.9E-02	2.9E-02	4.0E-01	4.6E-02
SELENIUM	1.4E+00	4.8E-01	1.5E+00	5.4E-01	2.3E+00	5.0E-01
SILVER	NA	NA	2.2E-01	7.4E-03	9.6E-02	4.9E-03
ZINC	8.6E-02	3.3E-02	4.5E-01	1.7E-01	4.7E-01	1.2E-01
DIBUTYLTIN	1.8E-03	7.3E-04	2.0E-03	7.8E-04	4.0E-04	2.7E-04

Cells are shaded if the value is greater than 1.0.
NV - No value; EEQ could not be calculated because NOAEL and LOAEL not avaliable.
NA - EEQ not applicable. Chemical was not detected in fish tissue, and sediment ingestion was assumed to be negligible for piscivorous birds represented by the kingfisher.
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient
1 - Ecological effects quotients (EEQs) shown in this table are based on NOAELs and LOAELs.

TABLE 6-15

TERRESTRIAL FOOD CHAIN MODEL - CONSERVATIVE SCENARIO
PISCIVOROUS RECEPTORS, SUBSURFACE SEDIMENT (>30-52")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Piscivorous Receptor EEQs[(1)]					
	Kingfisher		Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Semivolatile Organics						
ACENAPHTHENE	1.2E-02	1.2E-03	1.3E-02	1.3E-03	2.9E-04	5.3E-05
ACENAPHTHYLENE	5.1E-03	5.1E-04	5.7E-03	5.7E-04	1.3E-04	2.4E-05
ANTHRACENE	9.8E-03	9.8E-04	1.1E-02	1.1E-03	2.4E-04	4.5E-05
BENZO(A)ANTHRACENE	1.7E-02	1.7E-03	1.9E-02	1.9E-03	4.5E-02	7.2E-04
BENZO(A)PYRENE	1.5E-02	1.5E-03	1.7E-02	1.7E-03	4.0E-02	6.4E-04
BENZO(B)FLUORANTHENE	2.8E-02	2.8E-03	3.1E-02	3.1E-03	7.3E-02	1.2E-03
BENZO(G,H,I)PERYLENE	1.5E-02	1.5E-03	1.7E-02	1.7E-03	4.0E-02	6.4E-04
BENZO(K)FLUORANTHENE	1.8E-02	1.8E-03	2.0E-02	2.0E-03	4.7E-02	7.6E-04
CHRYSENE	2.0E-02	2.0E-03	2.2E-02	2.2E-03	5.2E-02	8.3E-04
DIBENZO(A,H)ANTHRACENE	7.4E-03	7.4E-04	8.2E-03	8.2E-04	2.0E-02	3.1E-04
FLUORANTHENE	3.8E-02	3.8E-03	4.2E-02	4.2E-03	9.5E-04	1.8E-04
FLUORENE	1.6E-02	1.6E-03	1.8E-02	1.8E-03	4.0E-04	7.3E-05
INDENO(1,2,3-CD)PYRENE	1.4E-02	1.4E-03	1.6E-02	1.6E-03	3.8E-02	6.0E-04
PHENANTHRENE	6.2E-02	6.2E-03	6.9E-02	6.9E-03	1.5E-03	2.9E-04
PYRENE	4.3E-02	4.3E-03	4.7E-02	4.7E-03	1.1E-01	1.8E-03
PCBs						
AROCLOR-1260	NA	NA	5.3E-03	5.3E-04	1.8E-02	1.8E-03
AROCLOR-1262	4.8E+00	4.8E-01	5.2E+00	5.2E-01	9.7E+00	9.7E-01
AROCLOR-1268	4.2E-01	4.2E-02	4.5E-01	4.5E-02	8.4E-01	8.4E-02
TOTAL AROCLOR	5.3E+00	5.3E-01	5.6E+00	5.6E-01	1.1E+01	1.1E+00
Metals						
ARSENIC	NA	NA	1.3E-01	6.4E-02	3.6E-01	8.2E-02
CADMIUM	NA	NA	1.8E-01	4.2E-02	4.5E-01	5.0E-02
CHROMIUM	9.0E-02	1.5E-02	1.9E+00	3.2E-01	2.7E+00	1.1E-01
COPPER	2.9E-01	3.3E-02	4.7E-01	5.5E-02	3.1E-01	2.1E-02
LEAD	6.8E-02	2.5E-03	8.7E-01	3.2E-02	3.8E-01	9.5E-03
MERCURY	1.1E+01	1.1E+00	1.4E+01	1.4E+00	2.1E+00	4.3E-01
NICKEL	NA	NA	1.2E-01	4.4E-02	6.3E-01	7.2E-02
SELENIUM	1.4E+00	4.8E-01	1.5E+00	5.4E-01	2.3E+00	4.9E-01
SILVER	NA	NA	3.6E-02	1.2E-03	1.6E-02	8.0E-04
ZINC	8.6E-02	3.3E-02	6.2E-01	2.4E-01	6.6E-01	1.7E-01

Cells are shaded if the value is greater than 1.0.
NV - No value; EEQ could not be calculated because NOAEL and LOAEL not avaliable.
NA - EEQ not applicable. Chemical was not detected in fish tissue, and sediment ingestion was assumed to be negligible for piscivorous birds represented by the kingfisher.
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient
1 - Ecological effects quotients (EEQs) shown in this table are based on NOAELs and LOAELs.

TABLE 6-16

TERRESTRIAL FOOD CHAIN MODEL - AVERAGE SCENARIO
PISCIVOROUS RECEPTORS, SURFACE SEDIMENT (0-6")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Piscivorous Receptor EEQs[(1)]					
	Kingfisher		Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Semivolatile Organics						
PYRENE	3.6E-02	3.6E-03	4.6E-02	4.6E-03	4.7E-02	7.5E-04
PCBs						
AROCLOR-1260	NA	NA	5.4E-02	5.4E-03	7.8E-02	7.8E-03
AROCLOR-1262	9.1E-01	9.1E-02	1.0E+00	1.0E-01	7.9E-01	7.9E-02
TOTAL AROCLOR	1.0E+00	1.0E-01	1.2E+00	1.2E-01	9.8E-01	9.8E-02
Metals						
CADMIUM	NA	NA	5.3E-02	1.2E-02	5.4E-02	6.1E-03
CHROMIUM	3.0E-02	5.1E-03	4.3E-01	7.2E-02	2.5E-01	1.0E-02
LEAD	2.9E-02	1.1E-03	1.8E+00	6.6E-02	3.4E-01	8.5E-03
MERCURY	3.9E+00	3.9E-01	4.8E+00	4.8E-01	3.0E-01	5.9E-02
SELENIUM	7.9E-01	2.8E-01	9.2E-01	3.3E-01	5.5E-01	1.2E-01

Cells are shaded if the value is greater than 1.0
NA - EEQ not applicable. Chemical was not detected in fish tissue, and sediment ingestion was assumed to be negligible for piscivorous birds represented by the kingfisher.
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient
1 - Ecological effects quotients (EEQs) shown in this table are based on NOAELs and LOAELs.

TABLE 6-17

TERRESTRIAL FOOD CHAIN MODEL - AVERAGE SCENARIO
PISCIVOROUS RECEPTORS, SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Piscivorous Receptor EEQs[(1)]					
	Kingfisher		Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Semivolatile Organics						
BENZO(A)ANTHRACENE	2.9E-02	2.9E-03	3.6E-02	3.6E-03	3.6E-02	5.8E-04
BENZO(A)PYRENE	2.7E-02	2.7E-03	3.4E-02	3.4E-03	3.4E-02	5.5E-04
BENZO(B)FLUORANTHENE	3.5E-02	3.5E-03	4.3E-02	4.3E-03	4.3E-02	6.9E-04
CHRYSENE	3.2E-02	3.2E-03	3.9E-02	3.9E-03	3.9E-02	6.3E-04
PYRENE	6.0E-02	6.0E-03	7.4E-02	7.4E-03	7.5E-02	1.2E-03
PCBs						
AROCLOR-1248	NV	NV	NV	NV	2.9E-02	2.9E-03
AROCLOR-1260	NA	NA	2.3E-02	2.3E-03	3.3E-02	3.3E-03
AROCLOR-1262	9.1E-01	9.1E-02	1.0E+00	1.0E-01	7.9E-01	7.9E-02
TOTAL AROCLOR	1.0E+00	1.0E-01	1.2E+00	1.2E-01	9.3E-01	9.3E-02
Metals						
CADMIUM	NA	NA	9.7E-02	2.2E-02	1.0E-01	1.1E-02
CHROMIUM	3.0E-02	5.1E-03	8.1E-01	1.4E-01	4.8E-01	2.0E-02
LEAD	2.9E-02	1.1E-03	6.0E-01	2.2E-02	1.1E-01	2.8E-03
MERCURY	3.9E+00	3.9E-01	4.9E+00	4.9E-01	3.1E-01	6.3E-02
SELENIUM	7.9E-01	2.8E-01	9.2E-01	3.3E-01	5.5E-01	1.2E-01

Cells are shaded if the value is greater than 1.0
NV - No value; EEQ could not be calculated because NOAEL and LOAEL not avaliable.
NA - EEQ not applicable. Chemical was not detected in fish tissue, and sediment ingestion was assumed to be negligible for piscivorous birds represented by the kingfisher.
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient
1 - Ecological effects quotients (EEQs) shown in this table are based on NOAELs and LOAELs.

TABLE 6-18

TERRESTRIAL FOOD CHAIN MODEL - AVERAGE SCENARIO
PISCIVOROUS RECEPTORS, SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Piscivorous Receptor EEQs[(1)]					
	Kingfisher		Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Semivolatile Organics						
BENZO(A)ANTHRACENE	4.5E-02	4.5E-03	5.6E-02	5.6E-03	5.6E-02	9.0E-04
BENZO(A)PYRENE	4.1E-02	4.1E-03	5.1E-02	5.1E-03	5.1E-02	8.2E-04
BENZO(B)FLUORANTHENE	5.2E-02	5.2E-03	6.4E-02	6.4E-03	6.4E-02	1.0E-03
BENZO(G,H,I)PERYLENE	2.6E-02	2.6E-03	3.2E-02	3.2E-03	3.2E-02	5.1E-04
BENZO(K)FLUORANTHENE	2.6E-02	2.6E-03	3.2E-02	3.2E-03	3.2E-02	5.1E-04
CHRYSENE	4.9E-02	4.9E-03	6.1E-02	6.1E-03	6.1E-02	9.8E-04
FLUORANTHENE	8.7E-02	8.7E-03	1.1E-01	1.1E-02	1.0E-03	1.9E-04
INDENO(1,2,3-CD)PYRENE	2.5E-02	2.5E-03	3.1E-02	3.1E-03	3.1E-02	5.0E-04
PHENANTHRENE	6.5E-02	6.5E-03	8.0E-02	8.0E-03	7.5E-04	1.4E-04
PYRENE	9.4E-02	9.4E-03	1.2E-01	1.2E-02	1.2E-01	1.9E-03
PCBs						
AROCLOR-1262	9.1E-01	9.1E-02	1.0E+00	1.0E-01	7.9E-01	7.9E-02
TOTAL AROCLOR	1.0E+00	1.0E-01	1.2E+00	1.2E-01	9.1E-01	9.1E-02
Metals						
CADMIUM	NA	NA	9.6E-02	2.2E-02	9.9E-02	1.1E-02
CHROMIUM	3.0E-02	5.1E-03	8.6E-01	1.5E-01	5.0E-01	2.1E-02
LEAD	2.9E-02	1.1E-03	4.2E-01	1.5E-02	7.6E-02	1.9E-03
MERCURY	3.9E+00	3.9E-01	5.3E+00	5.3E-01	3.5E-01	7.0E-02
SELENIUM	7.9E-01	2.8E-01	9.2E-01	3.3E-01	5.5E-01	1.2E-01

Cells are shaded if the value is greater than 1.0
NA - EEQ not applicable. Chemical was not detected in fish tissue, and sediment ingestion was assumed to be negligible for piscivorous birds represented by the kingfisher.
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient
1 - Ecological effects quotients (EEQs) shown in this table are based on NOAELs and LOAELs.

TABLE 6-19

TERRESTRIAL FOOD CHAIN MODEL - AVERAGE SCENARIO
PISCIVOROUS RECEPTORS, SUBSURFACE SEDIMENT (>30-52")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Piscivorous Receptor EEQs[(1)]					
	Kingfisher		Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
PCBs						
AROCLOR-1262	9.1E-01	9.1E-02	1.0E+00	1.0E-01	7.9E-01	7.9E-02
TOTAL AROCLOR	1.0E+00	1.0E-01	1.2E+00	1.2E-01	9.0E-01	9.0E-02
Metals						
CHROMIUM	3.0E-02	5.1E-03	1.9E-01	3.3E-02	1.1E-01	4.4E-03
MERCURY	3.9E+00	3.9E-01	4.5E+00	4.5E-01	2.6E-01	5.3E-02
SELENIUM	7.9E-01	2.8E-01	9.1E-01	3.2E-01	5.4E-01	1.2E-01

Cells are shaded if the value is greater than 1.0

NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient
1 - Ecological effects quotients (EEQs) shown in this table are based on NOAELs and LOAELs.

TABLE 6-20
RISK SUMMARY FOR ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN IN SEDIMENT
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical of Potential Concern	Frequency of Detection				Ecological Effects Quotient[1]				Number of Detects Greater than Higher Effects Sediment Benchmark[2]				Ecological Risk Summary				Primary Risk Driver for Benthic Invertebrates?[3]
	0-6"	6-18"	18-30"	30-52"	0-6"	6-18"	18-30"	30-52"	0-6"	6-18"	18-30"	30-52"	Fish	Piscivorous Birds and Mammals	Benthic Invertebrates	Notes	
Volatile Organics																	
CARBON DISULFIDE	2/40	6/10	4/10	NA	14.1	22.3	12.9	NA	NA	NA	NA	NA	NA[4]	Negligible risk	Negligible risk	Occurs naturally in sediment.	No
METHYL TERT-BUTYL ETHER	24/41	2/10	2/10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA[4]	Negligible risk	Uncertain	No ecological screening values.	No
Semivolatile Organics																	
1,4-DICHLOROBENZENE[5]	8/39	2/9	NA	NA	1.8	0.4	NA	NA	NA	NA	NA	NA	NA[4]	Negligible risk	Negligible risk	Infrequently detected in sediment or maximum EEQs relatively low.	No
BIS(2-ETHYLHEXYL)PHTHALATE	37/39	6/9	5/9	NA	16.1	18.9	9.4	NA	1	1	0	NA	NA[4]	Negligible risk	Negligible risk	Common environmental contaminant; can be an artifact of sampling and/or analytical methods.	No
CARBAZOLE	5/39	4/9	2/9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA[4]	Negligible risk	Uncertain	No ecological screening values.	No
TOTAL PAHs	84/101	52/71	39/68	20/51	39.5	73.6	284	1.6	4	9	8	0	NA[4]	Negligible risk	Potential risk to benthic invertebrates, especially in Dark Head Cove.	Concentrations in most MRC samples are similar to background concentrations.	No
PCBs																	
TOTAL AROCLORs	79/101	42/71	26/68	6/51	1350	350	32.5	3	39	19	9	0	PCBs were elevated in one sample.	Negligible risk	Potential risk to benthic invertebrates.	Whole sediment concentrations exceeded the PEL in several samples.	Yes
Metals																	
ANTIMONY	48/103	38/72	33/69	16/51	3683	87.5	210	37.9	1	1	1	0	Infrequently detected in fish tissue; concentrations less than TRV and similar to concentrations in reference samples.	Negligible risk	Potential risk to benthic invertebrates is limited to a few sample locations.	Whole sediment concentrations exceed SQGs in some samples. Porewater concentrations less than surface water screening values.	No
ARSENIC	103/103	71/72	68/69	50/51	5.1	1.7	1.7	5.0	1	0	0	1	Not detected in fish tissue.	Negligible risk	Potential risk to benthic invertebrates limited to a few sample locations.	Whole sediment concentrations exceed SQGs in some samples. Porewater concentrations were less than surface water screening values. Concentrations in most samples similar to background.	No
BARIUM	68/68	48/48	47/47	31/31	0.9	1.8	1.8	0.42	NA	NA	NA	NA	NA[4]	Negligible risk	Negligible risk	COPC in two middle depth intervals but not in surface sediment or deepest interval. Exceeded background in only one sample.	No
BERYLLIUM	103/103	72/72	69/69	51/51	NA	NA	NA	NA	NA	NA	NA	NA	Not detected in fish tissue.	Negligible risk	Uncertain	No ecological screening values. Not detected in porewater.	No
CADMIUM	100/103	66/72	63/69	35/51	435	450	435	49.4	66	45	32	8	Not detected in fish tissue.	Negligible risk	Potential risk to benthic invertebrates.	Whole sediment concentrations exceeded the PEL in many samples.	Yes

TABLE 6-20
RISK SUMMARY FOR ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN IN SEDIMENT
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical of Potential Concern	Frequency of Detection				Ecological Effects Quotient[1]				Number of Detects Greater than Higher Effects Sediment Benchmark[2]				Ecological Risk Summary				Primary Risk Driver for Benthic Invertebrates?[3]
	0-6"	6-18"	18-30"	30-52"	0-6"	6-18"	18-30"	30-52"	0-6"	6-18"	18-30"	30-52"	Fish	Piscivorous Birds and Mammals	Benthic Invertebrates	Notes	
CHROMIUM	103/103	72/72	69/69	51/51	16.1	56.7	47.5	13.8	62	45	32	8	Fish tissue concentrations less than TRV and similar to concentrations in reference samples.	Negligible risk	Potential risks limited to only a few sample locations.	Whole sediment concentrations exceed SQGs in many samples, but AVS data indicate that Cr in whole sediment is primarily Cr^{+3} rather than more toxic Cr^{+6}. Only two sediment sample locations had higher whole sediment concentrations than in the highest sample where porewater was analyzed. All porewater concentrations less than surface water screening values.	No
COBALT	68/68	48/48	47/47	31/31	2.9	3.3	3.8	7.1	NA	NA	NA	NA	NA[4]	Negligible risk	Negligible risk	Relatively low screening EEQs. PEL or PEC not available, but most concentrations were less than alternate screening values.	No
COPPER	103/103	72/72	69/69	51/51	9.8	9.5	7.9	4.5	45	15	8	0	Fish tissue concentrations less than TRV and similar to concentrations in reference samples.	Negligible risk	Potential risk to benthic invertebrates.	Whole sediment concentrations exceeded the PEL in several samples.	Yes
HEXAVALENT CHROMIUM	5/41	1/10	NA	NA	0.30	0.04	NA	NA	NA	NA	NA	NA	NA[4]	Negligible risk	Negligible or minor risk.	Not a COPC in surface sediment or in 6-18 inch interval. AVS data suggests sediments are anoxic and unlikely to contain hexavalent chromium (Cr^{+6}).	No
LEAD	103/103	72/72	69/69	51/51	1043	45.4	10.5	5.4	52	38	24	1	Fish tissue concentrations similar to reference sample concentrations.	Negligible risk	Potential risk to benthic invertebrates.	Whole sediment concentrations exceeded the PEL in several samples.	Yes
MERCURY	97/103	62/72	60/69	35/51	26.9	26.9	46.9	11.5	6	19	24	1	Fish tissue concentrations less than the TRV and the marine CTL.	Negligible risk	Potential risk to benthic invertebrates.	Whole sediment concentrations exceeded the PEL in several samples in the two middle depth intervals.	Yes
MOLYBDENUM	56/68	38/48	43/47	22/31	NA	NA	NA	NA	NA	NA	NA	NA	NA[4]	Negligible risk	Uncertain	No ecological screening values.	No
NICKEL	103/103	72/72	69/69	51/51	3.9	4.4	4.2	6.5	14	25	18	3	Not detected in fish tissue.	Negligible risk	Potential risk limited to a few sampling locations.	Risk at most sample locations comparable to background.	No
SELENIUM	66/103	56/72	52/69	40/51	3.1	2.6	2.8	2.1	NA	NA	NA	NA	Fish tissue concentrations similar to reference sample concentrations.	Negligible risk	Potential risk to benthic invertebrates.	Whole sediment concentrations exceed SQGs in some samples, but relatively low EEQs. PEL or PEC not available, but most concentrations were less than alternate screening values.	No

TABLE 6-20
RISK SUMMARY FOR ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN IN SEDIMENT
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical of Potential Concern	Frequency of Detection				Ecological Effects Quotient[1]				Number of Detects Greater than Higher Effects Sediment Benchmark[2]				Ecological Risk Summary				Primary Risk Driver for Benthic Invertebrates?[3]
	0-6"	6-18"	18-30"	30-52"	0-6"	6-18"	18-30"	30-52"	0-6"	6-18"	18-30"	30-52"	Fish	Piscivorous Birds and Mammals	Benthic Invertebrates	Notes	
SILVER	81/103	61/72	54/69	30/51	39.2	51.0	76.4	12.5	44	43	37	10	Not detected in fish tissue.	Negligible risk	Potential risk to benthic invertebrates.	Whole sediment concentrations exceed SQGs in many samples. Not detected in porewater. AVS/SEM data and porewater data indicate silver toxicity is not likely to be bioavailable or toxic.	No
THALLIUM	26/103	26/72	25/69	20/51	NA	NA	NA	NA	NA	NA	NA	NA	Not detected in fish tissue.	Negligible risk	Uncertain	No ecological screening values. Not detected in porewater.	No
VANADIUM	68/68	48/48	47/47	31/31	2.1	1.9	1.9	0.84	NA	NA	NA	NA	NA[4]	Negligible risk	Negligible risk	Concentrations only slightly exceeded screening values.	No
ZINC	103/103	72/72	69/69	51/51	5.3	10.7	24.6	36.1	7	8	17	1	Fish tissue concentrations less than TRV and most are similar to reference sample concentrations.	Negligible risk	Potential risk to benthic invertebrates.	Whole sediment concentrations exceeded the PEL in several samples at 18-30", and in some samples in the two shallower intervals.	Yes
DIBUTYLTIN	3/6	1/3	2/3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA[4]	Negligible risk	Uncertain	No ecological screening values.	No

Notes:
1 - The ecological effects quotient (EEQ) is the maximum detected concentration divided by the ecological screening value.
2 - Higher Effects Benchmarks are discussed in Section 6.3.1, and sources are provided in Tables 6-7 through 6-10.
3 - No COPCs pose significant risk to fish or piscivorous birds and mammals. Several COPCs pose potential risks to benthic organisms to varying degrees, and MRC sediment concentrations of some COPCs are similar to background regional concentrations. See Sections 6.5 through 6.7 for details regarding these COPCs. Risk management decisions (which are not part of the ecological risk assessment) will be required to focus additional efforts on the "primary risk drivers" (COPCs of greatest ecological concern).
4 - Chemical was not analyzed in fish tissue, but risks to fish are expected to be negligible.
5 - Three dichlorobenzenes were detected in sediment; data for 1,4-dichlorobenzene is shown.
NA- Chemical was not analyzed in samples collected from this depth, ecological screening not available, or Higher Effects Benchmark not available.
AVS/SEM - Acid volatile sulfide/simultaneously extracted metals
COPC- Chemical of Potential Concern
CTL - Critical tissue level
PEC - Probable effects concentration
PEL - Probable effects level
TRV -Toxicity reference value
SQG - Sediment quality quideline

TABLE 6-21

FINAL ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Assessment Endpoint	Final Chemicals of Potential Concern
Protection of benthic invertebrates from adverse effects on their survival, reproduction, and growth	Total Aroclor Cadmium Copper Lead Mercury Zinc
Protection of fish from adverse effects on their survival, reproduction, and growth.	None (negligible ecological risk)
Protection of piscivorous birds from adverse effects on their survival, reproduction, and growth	None (negligible ecological risk)
Protection of piscivorous mammals from adverse effects on their survival, reproduction, and growth	None (negligible ecological risk)

Section 7
Summary and Conclusions

This section presents an overall summary and the conclusions of this investigation, including a discussion of the nature and extent of contamination and of the results of the human health and ecological risk assessments.

In general, the available datasets were adequate for the development of the human health and ecological risk assessments and will be for risk management decision-making except that the potential metals "hot spot" at location SD-84 should be resolved and sediment toxicity tests should be conducted in support of the development of remedial goals for ecological receptors.

7.1 NATURE AND EXTENT OF IMPACTS

Analytical data from sediment samples collected in Cow Pen Creek, Dark Head Cove, and Dark Head Creek in 2005, 2008, and 2010 were evaluated to determine the nature and extent of chemical impacts to sediment. Sediment samples were collected from four depth intervals: 0-6 inches, >6–18 inches, >18–30 inches, and >30-52 inches. Concentrations of chemicals of potential concern (COPC) in surface sediment are generally highest at locations immediately adjacent to the Middle River Complex (MRC). In the deeper intervals in Dark Head Cove, the highest concentrations are generally farther away from the MRC shoreline.

The highest concentrations of polycyclic aromatic-hydrocarbons (PAHs) are found in sampling locations along the northern shoreline of Dark Head Cove. PAH concentrations tend to be higher in the middle two depth intervals (>6–18 inches and >18–30 inches) than in surface sediment. PAH concentrations in most samples from the top two intervals were less than maximum background concentrations. Polychlorinated biphenyl (PCB) concentrations tend to be highest in surface sediments and decrease with increasing depth.

Surface sediment concentrations of PCBs are highest in the middle of Dark Head Cove and adjacent to the shoreline of the MRC complex (i.e., near Outfall 05). The highest concentrations

of metals are generally found in samples from the >6–18 inch and >18–30 inch intervals, which indicates that sediment with higher concentrations has been buried under cleaner sediments and the higher concentrations are probably due to historical releases. This conclusion is supported by sediment age-dating and hydraulic analysis of the watershed. Among metals detected in sediment, cadmium concentrations tend to be the most elevated relative to sediment guidelines.

7.2 HUMAN HEALTH RISK ASSESSMENT

Cancer and non-cancer risk estimates were developed for human receptors potentially exposed to COPC in MRC study area sediments and in fish tissue samples collected from Cow Pen Creek, Dark Head Cove, and selected reference areas. The primary COPC evaluated are PCBs, PAHs (BaPEq), and several metals (e.g., arsenic) detected at maximum concentrations exceeding conservative screening level established for direct contact and fish consumption exposure scenarios. The human health risk assessment (HHRA) evaluated COPC concentrations in both surficial and deeper sediments. However, exposure to the deeper sediments would potentially occur only if such sediments were dredged and deposited on surface soils or surficial sediments.

Cancer risk estimates developed for the direct contact exposure pathways (incidental ingestion, dermal contact with sediments) do not exceed the U.S. Environmental Protection Agency (USEPA) target risk range (1E-04 to 1E-06). However, estimates *do* exceed the Maryland risk benchmark of 1E-05 when COPC in the 0–6 inch, 6–18 inch, and 18–30 inch sediment intervals are assessed and the conservative 95% upper confidence level (UCL) on the arithmetic mean is evaluated as the exposure concentration. BaPEq and PCBs are the primary risk drivers. Hazard indices for the direct contact exposure pathways do not exceed 1, indicating that adverse non-carcinogenic health effects are not anticipated for these particular exposure pathways.

Cancer risk estimates developed for the consumption of fish exposure pathway, based on sediment concentrations (and assuming bioaccumulation between sediments and fish), exceed both the USEPA target risk range (1E-04 to 1E-06) and the Maryland risk-benchmark of 1E-05 when COPC in the 0–6 inch, 6–18 inch, and 18–30 inch sediment intervals are evaluated, and either the conservative 95% UCL on the arithmetic mean or the area weighted average concentration is evaluated as the exposure concentration.

Individual target organ hazard indices for the fish consumption exposure pathway exceed 1 when COPC in any of the sediment intervals are evaluated with the 95% UCL and with the area weighted average, indicating a potential for adverse non-carcinogenic health effects. BaPEq, PCBs, and a few metals (e.g., antimony and cobalt) are the primary risk drivers for the fish consumption exposure pathway. However, as noted below, PCBs are the *only* risk drivers based on an evaluation of actual fish tissue data collected at the site. Additionally, neither antimony nor cobalt are significant site-wide contaminants, and the antimony was not identified as a chemical of concern when the actual site fish tissue concentrations were evaluated.

Cancer and non-cancer risk estimates developed for the consumption of fish exposure pathway (based on evaluation of *actual* fish tissue data for the study area) exceed both USEPA and Maryland risk-benchmarks. PCBs are the risk drivers. However, note that the PCB concentrations reported for the study area fall within the range of concentrations reported for the general Chesapeake Bay area, based on data from the State of Maryland's monitoring program.

The risk estimates above must be interpreted with the understanding that COPC concentrations detected at background sediment locations exceed the conservative screening levels used in this HHRA. Risk estimates for maximum background concentrations exceed both Maryland and USEPA cancer risk benchmarks. A review of both study area data and data reported in the open scientific literature indicate that the COPC concentrations detected in the MRC study area are a function of both study-area-specific and regional sources of contamination.

7.3 ECOLOGICAL RISK ASSESSMENT

The ecological endpoints evaluated in this ERA are benthic invertebrates, fish, and birds and mammals that consume fish and benthic invertebrates. Multiple lines of evidence were used to evaluate risks to benthic invertebrates. Sediment chemistry is the primary measure by which potential risks were evaluated, but acid volatile sulfides (AVS)/simultaneously extracted metals (SEM) data, pore water data, and benthic macroinvertebrate-community data were also used. Several chemicals were initially selected as COPC for risks to sediment invertebrates because they were detected at concentrations in excess of screening levels or did not have a screening level.

Risks to benthic invertebrates from metals in sediment are possible, with the greatest likelihood of those effects occurring in areas where probable effects concentrations (PECs) and probable-effects levels (PELs) are exceeded. Concentrations of metals at some locations are similar to background concentrations. However, concentrations at many locations, especially for cadmium, copper, lead, mercury, and zinc, are greater than PECs, PELs, and background values. Generally, the highest concentrations of inorganics are in the >6–18 inch and >18–30 inch intervals, with much lower concentrations in the >30–52 inch interval.

PCBs and PAHs pose potential risks to benthic invertebrates, especially in Dark Head Cove surface sediment near Outfall 05. PAHs also pose potential risks to benthic invertebrates at the eastern end of the cove. However, background data indicate that potential risks from PAHs in most samples near MRC are similar to those throughout the region. Of 101 surface sediment samples analyzed for PAHs, total PAH concentrations exceed the background value in only eight surface sediment samples. The PAH forensic data suggest that PAHs in most MRC samples are probably due to typical urban runoff. Therefore, PAHs were not retained for further evaluation.

Some measure of uncertainty exists as to whether the chemicals in sediment are bioavailable and significantly affecting the benthic community, based on evaluations of AVS/SEM data, *ex situ* pore water data, and benthic macroinvertebrate-community data,. At most locations where AVS/SEM and *ex situ* pore water samples were collected, bioavailability was low, but locations with the greatest whole-sediment chemical concentrations were not sampled. The benthic macroinvertebrate-community is stressed in all MRC samples, but is also stressed in background reference samples.

Although uncertainty exists as to whether the benthic community is being significantly adversely affected, cadmium, copper, lead, mercury, zinc, and total Aroclor pose the highest potential risks to benthic invertebrates. These chemicals were therefore retained as final ecological COPC in sediments near MRC (Table 6-21). However, under current conditions, ecological receptors would be exposed only to the surface sediment (0–6 inch interval), which is considered the bioactive zone. In surface sediment, cadmium and total Aroclors pose the greatest potential risk to benthic receptors.

Based on tissue concentrations in fish collected from Cow Pen Creek and Dark Head Cove, fish do not appear to be at risk from sediment contamination and/or risks are similar to risks throughout the region.

This ERA determined that bioaccumulative chemicals in sediment in all four depth intervals pose negligible risks to upper trophic-level receptors, based on the results of food-chain modeling. The modeling addresses the transfer of contaminants from sediment to food sources consumed by piscivorous birds and mammals, including consumption of benthic organisms and fish. These results indicate that, under current conditions where contamination in the upper six inches of sediment is available to receptors and under possible future conditions where deeper sediment may be exposed through dredging, potential risks to these receptors are not considered a concern.

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Section 8
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APPENDIX A—DATA TABLES AND DATA-VALIDATION REPORTS

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	MRC-SW/SD-1	SD-1
SAMPLE ID	BOWLEYS_QUARTERS-SS	MIDDLE_RIVER_DOWNSTREAM-	MARSHY_POINT-SS	MRC-SED-1	SD-1-031705
SAMPLE DATE	20100821	20100820	20100821	20101014	20050317
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	UPGRADIENT STORMWATER	BACKGROUND
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	6.1 U
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	6.1 U
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	6.1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	6.1 U
1,1-DICHLOROETHANE	NA	NA	NA	NA	6.1 U
1,1-DICHLOROETHENE	NA	NA	NA	NA	6.1 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	6.1 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	6.1 U
1,2-DIBROMOETHANE	NA	NA	NA	NA	6.1 U
1,2-DICHLOROBENZENE	NA	NA	NA	NA	6.1 U
1,2-DICHLOROETHANE	NA	NA	NA	NA	6.1 U
1,2-DICHLOROPROPANE	NA	NA	NA	NA	6.1 U
1,3-DICHLOROBENZENE	NA	NA	NA	NA	6.1 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	6.1 U
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	12 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	12 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	12 U
ACETONE	NA	NA	NA	NA	12 J
BENZENE	NA	NA	NA	NA	6.1 U
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	6.1 U
BROMOFORM	NA	NA	NA	NA	6.1 U
BROMOMETHANE	NA	NA	NA	NA	12 U
CARBON DISULFIDE	NA	NA	NA	NA	6.1 U
CARBON TETRACHLORIDE	NA	NA	NA	NA	6.1 U
CHLOROBENZENE	NA	NA	NA	NA	6.1 U
CHLORODIBROMOMETHANE	NA	NA	NA	NA	6.1 U
CHLOROETHANE	NA	NA	NA	NA	12 U
CHLOROFORM	NA	NA	NA	NA	6.1 U
CHLOROMETHANE	NA	NA	NA	NA	12 U
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	6.1 U
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	6.1 U
CYCLOHEXANE	NA	NA	NA	NA	6.1 U
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	6.1 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	6.1 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	MRC-SW/SD-1	SD-1
SAMPLE ID	BOWLEYS_QUARTERS-SS	MIDDLE_RIVER_DOWNSTREAM-	MARSHY_POINT-SS	MRC-SED-1	SD-1-031705
SAMPLE DATE	20100821	20100820	20100821	20101014	20050317
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	UPGRADIENT STORMWATER	BACKGROUND
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	6.1 U
M+P-XYLENES	NA	NA	NA	NA	6.1 U
METHYL ACETATE	NA	NA	NA	NA	6.1 U
METHYL CYCLOHEXANE	NA	NA	NA	NA	6.1 U
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	6.1 U
METHYLENE CHLORIDE	NA	NA	NA	NA	12 U
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	6.1 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	6.1 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	6.1 U
TOLUENE	NA	NA	NA	NA	6.1 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	6.1 U
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	6.1 U
TRICHLOROETHENE	NA	NA	NA	NA	6.1 U
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	6.1 U
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	12 U
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	410 U
1,2-DICHLOROBENZENE	NA	NA	NA	NA	410 U
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	410 U
1,3-DICHLOROBENZENE	NA	NA	NA	NA	410 U
1,4-DICHLOROBENZENE	NA	NA	NA	NA	410 U
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	410 U
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	410 U
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	410 U
2,4-DICHLOROPHENOL	NA	NA	NA	NA	410 U
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	410 U
2,4-DINITROPHENOL	NA	NA	NA	NA	820 U
2,4-DINITROTOLUENE	NA	NA	NA	NA	410 U
2,6-DINITROTOLUENE	NA	NA	NA	NA	410 U
2-CHLORONAPHTHALENE	NA	NA	NA	NA	410 U
2-CHLOROPHENOL	NA	NA	NA	NA	410 U
2-METHYLNAPHTHALENE	NA	NA	NA	NA	30 J
2-METHYLPHENOL	NA	NA	NA	NA	410 U
2-NITROANILINE	NA	NA	NA	NA	410 U
2-NITROPHENOL	NA	NA	NA	NA	410 U
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	820 U
3-NITROANILINE	NA	NA	NA	NA	410 U
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	820 U
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	410 U
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	410 U
4-CHLOROANILINE	NA	NA	NA	NA	410 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	MRC-SW/SD-1	SD-1
SAMPLE ID	BOWLEYS_QUARTERS-SS	MIDDLE_RIVER_DOWNSTREAM-	MARSHY_POINT-SS	MRC-SED-1	SD-1-031705
SAMPLE DATE	20100821	20100820	20100821	20101014	20050317
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	UPGRADIENT STORMWATER	BACKGROUND
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	410 U
4-METHYLPHENOL	NA	NA	NA	NA	410 U
4-NITROANILINE	NA	NA	NA	NA	410 U
4-NITROPHENOL	NA	NA	NA	NA	820 U
ACENAPHTHENE	5.7 UJ	11 J	6 UJ	NA	410 U
ACENAPHTHYLENE	6.7 UJ	23 J	7.2 UJ	NA	180 J
ANILINE	NA	NA	NA	NA	410 U
ANTHRACENE	29 J	31 J	18 J	NA	140 J
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	78.3	99.9	12.5	NA	911
BAP EQUIVALENT-POSITIVE RESULTS	75.0	97.8	5.4	NA	706
BENZIDINE	NA	NA	NA	NA	410 U
BENZO(A)ANTHRACENE	53 J	67 J	24 J	NA	650
BENZO(A)PYRENE	49 J	64 J	6.3 UJ	NA	530
BENZO(B)FLUORANTHENE	96 J	150 J	30 J	NA	800
BENZO(G,H,I)PERYLENE	93 J	120 J	6.3 UJ	NA	320 J
BENZO(K)FLUORANTHENE	12 UJ	7.6 UJ	13 UJ	NA	190 J
BENZOIC ACID	NA	NA	NA	NA	820 U
BENZYL ALCOHOL	NA	NA	NA	NA	410 U
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	410 U
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	410 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	730 J
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	2500
CARBAZOLE	NA	NA	NA	NA	410 U
CHRYSENE	68 J	80 J	32 J	NA	730
DIBENZO(A,H)ANTHRACENE	6.5 UJ	4.2 UJ	7 UJ	NA	410 U
DIBENZOFURAN	NA	NA	NA	NA	410 U
DIETHYL PHTHALATE	NA	NA	NA	NA	410 U
DIMETHYL PHTHALATE	NA	NA	NA	NA	410 U
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	410 U
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	410 U
FLUORANTHENE	140 J	130 J	67 J	NA	1000
FLUORENE	23 J	12 J	8.3 UJ	NA	54 J
HEXACHLOROBENZENE	NA	NA	NA	NA	410 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	410 U
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	410 U
HEXACHLOROETHANE	NA	NA	NA	NA	410 U
INDENO(1,2,3-CD)PYRENE	110 J	120 J	6.5 UJ	NA	280 J
ISOPHORONE	NA	NA	NA	NA	410 U
NAPHTHALENE	51 J	36 J	50 J	NA	410 U
NITROBENZENE	NA	NA	NA	NA	410 U
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	410 U
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	410 U
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	410 U
PENTACHLOROPHENOL	NA	NA	NA	NA	820 U
PHENANTHRENE	82 J	65 J	54 J	NA	550
PHENOL	NA	NA	NA	NA	410 U
PYRENE	100 J	140 J	49 J	NA	1200
PYRIDINE	NA	NA	NA	NA	410 U
TOTAL PAHS	894	1049	324	NA	6654

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	MRC-SW/SD-1	SD-1
SAMPLE ID	BOWLEYS_QUARTERS-SS	MIDDLE_RIVER_DOWNSTREAM-	MARSHY_POINT-SS	MRC-SED-1	SD-1-031705
SAMPLE DATE	20100821	20100820	20100821	20101014	20050317
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	UPGRADIENT STORMWATER	BACKGROUND
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	4.4 UJ	4.7 UJ	4.7 UJ	NA	41 U
AROCLOR-1221	5.6 UJ	6 UJ	6 UJ	NA	41 U
AROCLOR-1232	5 UJ	5.4 UJ	5.4 UJ	NA	41 U
AROCLOR-1242	4.8 UJ	5.1 UJ	5.1 UJ	NA	41 U
AROCLOR-1248	2.8 UJ	3 UJ	3 UJ	NA	41 U
AROCLOR-1254	4.2 UJ	4.5 UJ	4.5 UJ	NA	41 U
AROCLOR-1260	4.2 UJ	4.5 UJ	4.5 UJ	NA	41 U
TOTAL AROCLOR	0 U	0 U	0 U	NA	0 U
METALS (MG/KG)					
ANTIMONY	0.48 J	2.1 J	0.43 J	1.9	0.54 B
ARSENIC	13.5 J	14.1 J	11.2 J	2.9	2.6
BARIUM	NA	NA	NA	57.5	NA
BERYLLIUM	1.6 J	1.8 J	1.7 J	0.26	1.2
CADMIUM	0.95 J	2.5 J	0.84 J	0.12 J	0.47
CHROMIUM	39.3 J	119 J	36.3 J	122	90.9
COBALT	NA	NA	NA	4.8	NA
COPPER	110 J	224 J	67.1 J	255	12
HEXAVALENT CHROMIUM	NA	NA	NA	NA	0.49 U
IRON	NA	NA	NA	33700	NA
LEAD	104 J	173 J	67.1 J	5.8	151
MANGANESE	NA	NA	NA	518	NA
MERCURY	0.43 J	0.72 J	0.25 J	0.034 J	0.71
MOLYBDENUM	NA	NA	NA	4	NA
NICKEL	44.2 J	41.5 J	46.8 J	32.3	69.4
SELENIUM	2 J	2 J	2.1 J	0.26 J	0.48 U
SILVER	0.59 J	1.4 J	0.47 J	0.057 J	0.097 U
THALLIUM	0.24 J	0.25 J	0.27 J	0.023 B	0.29 U
VANADIUM	NA	NA	NA	13.4	NA
ZINC	327 J	372 J	248 J	53.4	80
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	81
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	35200 J	30800 J	34300 J	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-78	SD-2	SD-3	SD-4	SD-5
SAMPLE ID	SD-78-SS	SD-2-031805	SD-3-031705	SD-4-031705	SD-5-031805
SAMPLE DATE	20081117	20050318	20050317	20050317	20050318
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	12 U	5.9 U	6.9 U	10 U
1,1,2,2-TETRACHLOROETHANE	NA	12 U	5.9 U	6.9 U	10 U
1,1,2-TRICHLOROETHANE	NA	12 U	5.9 U	6.9 U	10 U
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	12 U	5.9 U	6.9 U	10 U
1,1-DICHLOROETHANE	NA	12 U	5.9 U	6.9 U	10 U
1,1-DICHLOROETHENE	NA	12 U	5.9 U	6.9 U	10 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	12 U	5.9 U	6.9 U	10 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	12 U	5.9 U	6.9 U	10 U
1,2-DIBROMOETHANE	NA	12 U	5.9 U	6.9 U	10 U
1,2-DICHLOROBENZENE	NA	12 U	5.9 U	6.9 U	10 U
1,2-DICHLOROETHANE	NA	12 U	5.9 U	6.9 U	10 U
1,2-DICHLOROPROPANE	NA	12 U	5.9 U	6.9 U	10 U
1,3-DICHLOROBENZENE	NA	12 U	5.9 U	6.9 U	10 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	12 U	5.9 U	6.9 U	10 U
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	24 U	12 U	14 U	20 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	24 U	12 U	14 U	20 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	24 U	12 U	14 U	20 U
ACETONE	NA	19 B	7.1 J	14 U	15 B
BENZENE	NA	12 U	5.9 U	6.9 U	10 U
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	12 U	5.9 U	6.9 U	10 U
BROMOFORM	NA	12 U	5.9 U	6.9 U	10 U
BROMOMETHANE	NA	24 U	12 U	14 U	20 U
CARBON DISULFIDE	NA	12 U	5.9 U	6.9 U	10 U
CARBON TETRACHLORIDE	NA	12 U	5.9 U	6.9 U	10 U
CHLOROBENZENE	NA	12 U	5.9 U	6.9 U	10 U
CHLORODIBROMOMETHANE	NA	12 U	5.9 U	6.9 U	10 U
CHLOROETHANE	NA	24 U	12 U	14 U	20 U
CHLOROFORM	NA	12 U	5.9 U	6.9 U	10 U
CHLOROMETHANE	NA	24 U	12 U	14 U	20 U
CIS-1,2-DICHLOROETHENE	NA	12 U	5.9 U	6.9 U	10 U
CIS-1,3-DICHLOROPROPENE	NA	12 U	5.9 U	6.9 U	10 U
CYCLOHEXANE	NA	12 U	5.9 U	6.9 U	10 U
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	12 U	5.9 U	6.9 U	10 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	12 U	5.9 U	6.9 U	10 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-78	SD-2	SD-3	SD-4	SD-5
SAMPLE ID	SD-78-SS	SD-2-031805	SD-3-031705	SD-4-031705	SD-5-031805
SAMPLE DATE	20081117	20050318	20050317	20050317	20050318
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	12 U	5.9 U	6.9 U	10 U
M+P-XYLENES	NA	12 U	5.9 U	6.9 U	10 U
METHYL ACETATE	NA	12 U	5.9 U	6.9 U	10 U
METHYL CYCLOHEXANE	NA	12 U	5.9 U	6.9 U	10 U
METHYL TERT-BUTYL ETHER	NA	12 U	5.9 U	6.9 U	10 U
METHYLENE CHLORIDE	NA	24 U	12 U	14 U	20 U
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	12 U	5.9 U	6.9 U	10 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	12 U	5.9 U	6.9 U	10 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	12 U	5.9 U	6.9 U	10 U
TOLUENE	NA	12 U	5.9 U	6.9 U	10 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	12 U	5.9 U	6.9 U	10 U
TRANS-1,3-DICHLOROPROPENE	NA	12 U	5.9 U	6.9 U	10 U
TRICHLOROETHENE	NA	12 U	5.9 U	6.9 U	10 U
TRICHLOROFLUOROMETHANE	NA	12 U	5.9 U	6.9 U	10 U
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	24 U	12 U	14 U	20 U
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	800 U	390 U	460 U	680 U
1,2-DICHLOROBENZENE	NA	800 U	390 U	460 U	680 U
1,2-DIPHENYLHYDRAZINE	NA	800 U	390 U	460 U	680 U
1,3-DICHLOROBENZENE	NA	800 U	390 U	460 U	680 U
1,4-DICHLOROBENZENE	NA	800 U	390 U	460 U	680 U
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	1700 U	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	800 U	390 U	460 U	680 U
2,4,5-TRICHLOROPHENOL	NA	800 U	390 U	460 U	680 U
2,4,6-TRICHLOROPHENOL	NA	800 U	390 U	460 U	680 U
2,4-DICHLOROPHENOL	NA	800 U	390 U	460 U	680 U
2,4-DIMETHYLPHENOL	NA	800 U	390 U	460 U	680 U
2,4-DINITROPHENOL	NA	1600 U	790 U	920 U	1400 U
2,4-DINITROTOLUENE	NA	800 U	390 U	460 U	680 U
2,6-DINITROTOLUENE	NA	800 U	390 U	460 U	680 U
2-CHLORONAPHTHALENE	NA	800 U	390 U	460 U	680 U
2-CHLOROPHENOL	NA	800 U	390 U	460 U	680 U
2-METHYLNAPHTHALENE	1700 U	800 U	390 U	34 J	680 U
2-METHYLPHENOL	NA	800 U	390 U	460 U	680 U
2-NITROANILINE	NA	800 U	390 U	460 U	680 U
2-NITROPHENOL	NA	800 U	390 U	460 U	680 U
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	1600 U	790 U	920 U	1400 U
3-NITROANILINE	NA	800 U	390 U	460 U	680 U
4,6-DINITRO-2-METHYLPHENOL	NA	1600 U	790 U	920 U	1400 U
4-BROMOPHENYL PHENYL ETHER	NA	800 U	390 U	460 U	680 U
4-CHLORO-3-METHYLPHENOL	NA	800 U	390 U	460 U	680 U
4-CHLOROANILINE	NA	800 U	390 U	460 U	680 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-78	SD-2	SD-3	SD-4	SD-5
SAMPLE ID	SD-78-SS	SD-2-031805	SD-3-031705	SD-4-031705	SD-5-031805
SAMPLE DATE	20081117	20050318	20050317	20050317	20050318
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	800 U	390 U	460 U	680 U
4-METHYLPHENOL	NA	800 U	390 U	460 U	680 U
4-NITROANILINE	NA	800 U	390 U	460 U	680 U
4-NITROPHENOL	NA	1600 U	790 U	920 U	1400 U
ACENAPHTHENE	1700 U	800 U	390 U	460 U	680 U
ACENAPHTHYLENE	1700 U	800 U	390 U	55 J	680 U
ANILINE	NA	800 U	390 U	460 U	680 U
ANTHRACENE	490 J	800 U	100 J	200 J	290 J
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	1973	616	736	1043	1678
BAP EQUIVALENT-POSITIVE RESULTS	188	172	541	813	1338
BENZIDINE	NA	800 U	390 U	460 U	680 U
BENZO(A)ANTHRACENE	1700 U	140 J	410	750	1200
BENZO(A)PYRENE	1700 U	140 J	420	630	1000
BENZO(B)FLUORANTHENE	1200 J	180 J	530	710	1500
BENZO(G,H,I)PERYLENE	1700 U	800 U	300 J	390 J	670 J
BENZO(K)FLUORANTHENE	1100 J	800 U	170 J	270 J	550 J
BENZOIC ACID	NA	1600 U	790 U	920 U	1400 U
BENZYL ALCOHOL	NA	800 U	390 U	460 U	680 U
BIS(2-CHLOROETHOXY)METHANE	NA	800 U	390 U	460 U	680 U
BIS(2-CHLOROETHYL)ETHER	NA	800 U	390 U	460 U	680 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	290 J	370 J	400 J	1500 J
BUTYL BENZYL PHTHALATE	NA	800 U	390 U	460 U	680 U
CARBAZOLE	NA	800 U	390 U	460 U	190 J
CHRYSENE	1600 J	190 J	450	830	1300
DIBENZO(A,H)ANTHRACENE	1700 U	800 U	390 U	460 U	680 U
DIBENZOFURAN	NA	800 U	390 U	460 U	680 U
DIETHYL PHTHALATE	NA	800 U	390 U	460 U	680 U
DIMETHYL PHTHALATE	NA	800 U	390 U	460 U	680 U
DI-N-BUTYL PHTHALATE	NA	800 U	390 U	460 U	680 U
DI-N-OCTYL PHTHALATE	NA	800 U	390 U	460 U	680 U
FLUORANTHENE	3200	310 J	750	1400	2300
FLUORENE	210 J	800 U	390 U	130 J	680 U
HEXACHLOROBENZENE	NA	800 U	390 U	460 U	680 U
HEXACHLOROBUTADIENE	NA	800 U	390 U	460 U	680 U
HEXACHLOROCYCLOPENTADIENE	NA	800 U	390 U	460 U	680 U
HEXACHLOROETHANE	NA	800 U	390 U	460 U	680 U
INDENO(1,2,3-CD)PYRENE	550 J	800 U	250 J	330 J	610 J
ISOPHORONE	NA	800 U	390 U	460 U	680 U
NAPHTHALENE	1700 U	800 U	390 U	460 U	680 U
NITROBENZENE	NA	800 U	390 U	460 U	680 U
N-NITROSODIMETHYLAMINE	NA	800 U	390 U	460 U	680 U
N-NITROSO-DI-N-PROPYLAMINE	NA	800 U	390 U	460 U	680 U
N-NITROSODIPHENYLAMINE	NA	800 U	390 U	460 U	680 U
PENTACHLOROPHENOL	NA	1600 U	790 U	920 U	1400 U
PHENANTHRENE	2800	100 J	450	1400	1300
PHENOL	NA	800 U	390 U	460 U	680 U
PYRENE	4200 K	270 J	880	1800	2200
PYRIDINE	NA	800 U	390 U	460 U	680 U
TOTAL PAHS	15350	1330	4710	8929	12920

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-78	SD-2	SD-3	SD-4	SD-5
SAMPLE ID	SD-78-SS	SD-2-031805	SD-3-031705	SD-4-031705	SD-5-031805
SAMPLE DATE	20081117	20050318	20050317	20050317	20050318
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	21 U	80 U	39 U	46 U	68 U
AROCLOR-1221	21 U	80 U	39 U	46 U	68 U
AROCLOR-1232	21 U	80 U	39 U	46 U	68 U
AROCLOR-1242	21 U	80 U	39 U	46 U	68 U
AROCLOR-1248	21 U	80 U	39 U	46 U	68 U
AROCLOR-1254	21 U	80 U	39 U	46 U	68 U
AROCLOR-1260	21 U	160	53	46 U	420 J
TOTAL AROCLOR	0 U	160	53	0 U	420
METALS (MG/KG)					
ANTIMONY	0.12 U	1.1 B	0.94 B	4.6	1.9 B
ARSENIC	2.1	5.7 K	2.1	3.3	4.6
BARIUM	14.8 J	NA	NA	NA	NA
BERYLLIUM	0.79 J	1.1 J	1	0.77	1 J
CADMIUM	0.072 B	7.9 K	0.42	20.5	20.9 K
CHROMIUM	13.3 J	138	103	113	203
COBALT	6.3	NA	NA	NA	NA
COPPER	7 J	113	14.9	25	61.2
HEXAVALENT CHROMIUM	NA	0.87 U	0.44 U	0.53 U	0.72 U
IRON	NA	NA	NA	NA	NA
LEAD	5.2 J	101	90.2	140	107
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.046	0.34	0.016 U	0.027	0.1
MOLYBDENUM	0.69	NA	NA	NA	NA
NICKEL	9	23.2	51.5	17.2	30
SELENIUM	0.8	1.9	1.6 K	1 U	0.87
SILVER	0.11 B	1.3	0.092 U	0.21 U	0.77
THALLIUM	0.21 U	0.56 U	0.28 U	0.62 UL	0.42 U
VANADIUM	14.2 J	NA	NA	NA	NA
ZINC	30.8	230	54.7	276	331
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	80	42	85	72	49
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-6	SD-7	SD-8	SD-9	SD-10
SAMPLE ID	SD-6-031805	SD-7-031805	SD-8-031805	SD-9-031805	SD-10-031805
SAMPLE DATE	20050318	20050318	20050318	20050318	20050318
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	12 U	10 U	10 U	16 U	14 U
1,1,2,2-TETRACHLOROETHANE	12 U	10 U	10 U	16 U	14 U
1,1,2-TRICHLOROETHANE	12 U	10 U	10 U	16 U	14 U
1,1,2-TRICHLOROTRIFLUOROETHANE	12 U	10 U	10 U	16 U	14 U
1,1-DICHLOROETHANE	12 U	10 U	10 U	16 U	14 U
1,1-DICHLOROETHENE	12 U	10 U	10 U	16 U	14 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	12 U	10 U	10 U	16 U	14 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	12 U	10 U	10 U	16 U	14 U
1,2-DIBROMOETHANE	12 U	10 U	10 U	16 U	14 U
1,2-DICHLOROBENZENE	12 U	10 U	10 U	16 U	14 U
1,2-DICHLOROETHANE	12 U	10 U	10 U	16 U	14 U
1,2-DICHLOROPROPANE	12 U	10 U	10 U	16 U	14 U
1,3-DICHLOROBENZENE	12 U	10 U	10 U	16 U	14 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	12 U	10 U	10 U	16 U	14 U
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	24 U	21 U	20 U	32 U	29 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	24 U	21 U	20 U	32 U	29 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	24 U	21 U	20 U	32 U	29 U
ACETONE	24 U	91 B	96 B	160 B	28 B
BENZENE	12 U	10 U	10 U	16 U	14 U
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	12 U	10 U	10 U	16 U	14 U
BROMOFORM	12 U	10 U	10 U	16 U	14 U
BROMOMETHANE	24 U	21 U	20 U	32 U	29 U
CARBON DISULFIDE	12 U	10 U	10 U	9.1 J	14 U
CARBON TETRACHLORIDE	12 U	10 U	10 U	16 U	14 U
CHLOROBENZENE	12 U	10 U	10 U	16 U	14 U
CHLORODIBROMOMETHANE	12 U	10 U	10 U	16 U	14 U
CHLOROETHANE	24 U	21 U	20 U	32 U	29 U
CHLOROFORM	12 U	10 U	10 U	16 U	14 U
CHLOROMETHANE	24 U	21 U	20 U	32 U	29 U
CIS-1,2-DICHLOROETHENE	12 U	10 U	10 U	16 U	14 U
CIS-1,3-DICHLOROPROPENE	12 U	10 U	10 U	16 U	14 U
CYCLOHEXANE	12 U	10 U	10 U	16 U	14 U
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	12 U	10 U	10 U	16 U	14 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	12 U	10 U	10 U	16 U	14 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-6	SD-7	SD-8	SD-9	SD-10
SAMPLE ID	SD-6-031805	SD-7-031805	SD-8-031805	SD-9-031805	SD-10-031805
SAMPLE DATE	20050318	20050318	20050318	20050318	20050318
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	12 U	10 U	10 U	16 U	14 U
M+P-XYLENES	12 U	10 U	10 U	16 U	14 U
METHYL ACETATE	12 U	10 U	10 U	16 U	14 U
METHYL CYCLOHEXANE	12 U	10 U	10 U	16 U	14 U
METHYL TERT-BUTYL ETHER	12 U	10 U	10 U	16 U	14 U
METHYLENE CHLORIDE	24 U	21 U	20 U	32 U	29 U
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	12 U	10 U	10 U	16 U	14 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	12 U	10 U	10 U	16 U	14 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	12 U	10 U	10 U	16 U	14 U
TOLUENE	12 U	10 U	10 U	16 U	14 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	12 U	10 U	10 U	16 U	14 U
TRANS-1,3-DICHLOROPROPENE	12 U	10 U	10 U	16 U	14 U
TRICHLOROETHENE	12 U	10 U	10 U	16 U	14 U
TRICHLOROFLUOROMETHANE	12 U	10 U	10 U	16 U	14 U
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	24 U	21 U	20 U	32 U	29 U
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	790 U	680 U	670 U	1100 U	960 U
1,2-DICHLOROBENZENE	790 U	680 U	670 U	1100 U	960 U
1,2-DIPHENYLHYDRAZINE	790 U	680 U	670 U	1100 U	960 U
1,3-DICHLOROBENZENE	790 U	680 U	670 U	1100 U	960 U
1,4-DICHLOROBENZENE	790 U	680 U	670 U	1100 U	960 U
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	790 U	680 U	670 U	1100 U	960 U
2,4,5-TRICHLOROPHENOL	790 U	680 U	670 U	1100 U	960 U
2,4,6-TRICHLOROPHENOL	790 U	680 U	670 U	1100 U	960 U
2,4-DICHLOROPHENOL	790 U	680 U	670 U	1100 U	960 U
2,4-DIMETHYLPHENOL	790 U	680 U	670 U	1100 U	960 U
2,4-DINITROPHENOL	1600 U	1400 U	1300 U	2100 U	1900 U
2,4-DINITROTOLUENE	790 U	680 U	670 U	1100 U	960 U
2,6-DINITROTOLUENE	790 U	680 U	670 U	1100 U	960 U
2-CHLORONAPHTHALENE	790 U	680 U	670 U	1100 U	960 U
2-CHLOROPHENOL	790 U	680 U	670 U	1100 U	960 U
2-METHYLNAPHTHALENE	790 U	680 U	670 U	1100 U	960 U
2-METHYLPHENOL	790 U	680 U	670 U	1100 U	960 U
2-NITROANILINE	790 U	680 U	670 U	1100 U	960 U
2-NITROPHENOL	790 U	680 U	670 U	1100 U	960 U
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	1600 U	1400 U	1300 U	2100 U	1900 U
3-NITROANILINE	790 U	680 U	670 U	1100 U	960 U
4,6-DINITRO-2-METHYLPHENOL	1600 U	1400 U	1300 U	2100 U	1900 U
4-BROMOPHENYL PHENYL ETHER	790 U	680 U	670 U	1100 U	960 U
4-CHLORO-3-METHYLPHENOL	790 U	680 U	670 U	1100 U	960 U
4-CHLOROANILINE	790 U	680 U	670 U	1100 U	960 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-6	SD-7	SD-8	SD-9	SD-10
SAMPLE ID	SD-6-031805	SD-7-031805	SD-8-031805	SD-9-031805	SD-10-031805
SAMPLE DATE	20050318	20050318	20050318	20050318	20050318
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	790 U	680 U	670 U	1100 U	960 U
4-METHYLPHENOL	790 U	680 U	670 U	1100 U	960 U
4-NITROANILINE	790 U	680 U	670 U	1100 U	960 U
4-NITROPHENOL	1600 U	1400 U	1300 U	2100 U	1900 U
ACENAPHTHENE	790 U	680 U	670 U	1100 U	190 J
ACENAPHTHYLENE	790 U	680 U	63 J	1100 U	960 U
ANILINE	790 U	680 U	670 U	1100 U	960 U
ANTHRACENE	790 U	680 U	120 J	180 J	500 J
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	970	537	1005	1270	1919
BAP EQUIVALENT-POSITIVE RESULTS	575	194	670	1270	1439
BENZIDINE	790 U	680 U	670 U	1100 U	960 U
BENZO(A)ANTHRACENE	440 J	140 J	580 J	790 J	1300
BENZO(A)PYRENE	450 J	150 J	500 J	810 J	1100
BENZO(B)FLUORANTHENE	490 J	200 J	800	1600	1400
BENZO(G,H,I)PERYLENE	370 J	110 J	310 J	670 J	740 J
BENZO(K)FLUORANTHENE	270 J	680 U	290 J	400 J	490 J
BENZOIC ACID	1600 U	1400 U	1300 U	2100 U	1900 U
BENZYL ALCOHOL	790 U	680 U	670 U	1100 U	960 U
BIS(2-CHLOROETHOXY)METHANE	790 U	680 U	670 U	1100 U	960 U
BIS(2-CHLOROETHYL)ETHER	790 U	680 U	670 U	1100 U	960 U
BIS(2-ETHYLHEXYL)PHTHALATE	1200 J	430 J	180 J	310 J	280 J
BUTYL BENZYL PHTHALATE	790 U	680 U	670 U	1100 U	960 U
CARBAZOLE	790 U	680 U	670 U	1100 U	250 J
CHRYSENE	410 J	140 J	710	1100	1300
DIBENZO(A,H)ANTHRACENE	790 U	680 U	670 U	160 J	960 U
DIBENZOFURAN	790 U	680 U	670 U	1100 U	960 U
DIETHYL PHTHALATE	790 U	680 U	670 U	1100 U	960 U
DIMETHYL PHTHALATE	790 U	680 U	670 U	1100 U	960 U
DI-N-BUTYL PHTHALATE	790 U	680 U	670 U	1100 U	960 U
DI-N-OCTYL PHTHALATE	790 U	680 U	670 U	1100 U	960 U
FLUORANTHENE	740 J	250 J	1500	2300	2700
FLUORENE	790 U	680 U	670 U	1100 U	250 J
HEXACHLOROBENZENE	790 U	680 U	670 U	1100 U	960 U
HEXACHLOROBUTADIENE	790 U	680 U	670 U	1100 U	960 U
HEXACHLOROCYCLOPENTADIENE	790 U	680 U	670 U	1100 U	960 U
HEXACHLOROETHANE	790 U	680 U	670 U	1100 U	960 U
INDENO(1,2,3-CD)PYRENE	290 J	95 J	280 J	560 J	630 J
ISOPHORONE	790 U	680 U	670 U	1100 U	960 U
NAPHTHALENE	790 U	680 U	670 U	1100 U	960 U
NITROBENZENE	790 U	680 U	670 U	1100 U	960 U
N-NITROSODIMETHYLAMINE	790 U	680 U	670 U	1100 U	960 U
N-NITROSO-DI-N-PROPYLAMINE	790 U	680 U	670 U	1100 U	960 U
N-NITROSODIPHENYLAMINE	790 U	680 U	670 U	1100 U	960 U
PENTACHLOROPHENOL	1600 U	1400 U	1300 U	2100 U	1900 U
PHENANTHRENE	330 J	130 J	410 J	810 J	2300
PHENOL	790 U	680 U	670 U	1100 U	960 U
PYRENE	870	270 J	1100	1700	2700
PYRIDINE	790 U	680 U	670 U	1100 U	960 U
TOTAL PAHS	4660	1485	6663	11080	15600

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-6	SD-7	SD-8	SD-9	SD-10
SAMPLE ID	SD-6-031805	SD-7-031805	SD-8-031805	SD-9-031805	SD-10-031805
SAMPLE DATE	20050318	20050318	20050318	20050318	20050318
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	79 U	68 U	67 U	11000 U	190 U
AROCLOR-1221	79 U	68 U	67 U	11000 U	190 U
AROCLOR-1232	79 U	68 U	67 U	11000 U	190 U
AROCLOR-1242	79 U	68 U	67 U	11000 U	190 U
AROCLOR-1248	79 U	68 U	67 U	11000 U	190 U
AROCLOR-1254	79 U	68 U	67 U	11000 U	190 U
AROCLOR-1260	540 J	110	370	54000	1300
TOTAL AROCLOR	540	110	370	54000	1300
METALS (MG/KG)					
ANTIMONY	1.7 B	0.47 B	1.1 B	2.1 B	1.9 B
ARSENIC	4.8 K	4.3 K	5.9	11.6	9.4
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1.3 J	1.1 J	1.2 J	1.7 J	2.1 J
CADMIUM	34.8 K	5.6 K	5 K	6.1 K	4.9 K
CHROMIUM	391	76.8	89.1	103	87.1
COBALT	NA	NA	NA	NA	NA
COPPER	84.8	41.2	82.6	159	119
HEXAVALENT CHROMIUM	0.87 U	1.2	0.74 U	1.3 U	1.2 U
IRON	NA	NA	NA	NA	NA
LEAD	145	64.1	67.8	103	88.9
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.32	0.084	0.17	0.3	0.27
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	27.3	12.3	19.6	39	33
SELENIUM	1	0.9	0.85	2.1	2.1
SILVER	2.6	0.46	0.79	1.2	1.4
THALLIUM	0.51 U	0.46 U	0.46 B	0.69 U	0.67 U
VANADIUM	NA	NA	NA	NA	NA
ZINC	425	138	184	401	339
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	44	49	50	32	35
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-11	SD-12	SD-13	SD-14	SD-15
SAMPLE ID	SD-11-031805	SD-12-031805	SD-13-SS	SD-14-SS	SD-15-SS
SAMPLE DATE	20050318	20050318	20051020	20051020	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	20 UJ	6 U	19 UJ
1,1,1-TRICHLOROETHANE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,1,2,2-TETRACHLOROETHANE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,1,2-TRICHLOROETHANE	8.9 U	17 U	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,1-DICHLOROETHANE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,1-DICHLOROETHENE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,1-DICHLOROPROPENE	NA	NA	20 UJ	6 U	19 UJ
1,2,3-TRICHLOROBENZENE	NA	NA	20 UJ	6 U	19 UJ
1,2,3-TRICHLOROPROPANE	NA	NA	20 UJ	6 U	19 UJ
1,2,3-TRIMETHYLBENZENE	NA	NA	20 UJ	6 U	19 UJ
1,2,4-TRICHLOROBENZENE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,2,4-TRIMETHYLBENZENE	NA	NA	20 UJ	6 U	19 UJ
1,2-DIBROMO-3-CHLOROPROPANE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,2-DIBROMOETHANE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,2-DICHLOROBENZENE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,2-DICHLOROETHANE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,2-DICHLOROPROPANE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,3-DICHLOROBENZENE	8.9 U	17 U	20 UJ	6 U	19 UJ
1,3-DICHLOROPROPANE	NA	NA	20 UJ	6 U	19 UJ
1,4-DICHLOROBENZENE	8.9 U	17 U	20 UJ	6 U	19 UJ
2,2-DICHLOROPROPANE	NA	NA	20 UJ	6 U	19 UJ
2-BUTANONE	18 U	33 U	23 J	32 UR	95 UR
2-CHLOROETHYL VINYL ETHER	NA	NA	20 UJ	6 U	19 UJ
2-CHLOROTOLUENE	NA	NA	20 UJ	6 U	19 UJ
2-HEXANONE	18 U	33 U	98 UJ	32 U	95 UJ
4-CHLOROTOLUENE	NA	NA	20 UJ	6 U	19 UJ
4-ISOPROPYLTOLUENE	NA	NA	20 UJ	6 U	19 UJ
4-METHYL-2-PENTANONE	18 U	33 U	98 UJ	32 U	95 UJ
ACETONE	18 U	110 B	130 B	32 UR	95 B
BENZENE	8.9 U	17 U	20 UJ	6 U	19 UJ
BROMOBENZENE	NA	NA	20 UJ	6 U	19 UJ
BROMOCHLOROMETHANE	NA	NA	20 UJ	6 U	19 UJ
BROMODICHLOROMETHANE	8.9 U	17 U	20 UJ	6 U	19 UJ
BROMOFORM	8.9 U	17 U	20 UJ	6 U	19 UJ
BROMOMETHANE	18 U	33 U	39 UJ	13 U	38 UJ
CARBON DISULFIDE	8.9 U	17 U	20 UJ	6 U	19 UJ
CARBON TETRACHLORIDE	8.9 U	17 U	20 UJ	6 U	19 UJ
CHLOROBENZENE	8.9 U	17 U	20 UJ	6 U	19 UJ
CHLORODIBROMOMETHANE	8.9 U	17 U	20 UJ	6 U	19 UJ
CHLOROETHANE	18 U	33 U	39 UJ	13 U	38 UJ
CHLOROFORM	8.9 U	17 U	20 UJ	6 U	19 UJ
CHLOROMETHANE	18 U	33 U	39 UJ	13 U	38 UJ
CIS-1,2-DICHLOROETHENE	8.9 U	17 U	20 UJ	6 U	19 UJ
CIS-1,3-DICHLOROPROPENE	8.9 U	17 U	20 UJ	6 U	19 UJ
CYCLOHEXANE	8.9 U	17 U	NA	NA	NA
DIBROMOMETHANE	NA	NA	20 UJ	6 U	19 UJ
DICHLORODIFLUOROMETHANE	8.9 U	17 U	39 UJ	13 U	38 UJ
DIISOPROPYL ETHER	NA	NA	20 UJ	6 U	19 UJ
ETHYL TERT-BUTYL ETHER	NA	NA	20 UJ	6 U	19 UJ
ETHYLBENZENE	8.9 U	17 U	20 UJ	6 U	19 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-11	SD-12	SD-13	SD-14	SD-15
SAMPLE ID	SD-11-031805	SD-12-031805	SD-13-SS	SD-14-SS	SD-15-SS
SAMPLE DATE	20050318	20050318	20051020	20051020	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	20 UJ	6 U	19 UJ
ISOPROPYLBENZENE	8.9 U	17 U	20 UJ	6 U	19 UJ
M+P-XYLENES	8.9 U	17 U	39 UJ	13 U	38 UJ
METHYL ACETATE	8.9 U	17 U	NA	NA	NA
METHYL CYCLOHEXANE	8.9 U	17 U	NA	NA	NA
METHYL TERT-BUTYL ETHER	8.9 U	17 U	8 J	13 U	6 J
METHYLENE CHLORIDE	18 U	33 U	20 B	7 B	19 B
NAPHTHALENE	NA	NA	7 J	6 U	19 UJ
N-BUTYLBENZENE	NA	NA	20 UJ	6 U	19 UJ
N-PROPYLBENZENE	NA	NA	20 UJ	6 U	19 UJ
O-XYLENE	8.9 U	17 U	20 UJ	6 U	19 UJ
SEC-BUTYLBENZENE	NA	NA	20 UJ	6 U	19 UJ
STYRENE	8.9 U	17 U	20 B	6 B	19 UJ
TERT-AMYL METHYL ETHER	NA	NA	20 UJ	6 U	19 UJ
TERT-BUTYLBENZENE	NA	NA	20 UJ	6 U	19 UJ
TERTIARY-BUTYL ALCOHOL	NA	NA	39 UR	13 UR	38 UR
TETRACHLOROETHENE	8.9 U	17 U	20 UJ	6 U	19 UJ
TOLUENE	8.9 U	17 U	20 UJ	6 U	4 J
TOTAL 1,2-DICHLOROETHENE	NA	NA	39 UJ	13 U	38 UJ
TOTAL XYLENES	NA	NA	58 UJ	19 U	57 UJ
TRANS-1,2-DICHLOROETHENE	8.9 U	17 U	20 UJ	6 U	19 UJ
TRANS-1,3-DICHLOROPROPENE	8.9 U	17 U	20 UJ	6 U	19 UJ
TRICHLOROETHENE	8.9 U	17 U	20 UJ	6 U	19 UJ
TRICHLOROFLUOROMETHANE	8.9 U	17 U	39 UJ	13 U	38 UJ
VINYL ACETATE	NA	NA	20 UJ	6 U	19 UJ
VINYL CHLORIDE	18 U	33 U	39 UJ	13 U	38 UJ
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
1,2-DICHLOROBENZENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
1,2-DIPHENYLHYDRAZINE	600 U	1100 U	NA	NA	NA
1,3-DICHLOROBENZENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
1,4-DICHLOROBENZENE	600 U	1100 U	230 J	430 U	1300 UJ
1,4-DIOXANE	NA	NA	1300 UJ	430 U	1300 UJ
1-METHYLNAPHTHALENE	NA	NA	1300 UJ	430 U	1300 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	600 U	1100 U	1300 UJ	430 U	1300 UJ
2,4,5-TRICHLOROPHENOL	600 U	1100 U	3200 UJ	1100 U	3300 UJ
2,4,6-TRICHLOROPHENOL	600 U	1100 U	1300 UJ	430 U	1300 UJ
2,4-DICHLOROPHENOL	600 U	1100 U	1300 UJ	430 U	1300 UJ
2,4-DIMETHYLPHENOL	600 U	1100 U	1300 UJ	430 U	1300 UJ
2,4-DINITROPHENOL	1200 U	2200 U	3200 UJ	1100 U	3300 UJ
2,4-DINITROTOLUENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
2,6-DINITROTOLUENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
2-CHLORONAPHTHALENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
2-CHLOROPHENOL	600 U	1100 U	1300 UJ	430 U	1300 UJ
2-METHYLNAPHTHALENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
2-METHYLPHENOL	600 U	1100 U	1300 UJ	430 U	1300 UJ
2-NITROANILINE	600 U	1100 U	3200 UJ	1100 U	3300 UJ
2-NITROPHENOL	600 U	1100 U	1300 UJ	430 U	1300 UJ
3&4-METHYLPHENOL	NA	NA	1300 UJ	430 U	1300 UJ
3,3'-DICHLOROBENZIDINE	1200 U	2200 U	1300 UJ	430 U	1300 UJ
3-NITROANILINE	600 U	1100 U	3200 UJ	1100 U	3300 UJ
4,6-DINITRO-2-METHYLPHENOL	1200 U	2200 U	3200 UJ	1100 U	3300 UJ
4-BROMOPHENYL PHENYL ETHER	600 U	1100 U	1300 UJ	430 U	1300 UJ
4-CHLORO-3-METHYLPHENOL	600 U	1100 U	1300 UJ	430 U	1300 UJ
4-CHLOROANILINE	600 U	1100 U	1300 UJ	430 U	1300 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-11	SD-12	SD-13	SD-14	SD-15
SAMPLE ID	SD-11-031805	SD-12-031805	SD-13-SS	SD-14-SS	SD-15-SS
SAMPLE DATE	20050318	20050318	20051020	20051020	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	600 U	1100 U	1300 UJ	430 U	1300 UJ
4-METHYLPHENOL	600 U	1100 U	NA	NA	NA
4-NITROANILINE	600 U	1100 U	3200 UJ	1100 U	3300 UJ
4-NITROPHENOL	1200 U	2200 U	3200 UJ	1100 U	3300 UJ
ACENAPHTHENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
ACENAPHTHYLENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
ANILINE	600 U	1100 U	1300 UJ	430 U	1300 UJ
ANTHRACENE	600 U	1100 U	310 J	200 J	1300 UJ
AZOBENZENE	NA	NA	1300 UJ	430 U	1300 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	600 U	1993	3941	1308	2223
BAP EQUIVALENT-POSITIVE RESULTS	600 U	1443	3291	1093	1573
BENZIDINE	600 U	1100 U	3200 UJ	1100 U	3300 UJ
BENZO(A)ANTHRACENE	600 U	1100 J	2000 J	1100	1000 J
BENZO(A)PYRENE	600 U	1100 J	2500 J	790	1200 J
BENZO(B)FLUORANTHENE	600 U	1600	3700 J	1400	1800 J
BENZO(G,H,I)PERYLENE	600 U	760 J	2000 J	360 J	730 J
BENZO(K)FLUORANTHENE	600 U	530 J	1800 J	560	750 J
BENZOIC ACID	1200 U	2200 U	3200 UJ	1100 U	3300 UJ
BENZYL ALCOHOL	600 U	1100 U	1300 UJ	430 UJ	1300 UJ
BIS(2-CHLOROETHOXY)METHANE	600 U	1100 U	1300 UJ	430 U	1300 UJ
BIS(2-CHLOROETHYL)ETHER	600 U	1100 U	1300 UJ	430 U	1300 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	78 J	430 J	1400 J	210 J	820 J
BUTYL BENZYL PHTHALATE	600 U	160 J	1300 UJ	430 U	1300 UJ
CARBAZOLE	600 U	1100 U	1300 UJ	130 J	1300 UJ
CHRYSENE	600 U	1200	3000 J	1200	1400 J
DIBENZO(A,H)ANTHRACENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
DIBENZOFURAN	600 U	1100 U	1300 UJ	430 U	1300 UJ
DIETHYL PHTHALATE	600 U	1100 U	1300 UJ	430 U	1300 UJ
DIMETHYL PHTHALATE	600 U	1100 U	1300 UJ	430 U	1300 UJ
DI-N-BUTYL PHTHALATE	600 U	1100 U	1300 UJ	430 U	1300 UJ
DI-N-OCTYL PHTHALATE	600 U	1100 U	1300 UJ	430 U	1300 UJ
FLUORANTHENE	600 U	2000	4200 J	2400	2000 J
FLUORENE	600 U	1100 U	1300 UJ	81 J	1300 UJ
HEXACHLOROBENZENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
HEXACHLOROBUTADIENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
HEXACHLOROCYCLOPENTADIENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
HEXACHLOROETHANE	600 U	1100 U	1300 UJ	430 U	1300 UJ
INDENO(1,2,3-CD)PYRENE	600 U	660 J	2000 J	460	840 J
ISOPHORONE	600 U	1100 U	1300 UJ	430 U	1300 UJ
NAPHTHALENE	600 U	1100 U	250 J	430 U	1300 UJ
NITROBENZENE	600 U	1100 U	1300 UJ	430 U	1300 UJ
N-NITROSODIMETHYLAMINE	600 U	1100 U	1300 UJ	430 U	1300 UJ
N-NITROSO-DI-N-PROPYLAMINE	600 U	1100 U	1300 UJ	430 U	1300 UJ
N-NITROSODIPHENYLAMINE	600 U	1100 U	1300 UJ	430 U	1300 UJ
PENTACHLOROPHENOL	1200 U	2200 U	3200 UJ	1100 U	3300 UJ
PHENANTHRENE	600 U	550 J	1500 J	830	940 J
PHENOL	600 U	1100 U	1300 UJ	430 U	1300 UJ
PYRENE	600 U	1900	6800 J	2400	3900 J
PYRIDINE	600 U	1100 U	1300 UJ	430 U	1300 UJ
TOTAL PAHS	0 U	11400	30060	11781	14560

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-11	SD-12	SD-13	SD-14	SD-15
SAMPLE ID	SD-11-031805	SD-12-031805	SD-13-SS	SD-14-SS	SD-15-SS
SAMPLE DATE	20050318	20050318	20051020	20051020	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	300 U	220 U	66 UJ	22 U	68 UJ
AROCLOR-1221	300 U	220 U	66 UJ	22 U	68 UJ
AROCLOR-1232	300 U	220 U	66 UJ	22 U	68 UJ
AROCLOR-1242	300 U	220 U	66 UJ	22 U	68 UJ
AROCLOR-1248	300 U	220 U	66 UJ	22 U	68 UJ
AROCLOR-1254	300 U	220 U	66 UJ	22 U	68 UJ
AROCLOR-1260	1400	1800	1400 J	480	1300 J
TOTAL AROCLOR	1400	1800	1400	480	1300
METALS (MG/KG)					
ANTIMONY	1 B	2.1 B	1.09 UJ	0.96	1.8 J
ARSENIC	5.3	9.7	9 J	4	10.5 J
BARIUM	NA	NA	49.5 J	60.6	57.4 J
BERYLLIUM	1 J	2.2 J	2.2 J	0.46	2.2 J
CADMIUM	3.5 K	5.9 K	5.9 J	3.5	4.7 J
CHROMIUM	58.1	106	124 J	75	120 J
COBALT	NA	NA	18.8 J	4.4	17.8 J
COPPER	64.3	140	116 J	19.1	124 J
HEXAVALENT CHROMIUM	0.74	1.4 U	8.2 J	0.53 J	2 UJ
IRON	NA	NA	NA	NA	NA
LEAD	59.6	115	127 J	42.2	123 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.21	0.35	0.48 J	0.34 L	0.44 J
MOLYBDENUM	NA	NA	2 J	1.3	2.3 J
NICKEL	16.5	35.6	42.5 J	9.9	39.6 J
SELENIUM	1.4	2.9	0.95 UJ	0.37 UL	1.12 UJ
SILVER	2.9	2	2.3 J	14.9	1.8 J
THALLIUM	0.44 U	0.77 U	1.63 UJ	0.64 U	1.91 UJ
VANADIUM	NA	NA	55 J	14.9	57.8 J
ZINC	199	423	464 J	132	405 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	56	30	26	77	25
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-16	SD-17	SD-18	SD-19	SD-20
SAMPLE ID	SD-16-SS	SD-17-SS	SD-18-SS	SD-19-SS	SD-20-SS
SAMPLE DATE	20051020	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,1,1-TRICHLOROETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,1,2,2-TETRACHLOROETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,1-DICHLOROETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,1-DICHLOROETHENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,1-DICHLOROPROPENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,2,3-TRICHLOROBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,2,3-TRICHLOROPROPANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,2,3-TRIMETHYLBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,2,4-TRICHLOROBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 B
1,2,4-TRIMETHYLBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,2-DIBROMO-3-CHLOROPROPANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,2-DIBROMOETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,2-DICHLOROBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,2-DICHLOROETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,2-DICHLOROPROPANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,3-DICHLOROBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,3-DICHLOROPROPANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
1,4-DICHLOROBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	2 J
2,2-DICHLOROPROPANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
2-BUTANONE	100 UR	100 UR	110 UR	23 J	110 UR
2-CHLOROETHYL VINYL ETHER	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
2-CHLOROTOLUENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
2-HEXANONE	100 UJ	100 UJ	110 UJ	81 UJ	110 UJ
4-CHLOROTOLUENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
4-ISOPROPYLTOLUENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
4-METHYL-2-PENTANONE	100 UJ	100 UJ	110 UJ	81 UJ	110 UJ
ACETONE	100 B	100 B	110 B	81 B	230 B
BENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
BROMOBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
BROMOCHLOROMETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
BROMODICHLOROMETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
BROMOFORM	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
BROMOMETHANE	40 UJ	41 UJ	44 UJ	32 UJ	45 UJ
CARBON DISULFIDE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
CARBON TETRACHLORIDE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
CHLOROBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
CHLORODIBROMOMETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
CHLOROETHANE	40 UJ	41 UJ	44 UJ	32 UJ	45 UJ
CHLOROFORM	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
CHLOROMETHANE	40 UJ	41 UJ	44 UJ	32 UJ	45 UJ
CIS-1,2-DICHLOROETHENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
CIS-1,3-DICHLOROPROPENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
DICHLORODIFLUOROMETHANE	40 UJ	41 UJ	44 UJ	32 UJ	45 UJ
DIISOPROPYL ETHER	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
ETHYL TERT-BUTYL ETHER	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
ETHYLBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-16	SD-17	SD-18	SD-19	SD-20
SAMPLE ID	SD-16-SS	SD-17-SS	SD-18-SS	SD-19-SS	SD-20-SS
SAMPLE DATE	20051020	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
ISOPROPYLBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
M+P-XYLENES	40 UJ	41 UJ	44 UJ	32 UJ	45 UJ
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	9 J	8 J	9 J	32 UJ	6 J
METHYLENE CHLORIDE	20 B	21 B	22 B	16 B	22 UJ
NAPHTHALENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
N-BUTYLBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
N-PROPYLBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
O-XYLENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
SEC-BUTYLBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
STYRENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
TERT-AMYL METHYL ETHER	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
TERT-BUTYLBENZENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
TERTIARY-BUTYL ALCOHOL	40 UR	41 UR	44 UR	32 UR	45 UR
TETRACHLOROETHENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
TOLUENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
TOTAL 1,2-DICHLOROETHENE	40 UJ	41 UJ	44 UJ	32 UJ	45 UJ
TOTAL XYLENES	60 UJ	62 UJ	66 UJ	48 UJ	68 UJ
TRANS-1,2-DICHLOROETHENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
TRANS-1,3-DICHLOROPROPENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
TRICHLOROETHENE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
TRICHLOROFLUOROMETHANE	40 UJ	41 UJ	44 UJ	32 UJ	45 UJ
VINYL ACETATE	20 UJ	21 UJ	22 UJ	16 UJ	22 UJ
VINYL CHLORIDE	40 UJ	41 UJ	44 UJ	32 UJ	45 UJ
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
1,2-DICHLOROBENZENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
1,4-DICHLOROBENZENE	240 J	1300 UJ	1500 UJ	140 J	1500 UJ
1,4-DIOXANE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
1-METHYLNAPHTHALENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2,4,5-TRICHLOROPHENOL	3400 UJ	3300 UJ	3800 UJ	2700 UJ	3700 UJ
2,4,6-TRICHLOROPHENOL	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2,4-DICHLOROPHENOL	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2,4-DIMETHYLPHENOL	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2,4-DINITROPHENOL	3400 UJ	3300 UJ	3800 UJ	2700 UJ	3700 UJ
2,4-DINITROTOLUENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2,6-DINITROTOLUENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2-CHLORONAPHTHALENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2-CHLOROPHENOL	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2-METHYLNAPHTHALENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2-METHYLPHENOL	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
2-NITROANILINE	3400 UJ	3300 UJ	3800 UJ	2700 UJ	3700 UJ
2-NITROPHENOL	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
3&4-METHYLPHENOL	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
3,3'-DICHLOROBENZIDINE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
3-NITROANILINE	3400 UJ	3300 UJ	3800 UJ	2700 UJ	3700 UJ
4,6-DINITRO-2-METHYLPHENOL	3400 UJ	3300 UJ	3800 UJ	2700 UJ	3700 UJ
4-BROMOPHENYL PHENYL ETHER	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
4-CHLORO-3-METHYLPHENOL	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
4-CHLOROANILINE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-16	SD-17	SD-18	SD-19	SD-20
SAMPLE ID	SD-16-SS	SD-17-SS	SD-18-SS	SD-19-SS	SD-20-SS
SAMPLE DATE	20051020	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	3400 UJ	3300 UJ	3800 UJ	2700 UJ	3700 UJ
4-NITROPHENOL	3400 UJ	3300 UJ	3800 UJ	2700 UJ	3700 UJ
ACENAPHTHENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
ACENAPHTHYLENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
ANILINE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
ANTHRACENE	1400 UJ	1300 UJ	1500 UJ	210 J	1500 UJ
AZOBENZENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	1446	1532	1501	1794	1358
BAP EQUIVALENT-POSITIVE RESULTS	676	817	676	1244	533
BENZIDINE	3400 UJ	3300 UJ	3800 UJ	2700 UJ	3700 UJ
BENZO(A)ANTHRACENE	490 J	510 J	380 J	770 J	360 J
BENZO(A)PYRENE	540 J	650 J	540 J	960 J	420 J
BENZO(B)FLUORANTHENE	810 J	1100 J	930 J	1400 J	740 J
BENZO(G,H,I)PERYLENE	1400 UJ	1300 UJ	1500 UJ	460 J	1500 UJ
BENZO(K)FLUORANTHENE	480 J	480 J	430 J	670 J	290 J
BENZOIC ACID	3400 UJ	3300 UJ	3800 UJ	2700 UJ	3700 UJ
BENZYL ALCOHOL	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
BIS(2-CHLOROETHOXY)METHANE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
BIS(2-CHLOROETHYL)ETHER	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	520 J	330 J	550 J	960 J	1500 UJ
BUTYL BENZYL PHTHALATE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
CARBAZOLE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
CHRYSENE	720 J	770 J	600 J	960 J	490 J
DIBENZO(A,H)ANTHRACENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
DIBENZOFURAN	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
DIETHYL PHTHALATE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
DIMETHYL PHTHALATE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
DI-N-BUTYL PHTHALATE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
DI-N-OCTYL PHTHALATE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
FLUORANTHENE	940 J	1200 J	980 J	1500 J	920 J
FLUORENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
HEXACHLOROBENZENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
HEXACHLOROBUTADIENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
HEXACHLOROCYCLOPENTADIENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
HEXACHLOROETHANE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
INDENO(1,2,3-CD)PYRENE	1400 UJ	1300 UJ	1500 UJ	590 J	1500 UJ
ISOPHORONE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
NAPHTHALENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
NITROBENZENE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
N-NITROSODIMETHYLAMINE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
N-NITROSO-DI-N-PROPYLAMINE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
N-NITROSODIPHENYLAMINE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
PENTACHLOROPHENOL	3400 UJ	3300 UJ	3800 UJ	2700 UJ	3700 UJ
PHENANTHRENE	440 J	580 J	370 J	770 J	350 J
PHENOL	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
PYRENE	1500 J	1600 J	1200 J	2200 J	820 J
PYRIDINE	1400 UJ	1300 UJ	1500 UJ	1100 UJ	1500 UJ
TOTAL PAHS	5920	6890	5430	10490	4390

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-16	SD-17	SD-18	SD-19	SD-20
SAMPLE ID	SD-16-SS	SD-17-SS	SD-18-SS	SD-19-SS	SD-20-SS
SAMPLE DATE	20051020	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	71 UJ	69 UJ	78 UJ	57 UJ	77 UJ
AROCLOR-1221	71 UJ	69 UJ	78 UJ	57 UJ	77 UJ
AROCLOR-1232	71 UJ	69 UJ	78 UJ	57 UJ	77 UJ
AROCLOR-1242	71 UJ	69 UJ	78 UJ	57 UJ	77 UJ
AROCLOR-1248	71 UJ	69 UJ	78 UJ	57 UJ	77 UJ
AROCLOR-1254	71 UJ	69 UJ	78 UJ	57 UJ	77 UJ
AROCLOR-1260	1400 J	1100 J	780 J	2800 J	1100 J
TOTAL AROCLOR	1400	1100	780	2800	1100
METALS (MG/KG)					
ANTIMONY	1.33 UJ	1.5 J	1.7 J	1.07 UJ	1.4 J
ARSENIC	9.6 J	11.9 J	11.3 J	8.2 J	10.2 J
BARIUM	45.2 J	52.8 J	51.9 J	45.8 J	52 J
BERYLLIUM	2.2 J	2.5 J	2.4 J	2.2 J	2.4 J
CADMIUM	5.1 J	4.6 J	4.6 J	7.2 J	5.4 J
CHROMIUM	127 J	125 J	132 J	135 J	140 J
COBALT	17.9 J	19.3 J	19.6 J	19.3 J	19.6 J
COPPER	116 J	127 J	131 J	97.3 J	126 J
HEXAVALENT CHROMIUM	2.1 UJ	2 UJ	2.3 UJ	1.6 UJ	2.2 UJ
IRON	NA	NA	NA	NA	NA
LEAD	109 J	114 J	115 J	125 J	115 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.4 J	0.39 J	0.4 J	0.43 J	0.46 J
MOLYBDENUM	1.2 J	1.6 J	1.2 J	1.3 J	1.3 J
NICKEL	39.3 J	42.4 J	40.9 J	42.4 J	41 J
SELENIUM	1.16 UJ	2.3 J	1.24 UJ	0.93 UJ	1.13 UJ
SILVER	1.9 J	1.7 J	1.5 J	2.3 J	1.7 J
THALLIUM	2.1 J	2.23 UJ	2.11 UJ	1.59 UJ	1.94 UJ
VANADIUM	52.2 J	61.4 J	57.4 J	56.3 J	55.6 J
ZINC	373 J	384 J	372 J	427 J	386 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	24	25	22	30	22
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	47000 J	NA	42000 J	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-21	SD-22	SD-23	SD-24	SD-25
SAMPLE ID	SD-21-SS	SD-22-SS	SD-23-SS	SD-24-SS	SD-25-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,1,1-TRICHLOROETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,1,2,2-TETRACHLOROETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,1-DICHLOROETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,1-DICHLOROETHENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,1-DICHLOROPROPENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,2,3-TRICHLOROBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,2,3-TRICHLOROPROPANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,2,3-TRIMETHYLBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,2,4-TRICHLOROBENZENE	20 B	22 B	22 B	7 U	12 UJ
1,2,4-TRIMETHYLBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,2-DIBROMO-3-CHLOROPROPANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,2-DIBROMOETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,2-DICHLOROBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,2-DICHLOROETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,2-DICHLOROPROPANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,3-DICHLOROBENZENE	20 UJ	2 J	22 UJ	7 U	12 UJ
1,3-DICHLOROPROPANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
1,4-DICHLOROBENZENE	1 J	3 J	1 J	7 U	12 UJ
2,2-DICHLOROPROPANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
2-BUTANONE	99 UR	110 UR	110 UR	36 UR	58 UR
2-CHLOROETHYL VINYL ETHER	20 UJ	22 UJ	22 UJ	7 U	12 UJ
2-CHLOROTOLUENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
2-HEXANONE	99 UJ	110 UJ	110 UJ	36 U	58 UJ
4-CHLOROTOLUENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
4-ISOPROPYLTOLUENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
4-METHYL-2-PENTANONE	99 UJ	110 UJ	110 UJ	36 U	58 UJ
ACETONE	200 B	240 B	140 B	13 B	47 B
BENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
BROMOBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
BROMOCHLOROMETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
BROMODICHLOROMETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
BROMOFORM	20 UJ	22 UJ	22 UJ	7 U	12 UJ
BROMOMETHANE	40 UJ	44 UJ	43 UJ	15 U	23 UJ
CARBON DISULFIDE	20 UJ	22 UJ	22 UJ	7 U	12 UR
CARBON TETRACHLORIDE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
CHLOROBENZENE	20 UJ	3 J	22 UJ	7 U	12 UJ
CHLORODIBROMOMETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
CHLOROETHANE	40 UJ	44 UJ	43 UJ	15 U	23 UJ
CHLOROFORM	20 UJ	22 UJ	22 UJ	7 U	12 UJ
CHLOROMETHANE	40 UJ	44 UJ	43 UJ	15 U	23 UJ
CIS-1,2-DICHLOROETHENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
CIS-1,3-DICHLOROPROPENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
DICHLORODIFLUOROMETHANE	40 UJ	44 UJ	43 UJ	15 U	23 UJ
DIISOPROPYL ETHER	20 UJ	22 UJ	22 UJ	7 U	12 UJ
ETHYL TERT-BUTYL ETHER	20 UJ	22 UJ	22 UJ	7 U	12 UJ
ETHYLBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-21	SD-22	SD-23	SD-24	SD-25
SAMPLE ID	SD-21-SS	SD-22-SS	SD-23-SS	SD-24-SS	SD-25-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
ISOPROPYLBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
M+P-XYLENES	40 UJ	44 UJ	43 UJ	15 U	23 UJ
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	8 J	5 J	9 J	15 U	3 J
METHYLENE CHLORIDE	20 UJ	22 UJ	22 UJ	6 B	9 B
NAPHTHALENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
N-BUTYLBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
N-PROPYLBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
O-XYLENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
SEC-BUTYLBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
STYRENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
TERT-AMYL METHYL ETHER	20 UJ	22 UJ	22 UJ	7 U	12 UJ
TERT-BUTYLBENZENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
TERTIARY-BUTYL ALCOHOL	40 UR	44 UR	43 UR	15 UR	23 UR
TETRACHLOROETHENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
TOLUENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
TOTAL 1,2-DICHLOROETHENE	40 UJ	44 UJ	43 UJ	15 U	23 UJ
TOTAL XYLENES	59 UJ	65 UJ	65 UJ	22 U	35 UJ
TRANS-1,2-DICHLOROETHENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
TRANS-1,3-DICHLOROPROPENE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
TRICHLOROETHENE	20 UJ	22 UJ	22 UJ	7 U	12 UR
TRICHLOROFLUOROMETHANE	40 UJ	44 UJ	43 UJ	15 U	23 UJ
VINYL ACETATE	20 UJ	22 UJ	22 UJ	7 U	12 UJ
VINYL CHLORIDE	40 UJ	44 UJ	43 UJ	15 U	23 UJ
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
1,2-DICHLOROBENZENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
1,4-DICHLOROBENZENE	1300 UJ	450 J	1400 UJ	480 U	96 J
1,4-DIOXANE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
1-METHYLNAPHTHALENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2,2'-OXYBIS(1-CHLOROPROPANE)	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2,4,5-TRICHLOROPHENOL	3200 UJ	3600 UJ	3600 UJ	1200 U	1900 U
2,4,6-TRICHLOROPHENOL	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2,4-DICHLOROPHENOL	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2,4-DIMETHYLPHENOL	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2,4-DINITROPHENOL	3200 UJ	3600 UJ	3600 UJ	1200 U	1900 U
2,4-DINITROTOLUENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2,6-DINITROTOLUENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2-CHLORONAPHTHALENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2-CHLOROPHENOL	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2-METHYLNAPHTHALENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2-METHYLPHENOL	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
2-NITROANILINE	3200 UJ	3600 UJ	3600 UJ	1200 U	1900 U
2-NITROPHENOL	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
3&4-METHYLPHENOL	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
3,3'-DICHLOROBENZIDINE	1300 UJ	1400 UJ	1400 UJ	480 UJ	780 U
3-NITROANILINE	3200 UJ	3600 UJ	3600 UJ	1200 U	1900 U
4,6-DINITRO-2-METHYLPHENOL	3200 UJ	3600 UJ	3600 UJ	1200 U	1900 U
4-BROMOPHENYL PHENYL ETHER	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
4-CHLORO-3-METHYLPHENOL	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
4-CHLOROANILINE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-21	SD-22	SD-23	SD-24	SD-25
SAMPLE ID	SD-21-SS	SD-22-SS	SD-23-SS	SD-24-SS	SD-25-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	3200 UJ	3600 UJ	3600 UJ	1200 U	1900 U
4-NITROPHENOL	3200 UJ	3600 UJ	3600 UJ	1200 U	1900 U
ACENAPHTHENE	1300 UJ	1400 UJ	1400 UJ	480 U	160 J
ACENAPHTHYLENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
ANILINE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
ANTHRACENE	1300 UJ	1400 UJ	1400 UJ	480 U	150 J
AZOBENZENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
BAP EQUIVALENT-1/2 NON-DETECTS	1354	1496	1371	711	886
BAP EQUIVALENT-POSITIVE RESULTS	639	726	601	471	492
BENZIDINE	3200 UJ	3600 UJ	3600 UJ	1200 UJ	1900 U
BENZO(A)ANTHRACENE	350 J	400 J	350 J	370 J	330 J
BENZO(A)PYRENE	520 J	580 J	480 J	350 J	370 J
BENZO(B)FLUORANTHENE	800 J	1000 J	830 J	570 J	570 J
BENZO(G,H,I)PERYLENE	1300 UJ	1400 UJ	1400 UJ	230 J	780 UJ
BENZO(K)FLUORANTHENE	350 J	520 J	280 J	210 J	780 UJ
BENZOIC ACID	3200 UJ	3600 UJ	3600 UJ	1200 U	1900 U
BENZYL ALCOHOL	1300 UJ	1400 UJ	1400 UJ	480 U	780 UJ
BIS(2-CHLOROETHOXY)METHANE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
BIS(2-CHLOROETHYL)ETHER	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
BIS(2-ETHYLHEXYL)PHTHALATE	360 J	440 J	360 J	450 J	300 J
BUTYL BENZYL PHTHALATE	1300 UJ	1400 UJ	1400 UJ	120 J	780 U
CARBAZOLE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
CHRYSENE	570 J	690 J	530 J	480 J	490 J
DIBENZO(A,H)ANTHRACENE	1300 UJ	1400 UJ	1400 UJ	480 UJ	780 UJ
DIBENZOFURAN	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
DIETHYL PHTHALATE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
DIMETHYL PHTHALATE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
DI-N-BUTYL PHTHALATE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
DI-N-OCTYL PHTHALATE	1300 UJ	1400 UJ	1400 UJ	480 UJ	780 UJ
FLUORANTHENE	990 J	1000 J	860 J	440 J	500 J
FLUORENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
HEXACHLOROBENZENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
HEXACHLOROBUTADIENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
HEXACHLOROCYCLOPENTADIENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 UR
HEXACHLOROETHANE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
INDENO(1,2,3-CD)PYRENE	1300 UJ	1400 UJ	1400 UJ	240 J	320 J
ISOPHORONE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
NAPHTHALENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
NITROBENZENE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
N-NITROSODIMETHYLAMINE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
N-NITROSO-DI-N-PROPYLAMINE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
N-NITROSODIPHENYLAMINE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
PENTACHLOROPHENOL	3200 UJ	3600 UJ	3600 UJ	1200 U	1900 U
PHENANTHRENE	350 J	460 J	300 J	240 J	240 J
PHENOL	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
PYRENE	950 J	1300 J	1100 J	990 J	860
PYRIDINE	1300 UJ	1400 UJ	1400 UJ	480 U	780 U
TOTAL PAHS	4880	5950	4730	4120	3990

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-21	SD-22	SD-23	SD-24	SD-25
SAMPLE ID	SD-21-SS	SD-22-SS	SD-23-SS	SD-24-SS	SD-25-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	67 UJ	74 UJ	74 UJ	25 U	40 U
AROCLOR-1221	67 UJ	74 UJ	74 UJ	25 U	40 U
AROCLOR-1232	67 UJ	74 UJ	74 UJ	25 U	40 U
AROCLOR-1242	67 UJ	74 UJ	74 UJ	25 U	40 U
AROCLOR-1248	67 UJ	74 UJ	74 UJ	25 U	40 U
AROCLOR-1254	67 UJ	74 UJ	74 UJ	25 U	40 U
AROCLOR-1260	560 J	2000 J	750 J	190 J	1300 J
TOTAL AROCLOR	560	2000	750	190	1300
METALS (MG/KG)					
ANTIMONY	1.35 UJ	1.35 UJ	1.25 UJ	0.43 UL	0.71 UL
ARSENIC	9.4 J	11.2 J	11.1 J	3.8	5.1
BARIUM	38.2 J	61.1 J	52 J	17.1	21.5
BERYLLIUM	1.9 J	2.5 J	2.3 J	0.84	0.98
CADMIUM	3.3 J	5.2 J	5.3 J	1.6	4.3
CHROMIUM	98.4 J	156 J	154 J	33.4 K	63.7 K
COBALT	15.2 J	22.2 J	19.9 J	9.8	9.8
COPPER	104 J	151 J	127 J	27.2 J	61.3 J
HEXAVALENT CHROMIUM	2 UJ	2.2 UJ	2.2 UJ	0.74 UL	1.1 UL
IRON	NA	NA	NA	NA	NA
LEAD	86 J	127 J	119 J	29.4	49.6
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.33 J	0.4 J	0.4 J	0.1 K	0.23 K
MOLYBDENUM	1 J	1.3 J	1.4 J	0.56	0.34 U
NICKEL	31.5 J	46.1 J	41.3 J	15.6	17.1
SELENIUM	1.2 J	1.18 UJ	1.09 UJ	0.38 U	0.62 B
SILVER	0.97 J	1.8 J	1.9 J	0.11 UL	0.74 L
THALLIUM	2.01 UJ	2.01 UJ	1.87 UJ	0.64 U	1.05 U
VANADIUM	44 J	61.5 J	55.9 J	20.8	24.2
ZINC	281 J	404 J	362 J	134	180
METALS (UG/KG)					
DIBUTYLTIN	NA	5.5 J	NA	NA	NA
MONOBUTYLTIN	NA	6.8 UJ	NA	NA	NA
TETRABUTYLTIN	NA	6.8 UJ	NA	NA	NA
TRIBUTYLTIN	NA	6 UJ	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	25	23	23	68	42
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	55000 J	NA	28000 K
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-26	SD-27	SD-28	SD-29	SD-30
SAMPLE ID	SD-26-SS	SD-27-SS	SD-28-SS	SD-29-SS	SD-30-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	23 UJ	14 U	17 UL	15 U	19 UJ
1,1,1-TRICHLOROETHANE	23 UJ	14 U	17 UL	15 U	19 UJ
1,1,2,2-TETRACHLOROETHANE	23 UJ	14 U	17 UL	15 UL	19 UJ
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	23 UJ	14 U	17 UL	15 U	19 UJ
1,1-DICHLOROETHANE	23 UJ	14 U	17 UL	15 U	19 UJ
1,1-DICHLOROETHENE	23 UJ	14 U	17 UL	15 U	19 UJ
1,1-DICHLOROPROPENE	23 UJ	14 U	17 UL	15 U	19 UJ
1,2,3-TRICHLOROBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
1,2,3-TRICHLOROPROPANE	23 UJ	14 U	17 UL	15 UL	19 UJ
1,2,3-TRIMETHYLBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
1,2,4-TRICHLOROBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
1,2,4-TRIMETHYLBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
1,2-DIBROMO-3-CHLOROPROPANE	23 UJ	14 U	17 UL	15 UL	19 UJ
1,2-DIBROMOETHANE	23 UJ	14 U	17 UL	15 U	19 UJ
1,2-DICHLOROBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
1,2-DICHLOROETHANE	23 UJ	14 U	17 UL	15 U	19 UJ
1,2-DICHLOROPROPANE	23 UJ	14 U	17 UL	15 U	19 UJ
1,3-DICHLOROBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
1,3-DICHLOROPROPANE	23 UJ	14 U	17 UL	15 U	19 UJ
1,4-DICHLOROBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
2,2-DICHLOROPROPANE	23 UJ	14 U	17 UL	15 U	19 UJ
2-BUTANONE	110 UR	71 UR	85 UR	17 J	93 UJ
2-CHLOROETHYL VINYL ETHER	23 UJ	14 U	17 UL	15 U	19 UJ
2-CHLOROTOLUENE	23 UJ	14 U	17 UL	15 UL	19 UJ
2-HEXANONE	110 UJ	71 U	85 UL	74 U	93 UJ
4-CHLOROTOLUENE	23 UJ	14 U	17 UL	15 UL	19 UJ
4-ISOPROPYLTOLUENE	23 UJ	14 U	17 UL	15 UL	19 UJ
4-METHYL-2-PENTANONE	110 UJ	71 U	85 UL	74 U	93 UJ
ACETONE	65 B	80 B	85 B	88 B	140 B
BENZENE	23 UJ	14 U	17 UL	15 U	19 UJ
BROMOBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
BROMOCHLOROMETHANE	23 UJ	14 U	17 UL	15 U	19 UJ
BROMODICHLOROMETHANE	23 UJ	14 U	17 UL	15 U	19 UJ
BROMOFORM	23 UJ	14 U	17 UL	15 U	19 UJ
BROMOMETHANE	46 UJ	28 U	34 UL	30 U	37 UJ
CARBON DISULFIDE	23 UJ	14 U	17 UL	12 J	19 UJ
CARBON TETRACHLORIDE	23 UJ	14 U	17 UL	15 U	19 UJ
CHLOROBENZENE	23 UJ	14 U	17 UL	15 U	19 UJ
CHLORODIBROMOMETHANE	23 UJ	14 U	17 UL	15 U	19 UJ
CHLOROETHANE	46 UJ	28 U	34 UL	30 U	37 UJ
CHLOROFORM	23 UJ	14 U	17 UL	15 U	19 UJ
CHLOROMETHANE	46 UJ	28 U	34 UL	30 U	37 UJ
CIS-1,2-DICHLOROETHENE	23 UJ	14 U	17 UL	15 U	19 UJ
CIS-1,3-DICHLOROPROPENE	23 UJ	14 U	17 UL	15 U	19 UJ
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	23 UJ	14 U	17 UL	15 U	19 UJ
DICHLORODIFLUOROMETHANE	46 UJ	28 U	34 UL	30 U	37 UJ
DIISOPROPYL ETHER	23 UJ	14 U	17 UL	15 U	19 UJ
ETHYL TERT-BUTYL ETHER	23 UJ	14 U	17 UL	15 U	19 UJ
ETHYLBENZENE	23 UJ	14 U	17 UL	15 U	19 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-26	SD-27	SD-28	SD-29	SD-30
SAMPLE ID	SD-26-SS	SD-27-SS	SD-28-SS	SD-29-SS	SD-30-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	23 UJ	14 U	17 UL	15 UL	19 UJ
ISOPROPYLBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
M+P-XYLENES	46 UJ	28 U	34 UL	30 U	37 UJ
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	8 J	28 U	3 J	5 J	3 J
METHYLENE CHLORIDE	23 B	10 B	12 B	10 B	19 UJ
NAPHTHALENE	23 UJ	14 U	17 UL	15 UL	19 UJ
N-BUTYLBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
N-PROPYLBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
O-XYLENE	23 UJ	14 U	17 UL	15 U	19 UJ
SEC-BUTYLBENZENE	23 UJ	14 U	17 UL	15 UL	19 UJ
STYRENE	23 UJ	14 U	17 UL	15 U	19 UJ
TERT-AMYL METHYL ETHER	23 UJ	14 U	17 UL	15 U	19 UJ
TERT-BUTYLBENZENE	23 UJ	14 U	17 UL	15 U	19 UJ
TERTIARY-BUTYL ALCOHOL	46 UR	28 UR	34 UR	30 UR	37 UR
TETRACHLOROETHENE	23 UJ	14 U	17 UL	15 U	19 UJ
TOLUENE	23 UJ	10 J	17 UL	15 U	19 UJ
TOTAL 1,2-DICHLOROETHENE	46 UJ	28 U	34 UL	30 U	37 UJ
TOTAL XYLENES	68 UJ	42 U	51 UL	45 U	56 UJ
TRANS-1,2-DICHLOROETHENE	23 UJ	14 U	17 UL	15 U	19 UJ
TRANS-1,3-DICHLOROPROPENE	23 UJ	14 U	17 UL	15 U	19 UJ
TRICHLOROETHENE	23 UJ	14 U	17 UL	15 U	19 UJ
TRICHLOROFLUOROMETHANE	46 UJ	28 U	34 UL	30 U	37 UJ
VINYL ACETATE	23 UJ	14 U	17 UL	15 U	19 UJ
VINYL CHLORIDE	46 UJ	28 U	34 UL	30 U	37 UJ
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
1,2-DICHLOROBENZENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	1500 UJ	420 J	1100 UJ	980 U	1300 UJ
1,4-DICHLOROBENZENE	160 J	850 J	1100 UJ	76 J	120 B
1,4-DIOXANE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
1-METHYLNAPHTHALENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2,4,5-TRICHLOROPHENOL	3700 UJ	2300 U	2800 UJ	2400 U	3300 UJ
2,4,6-TRICHLOROPHENOL	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2,4-DICHLOROPHENOL	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2,4-DIMETHYLPHENOL	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2,4-DINITROPHENOL	3700 UJ	2300 U	2800 UJ	2400 U	3300 UJ
2,4-DINITROTOLUENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2,6-DINITROTOLUENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2-CHLORONAPHTHALENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2-CHLOROPHENOL	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2-METHYLNAPHTHALENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2-METHYLPHENOL	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
2-NITROANILINE	3700 UJ	2300 U	2800 UJ	2400 U	3300 UJ
2-NITROPHENOL	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
3&4-METHYLPHENOL	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
3,3'-DICHLOROBENZIDINE	1500 UJ	940 U	1100 UJ	980 UJ	1300 UJ
3-NITROANILINE	3700 UJ	2300 U	2800 UJ	2400 U	3300 UJ
4,6-DINITRO-2-METHYLPHENOL	3700 UJ	2300 U	2800 UJ	2400 U	3300 UJ
4-BROMOPHENYL PHENYL ETHER	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
4-CHLORO-3-METHYLPHENOL	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
4-CHLOROANILINE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-26	SD-27	SD-28	SD-29	SD-30
SAMPLE ID	SD-26-SS	SD-27-SS	SD-28-SS	SD-29-SS	SD-30-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	3700 UJ	2300 U	2800 UJ	2400 U	3300 UJ
4-NITROPHENOL	3700 UJ	2300 U	2800 UJ	2400 U	3300 UJ
ACENAPHTHENE	1500 UJ	250 J	790 J	980 U	260 B
ACENAPHTHYLENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
ANILINE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
ANTHRACENE	1500 UJ	300 J	1700 J	980 U	1300 UJ
AZOBENZENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	1390	1776	6472	1121	1202
BAP EQUIVALENT-POSITIVE RESULTS	565	1306	6472	582	481
BENZIDINE	3700 UJ	2300 U	2800 UJ	2400 UJ	3300 UJ
BENZO(A)ANTHRACENE	330 J	980	5200 J	420 J	300 J
BENZO(A)PYRENE	450 J	990 J	4400 J	470 J	380 J
BENZO(B)FLUORANTHENE	780 J	1400 J	5800 J	660 J	700 J
BENZO(G,H,I)PERYLENE	1500 UJ	730 J	3100 J	980 UJ	1300 UJ
BENZO(K)FLUORANTHENE	310 J	240 J	2700 J	310 J	1300 UJ
BENZOIC ACID	3700 UJ	2300 U	2800 UJ	2400 U	3300 UJ
BENZYL ALCOHOL	1500 UJ	940 UJ	1100 UJ	980 U	1300 UJ
BIS(2-CHLOROETHOXY)METHANE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
BIS(2-CHLOROETHYL)ETHER	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	1500 J	630 J	510 J	390 J	340 J
BUTYL BENZYL PHTHALATE	1500 UJ	940 U	1100 UJ	980 UJ	1300 UJ
CARBAZOLE	1500 UJ	180 J	990 J	980 U	1300 UJ
CHRYSENE	530 J	1400	5400 J	560 J	540 J
DIBENZO(A,H)ANTHRACENE	1500 UJ	940 UJ	600 J	980 UJ	1300 UJ
DIBENZOFURAN	1500 UJ	940 U	340 J	980 U	1300 UJ
DIETHYL PHTHALATE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
DIMETHYL PHTHALATE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
DI-N-BUTYL PHTHALATE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
DI-N-OCTYL PHTHALATE	1500 UJ	940 UJ	1100 UJ	980 UJ	1300 UJ
FLUORANTHENE	780 J	1500	9800 J	840 J	540 J
FLUORENE	1500 UJ	180 J	680 J	980 U	1300 UJ
HEXACHLOROBENZENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
HEXACHLOROBUTADIENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
HEXACHLOROCYCLOPENTADIENE	1500 UJ	940 UR	1100 UJ	980 U	1300 UJ
HEXACHLOROETHANE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
INDENO(1,2,3-CD)PYRENE	1500 UJ	740 J	3400 J	980 UJ	1300 UJ
ISOPHORONE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
NAPHTHALENE	1500 UJ	940 U	290 J	980 U	1300 UJ
NITROBENZENE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
N-NITROSODIMETHYLAMINE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
N-NITROSO-DI-N-PROPYLAMINE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
N-NITROSODIPHENYLAMINE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
PENTACHLOROPHENOL	3700 UJ	2300 U	2800 UJ	2400 U	3300 UJ
PHENANTHRENE	360 J	850 J	6800 J	360 J	1300 UJ
PHENOL	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
PYRENE	1200 J	2500	13000 J	1200 J	1000 J
PYRIDINE	1500 UJ	940 U	1100 UJ	980 U	1300 UJ
TOTAL PAHS	4740	12060	63660	4820	3460

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-26	SD-27	SD-28	SD-29	SD-30
SAMPLE ID	SD-26-SS	SD-27-SS	SD-28-SS	SD-29-SS	SD-30-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	76 UJ	2400 UJ	59 UJ	51 U	68 UJ
AROCLOR-1221	76 UJ	2400 UJ	59 UJ	51 U	68 UJ
AROCLOR-1232	76 UJ	2400 UJ	59 UJ	51 U	68 UJ
AROCLOR-1242	76 UJ	2400 UJ	59 UJ	51 U	68 UJ
AROCLOR-1248	76 UJ	2400 UJ	59 UJ	51 U	68 UJ
AROCLOR-1254	76 UJ	2400 UJ	59 UJ	51 U	68 UJ
AROCLOR-1260	1500 J	20000 J	790 J	2500	1400 J
TOTAL AROCLOR	1500	20000	790	2500	1400
METALS (MG/KG)					
ANTIMONY	1.5 J	1.2 L	1.23 UJ	1.09 UL	1.24 UJ
ARSENIC	11 J	7.4	8.4 J	8.3	10.1 J
BARIUM	59.2 J	61.5	66.8 J	63.3	55.8 J
BERYLLIUM	2.1 J	2.3	2.2 J	2.3	1.9 J
CADMIUM	5.6 J	22.7	39.4 J	10.3	3.9 J
CHROMIUM	170 J	454 K	680 J	253 K	140 J
COBALT	21 J	22.6	20.9 J	22.8	18.6 J
COPPER	141 J	98.8 J	112 J	93.5 J	136 J
HEXAVALENT CHROMIUM	2.2 UJ	1.4 UL	1.7 UJ	1.5 UL	2 UJ
IRON	NA	NA	NA	NA	NA
LEAD	121 J	186	235 J	198	109 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.52 J	0.68 K	0.98 J	0.84 K	3.5 J
MOLYBDENUM	1 J	1	1.9 J	1.4	0.97 J
NICKEL	43.2 J	52.8	62.8 J	52.5	37.3 J
SELENIUM	1.4 B	1.2 B	1.2 B	1.4 B	1.9 B
SILVER	1.6 J	8.9	28.6 J	3.1 L	1.6 J
THALLIUM	2.21 UJ	1.8 B	1.83 UJ	1.63 U	1.85 UJ
VANADIUM	54.9 J	64.9	120 J	69.7	53.3 J
ZINC	379 J	456	636 J	414	338 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	4.5 UJ	9.9	NA
MONOBUTYLTIN	NA	NA	5.9 UJ	5.3 U	NA
TETRABUTYLTIN	NA	NA	5.9 UJ	5.3 U	NA
TRIBUTYLTIN	NA	NA	5.2 UJ	4.7 U	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	22	35	29	34	25
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	47000 K	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-31	SD-32	SD-33	SD-34	SD-35
SAMPLE ID	SD-31-SS	SD-32-SS	SD-33-SS	SD-34-SS	SD-35-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,1,1-TRICHLOROETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,1,2,2-TETRACHLOROETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,1-DICHLOROETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,1-DICHLOROETHENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,1-DICHLOROPROPENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,2,3-TRICHLOROBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,2,3-TRICHLOROPROPANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,2,3-TRIMETHYLBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,2,4-TRICHLOROBENZENE	8 B	24 UJ	20 UJ	13 UJ	19 UJ
1,2,4-TRIMETHYLBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,2-DIBROMO-3-CHLOROPROPANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,2-DIBROMOETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,2-DICHLOROBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,2-DICHLOROETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,2-DICHLOROPROPANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,3-DICHLOROBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,3-DICHLOROPROPANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
1,4-DICHLOROBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
2,2-DICHLOROPROPANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
2-BUTANONE	66 U	120 UJ	100 UR	64 UJ	96 UR
2-CHLOROETHYL VINYL ETHER	13 U	24 UJ	20 UJ	13 UJ	19 UJ
2-CHLOROTOLUENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
2-HEXANONE	66 U	120 UJ	100 UJ	64 UJ	96 UJ
4-CHLOROTOLUENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
4-ISOPROPYLTOLUENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
4-METHYL-2-PENTANONE	66 U	120 UJ	100 UJ	64 UJ	96 UJ
ACETONE	61 B	110 B	36 B	77 B	40 B
BENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
BROMOBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
BROMOCHLOROMETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
BROMODICHLOROMETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
BROMOFORM	13 U	24 UJ	20 UJ	13 UJ	19 UJ
BROMOMETHANE	26 U	49 UJ	41 UJ	25 UJ	38 UJ
CARBON DISULFIDE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
CARBON TETRACHLORIDE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
CHLOROBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
CHLORODIBROMOMETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
CHLOROETHANE	26 U	49 UJ	41 UJ	25 UJ	38 UJ
CHLOROFORM	13 U	24 UJ	20 UJ	13 UJ	19 UJ
CHLOROMETHANE	26 U	49 UJ	41 UJ	25 UJ	13 J
CIS-1,2-DICHLOROETHENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
CIS-1,3-DICHLOROPROPENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
DICHLORODIFLUOROMETHANE	26 U	49 UJ	41 UJ	25 UJ	38 UJ
DIISOPROPYL ETHER	13 U	24 UJ	20 UJ	13 UJ	19 UJ
ETHYL TERT-BUTYL ETHER	13 U	24 UJ	20 UJ	13 UJ	19 UJ
ETHYLBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-31	SD-32	SD-33	SD-34	SD-35
SAMPLE ID	SD-31-SS	SD-32-SS	SD-33-SS	SD-34-SS	SD-35-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
ISOPROPYLBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
M+P-XYLENES	26 U	49 UJ	41 UJ	25 UJ	38 UJ
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	3 J	9 J	6 J	3 J	6 J
METHYLENE CHLORIDE	13 U	24 UJ	14 B	13 UJ	11 B
NAPHTHALENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
N-BUTYLBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
N-PROPYLBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
O-XYLENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
SEC-BUTYLBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
STYRENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
TERT-AMYL METHYL ETHER	13 U	24 UJ	20 UJ	13 UJ	19 UJ
TERT-BUTYLBENZENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
TERTIARY-BUTYL ALCOHOL	26 UR	49 UR	41 UR	25 UR	38 UR
TETRACHLOROETHENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
TOLUENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
TOTAL 1,2-DICHLOROETHENE	26 U	49 UJ	41 UJ	25 UJ	38 UJ
TOTAL XYLENES	39 U	74 UJ	61 UJ	38 UJ	58 UJ
TRANS-1,2-DICHLOROETHENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
TRANS-1,3-DICHLOROPROPENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
TRICHLOROETHENE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
TRICHLOROFLUOROMETHANE	26 U	49 UJ	41 UJ	25 UJ	38 UJ
VINYL ACETATE	13 U	24 UJ	20 UJ	13 UJ	19 UJ
VINYL CHLORIDE	26 U	49 UJ	41 UJ	25 UJ	38 UJ
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
1,2-DICHLOROBENZENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
1,4-DICHLOROBENZENE	860 U	1600 UJ	1300 UJ	74 B	110 B
1,4-DIOXANE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
1-METHYLNAPHTHALENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2,4,5-TRICHLOROPHENOL	2200 U	4100 UJ	3300 UJ	2100 U	3100 UJ
2,4,6-TRICHLOROPHENOL	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2,4-DICHLOROPHENOL	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2,4-DIMETHYLPHENOL	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2,4-DINITROPHENOL	2200 U	4100 UJ	3300 UJ	2100 U	3100 UJ
2,4-DINITROTOLUENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2,6-DINITROTOLUENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2-CHLORONAPHTHALENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2-CHLOROPHENOL	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2-METHYLNAPHTHALENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2-METHYLPHENOL	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
2-NITROANILINE	2200 U	4100 UJ	3300 UJ	2100 U	3100 UJ
2-NITROPHENOL	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
3&4-METHYLPHENOL	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
3,3'-DICHLOROBENZIDINE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
3-NITROANILINE	2200 U	4100 UJ	3300 UJ	2100 U	3100 UJ
4,6-DINITRO-2-METHYLPHENOL	2200 U	4100 UJ	3300 UJ	2100 U	3100 UJ
4-BROMOPHENYL PHENYL ETHER	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
4-CHLORO-3-METHYLPHENOL	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
4-CHLOROANILINE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-31	SD-32	SD-33	SD-34	SD-35
SAMPLE ID	SD-31-SS	SD-32-SS	SD-33-SS	SD-34-SS	SD-35-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	2200 U	4100 UJ	3300 UJ	2100 U	3100 UJ
4-NITROPHENOL	2200 U	4100 UJ	3300 UJ	2100 U	3100 UJ
ACENAPHTHENE	860 U	1600 UJ	1300 UJ	170 B	1200 UJ
ACENAPHTHYLENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
ANILINE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
ANTHRACENE	860 U	1600 UJ	1300 UJ	170 J	1200 UJ
AZOBENZENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	860 U	1249	1466	895	927
BAP EQUIVALENT-POSITIVE RESULTS	860 U	280	29	428	200
BENZIDINE	2200 U	4100 UJ	3300 UJ	2100 U	3100 UJ
BENZO(A)ANTHRACENE	860 U	1600 UJ	1300 UJ	260 J	1200 UJ
BENZO(A)PYRENE	860 U	240 J	1300 UJ	350 J	170 J
BENZO(B)FLUORANTHENE	860 U	400 J	290 J	520 J	300 J
BENZO(G,H,I)PERYLENE	860 U	1600 UJ	1300 UJ	840 UJ	1200 UJ
BENZO(K)FLUORANTHENE	860 U	1600 UJ	1300 UJ	840 UJ	1200 UJ
BENZOIC ACID	2200 U	4100 UJ	3300 UJ	2100 U	3100 UJ
BENZYL ALCOHOL	860 UJ	1600 UJ	1300 UJ	840 UJ	1200 UJ
BIS(2-CHLOROETHOXY)METHANE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
BIS(2-CHLOROETHYL)ETHER	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	860 U	2900 J	800 J	1900	1600 J
BUTYL BENZYL PHTHALATE	860 U	1600 UJ	1300 UJ	190 J	1200 UJ
CARBAZOLE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
CHRYSENE	860 U	1600 UJ	1300 UJ	410 J	1200 UJ
DIBENZO(A,H)ANTHRACENE	860 U	1600 UJ	1300 UJ	840 UJ	1200 UJ
DIBENZOFURAN	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
DIETHYL PHTHALATE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
DIMETHYL PHTHALATE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
DI-N-BUTYL PHTHALATE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
DI-N-OCTYL PHTHALATE	860 U	1600 UJ	1300 UJ	840 UJ	1200 UJ
FLUORANTHENE	860 U	470 J	340 J	430 J	310 J
FLUORENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
HEXACHLOROBENZENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
HEXACHLOROBUTADIENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
HEXACHLOROCYCLOPENTADIENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
HEXACHLOROETHANE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
INDENO(1,2,3-CD)PYRENE	860 U	1600 UJ	1300 UJ	840 UJ	1200 UJ
ISOPHORONE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
NAPHTHALENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
NITROBENZENE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
N-NITROSODIMETHYLAMINE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
N-NITROSO-DI-N-PROPYLAMINE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
N-NITROSODIPHENYLAMINE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
PENTACHLOROPHENOL	2200 U	4100 UJ	3300 UJ	2100 U	3100 UJ
PHENANTHRENE	860 U	1600 UJ	1300 UJ	220 J	1200 UJ
PHENOL	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
PYRENE	860 U	610 J	400 J	830 J	440 J
PYRIDINE	860 U	1600 UJ	1300 UJ	840 U	1200 UJ
TOTAL PAHS	0 U	1720	1030	3190	1220

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-31	SD-32	SD-33	SD-34	SD-35
SAMPLE ID	SD-31-SS	SD-32-SS	SD-33-SS	SD-34-SS	SD-35-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	44 U	85 UJ	69 UJ	43 U	64 UJ
AROCLOR-1221	44 U	85 UJ	69 UJ	43 U	64 UJ
AROCLOR-1232	44 U	85 UJ	69 UJ	43 U	64 UJ
AROCLOR-1242	44 U	85 UJ	69 UJ	43 U	64 UJ
AROCLOR-1248	44 U	85 UJ	69 UJ	43 U	64 UJ
AROCLOR-1254	44 U	85 UJ	69 UJ	43 U	64 UJ
AROCLOR-1260	170	620 J	720 J	290	370 J
TOTAL AROCLOR	170	620	720	290	370
METALS (MG/KG)					
ANTIMONY	0.74 UL	1.73 UJ	1.39 UJ	0.72 UL	1.17 UJ
ARSENIC	6.2	12.1 J	10.3 J	6.7	12 J
BARIUM	37.3	72.1 J	57.7 J	36.2	64.1 J
BERYLLIUM	1.9	1.9 J	1.8 J	1.2	1.9 J
CADMIUM	0.37	3 J	3.9 J	3.7	4.2 J
CHROMIUM	46 K	152 J	154 J	105 K	172 J
COBALT	16.1	19.8 J	18.3 J	13.5	20.7 J
COPPER	24.3 J	152 J	141 J	94.5 J	154 J
HEXAVALENT CHROMIUM	1.3 UL	2.5 UJ	2 UJ	1.3 UL	1.9 UJ
IRON	NA	NA	NA	NA	NA
LEAD	34.4	117 J	114 J	78.4	127 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.19 K	0.52 J	0.49 J	0.34 K	0.51 J
MOLYBDENUM	1.2	1.5 J	1.5 J	0.89	1.2 J
NICKEL	25	41.5 J	38 J	23.9	41.6 J
SELENIUM	0.65 U	1.51 UJ	1.21 UJ	0.63 UL	1.02 UJ
SILVER	0.19 UL	1.1 J	1.2 J	0.94 L	1.6 J
THALLIUM	1.1 U	4 B	2.07 UJ	1.08 UL	1.75 UJ
VANADIUM	38.2	62.9 J	55.9 J	35	62.1 J
ZINC	105	350 J	339 J	225	360 J
METALS (UG/KG)					
DIBUTYLTIN	3.3 U	NA	NA	NA	NA
MONOBUTYLTIN	4.4 U	NA	NA	NA	NA
TETRABUTYLTIN	4.4 U	NA	NA	NA	NA
TRIBUTYLTIN	3.8 U	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	38	20	24	39	27
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	51000 J	NA	47000 J
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-36	SD-37	SD-38	SD-39	SD-40
SAMPLE ID	SD-36-SS	SD-37-SS	SD-38-SS	SD-39-SS	SD-40-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,1,1-TRICHLOROETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,1,2,2-TETRACHLOROETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,1-DICHLOROETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,1-DICHLOROETHENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,1-DICHLOROPROPENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,2,3-TRICHLOROBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,2,3-TRICHLOROPROPANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,2,3-TRIMETHYLBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,2,4-TRICHLOROBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,2,4-TRIMETHYLBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,2-DIBROMO-3-CHLOROPROPANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,2-DIBROMOETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,2-DICHLOROBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,2-DICHLOROETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,2-DICHLOROPROPANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,3-DICHLOROBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,3-DICHLOROPROPANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
1,4-DICHLOROBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
2,2-DICHLOROPROPANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
2-BUTANONE	87 UR	100 UR	120 UR	84 UR	90 UR
2-CHLOROETHYL VINYL ETHER	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
2-CHLOROTOLUENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
2-HEXANONE	87 UJ	100 UJ	120 UJ	84 UJ	90 UJ
4-CHLOROTOLUENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
4-ISOPROPYLTOLUENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
4-METHYL-2-PENTANONE	87 UJ	100 UJ	120 UJ	84 UJ	90 UJ
ACETONE	79 J	130 J	120 UR	84 UR	150 J
BENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
BROMOBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
BROMOCHLOROMETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
BROMODICHLOROMETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
BROMOFORM	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
BROMOMETHANE	35 UJ	42 UJ	48 UJ	34 UJ	36 UJ
CARBON DISULFIDE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
CARBON TETRACHLORIDE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
CHLOROBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
CHLORODIBROMOMETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
CHLOROETHANE	35 UJ	42 UJ	48 UJ	34 UJ	36 UJ
CHLOROFORM	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
CHLOROMETHANE	35 UJ	42 UJ	48 UJ	34 UJ	36 UJ
CIS-1,2-DICHLOROETHENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
CIS-1,3-DICHLOROPROPENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
DICHLORODIFLUOROMETHANE	35 UJ	42 UJ	48 UJ	34 UJ	36 UJ
DIISOPROPYL ETHER	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
ETHYL TERT-BUTYL ETHER	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
ETHYLBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-36	SD-37	SD-38	SD-39	SD-40
SAMPLE ID	SD-36-SS	SD-37-SS	SD-38-SS	SD-39-SS	SD-40-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
ISOPROPYLBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
M+P-XYLENES	35 UJ	42 UJ	48 UJ	34 UJ	36 UJ
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	5 J	5 J	7 J	34 UJ	36 UJ
METHYLENE CHLORIDE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
NAPHTHALENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
N-BUTYLBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
N-PROPYLBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
O-XYLENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
SEC-BUTYLBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
STYRENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
TERT-AMYL METHYL ETHER	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
TERT-BUTYLBENZENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
TERTIARY-BUTYL ALCOHOL	35 UR	42 UR	48 UR	34 UR	36 UR
TETRACHLOROETHENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
TOLUENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
TOTAL 1,2-DICHLOROETHENE	35 UJ	42 UJ	48 UJ	34 UJ	36 UJ
TOTAL XYLENES	52 UJ	63 UJ	72 UJ	50 UJ	54 UJ
TRANS-1,2-DICHLOROETHENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
TRANS-1,3-DICHLOROPROPENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
TRICHLOROETHENE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
TRICHLOROFLUOROMETHANE	35 UJ	42 UJ	48 UJ	34 UJ	36 UJ
VINYL ACETATE	17 UJ	21 UJ	24 UJ	17 UJ	18 UJ
VINYL CHLORIDE	35 UJ	42 UJ	48 UJ	34 UJ	36 UJ
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
1,2-DICHLOROBENZENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
1,4-DICHLOROBENZENE	100 B	130 B	1600 UJ	1100 UJ	120 B
1,4-DIOXANE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
1-METHYLNAPHTHALENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2,4,5-TRICHLOROPHENOL	3100 UJ	3500 UJ	4000 UJ	2700 UJ	3000 UJ
2,4,6-TRICHLOROPHENOL	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2,4-DICHLOROPHENOL	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2,4-DIMETHYLPHENOL	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2,4-DINITROPHENOL	3100 UJ	3500 UJ	4000 UJ	2700 UJ	3000 UJ
2,4-DINITROTOLUENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2,6-DINITROTOLUENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2-CHLORONAPHTHALENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2-CHLOROPHENOL	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2-METHYLNAPHTHALENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2-METHYLPHENOL	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
2-NITROANILINE	3100 UJ	3500 UJ	4000 UJ	2700 UJ	3000 UJ
2-NITROPHENOL	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
3&4-METHYLPHENOL	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
3,3'-DICHLOROBENZIDINE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
3-NITROANILINE	3100 UJ	3500 UJ	4000 UJ	2700 UJ	3000 UJ
4,6-DINITRO-2-METHYLPHENOL	3100 UJ	3500 UJ	4000 UJ	2700 UJ	3000 UJ
4-BROMOPHENYL PHENYL ETHER	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
4-CHLORO-3-METHYLPHENOL	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
4-CHLOROANILINE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-36	SD-37	SD-38	SD-39	SD-40
SAMPLE ID	SD-36-SS	SD-37-SS	SD-38-SS	SD-39-SS	SD-40-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	3100 UJ	3500 UJ	4000 UJ	2700 UJ	3000 UJ
4-NITROPHENOL	3100 UJ	3500 UJ	4000 UJ	2700 UJ	3000 UJ
ACENAPHTHENE	240 B	280 B	310 B	1100 UJ	240 B
ACENAPHTHYLENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
ANILINE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
ANTHRACENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
AZOBENZENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	962	1277	1262	900	1138
BAP EQUIVALENT-POSITIVE RESULTS	236	500	294	234	472
BENZIDINE	3100 UJ	3500 UJ	4000 UJ	2700 UJ	3000 UJ
BENZO(A)ANTHRACENE	1200 UJ	310 J	1600 UJ	1100 UJ	350 J
BENZO(A)PYRENE	200 J	410 J	250 J	200 J	380 J
BENZO(B)FLUORANTHENE	360 J	590 J	440 J	340 J	560 J
BENZO(G,H,I)PERYLENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
BENZO(K)FLUORANTHENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
BENZOIC ACID	3100 UJ	3500 UJ	4000 UJ	2700 UJ	3000 UJ
BENZYL ALCOHOL	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
BIS(2-CHLOROETHOXY)METHANE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
BIS(2-CHLOROETHYL)ETHER	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	1200 J	1500 J	1400 J	870 J	1200 J
BUTYL BENZYL PHTHALATE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
CARBAZOLE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
CHRYSENE	280 J	490 J	340 J	260 J	530 J
DIBENZO(A,H)ANTHRACENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
DIBENZOFURAN	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
DIETHYL PHTHALATE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
DIMETHYL PHTHALATE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
DI-N-BUTYL PHTHALATE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
DI-N-OCTYL PHTHALATE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
FLUORANTHENE	360 J	530 J	430 J	330 J	540 J
FLUORENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
HEXACHLOROBENZENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
HEXACHLOROBUTADIENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
HEXACHLOROCYCLOPENTADIENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
HEXACHLOROETHANE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
INDENO(1,2,3-CD)PYRENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
ISOPHORONE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
NAPHTHALENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
NITROBENZENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
N-NITROSODIMETHYLAMINE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
N-NITROSO-DI-N-PROPYLAMINE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
N-NITROSODIPHENYLAMINE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
PENTACHLOROPHENOL	3100 UJ	3500 UJ	4000 UJ	2700 UJ	3000 UJ
PHENANTHRENE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
PHENOL	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
PYRENE	550 J	980 J	640 J	430 J	950 J
PYRIDINE	1200 UJ	1400 UJ	1600 UJ	1100 UJ	1200 UJ
TOTAL PAHS	1750	3310	2100	1560	3310

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-36	SD-37	SD-38	SD-39	SD-40
SAMPLE ID	SD-36-SS	SD-37-SS	SD-38-SS	SD-39-SS	SD-40-SS
SAMPLE DATE	20051021	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	64 UJ	72 UJ	82 UJ	57 UJ	61 UJ
AROCLOR-1221	64 UJ	72 UJ	82 UJ	57 UJ	61 UJ
AROCLOR-1232	64 UJ	72 UJ	82 UJ	57 UJ	61 UJ
AROCLOR-1242	64 UJ	72 UJ	82 UJ	57 UJ	61 UJ
AROCLOR-1248	64 UJ	72 UJ	82 UJ	57 UJ	61 UJ
AROCLOR-1254	64 UJ	72 UJ	82 UJ	57 UJ	61 UJ
AROCLOR-1260	430 J	240 J	210 J	190 J	360 J
TOTAL AROCLOR	430	240	210	190	360
METALS (MG/KG)					
ANTIMONY	1.25 UJ	1.41 UJ	1.26 UJ	0.86 UJ	1.21 UJ
ARSENIC	9.6 J	8.5 J	9.7 J	7.4 J	8.6 J
BARIUM	56.3 J	42.8 J	55.4 J	32.6 J	71.6 J
BERYLLIUM	1.8 J	1.5 J	1.9 J	1.2 J	2.6 J
CADMIUM	4.7 J	4.3 J	5.5 J	5.3 J	24 J
CHROMIUM	152 J	113 J	158 J	127 J	361 J
COBALT	18.9 J	15 J	18 J	13.1 J	26.6 J
COPPER	138 J	114 J	146 J	118 J	111 J
HEXAVALENT CHROMIUM	1.8 UJ	13 J	2.4 UJ	1.7 UJ	1.8 UJ
IRON	NA	NA	NA	NA	NA
LEAD	115 J	86.8 J	118 J	105 J	216 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.34 J	0.26 J	0.36 J	0.38 J	0.52 J
MOLYBDENUM	1 J	1.2 J	1.9 J	1.2 J	2.3 J
NICKEL	39.7 J	31.7 J	37.9 J	26.6 J	53.8 J
SELENIUM	1.6 J	1.23 UJ	1.1 UJ	0.75 UJ	1.05 UJ
SILVER	2.1 B	1.7 B	1.9 B	1.8 B	3.4 B
THALLIUM	1.87 UJ	2.11 UJ	1.9 B	1.28 UJ	1.8 UJ
VANADIUM	48.2 J	38.1 J	48.1 J	30.2 J	61.7 J
ZINC	327 J	270 J	333 J	260 J	548 J
METALS (UG/KG)					
DIBUTYLTIN	NA	5.6 UJ	NA	NA	11 J
MONOBUTYLTIN	NA	7.4 UJ	NA	NA	5.7 UJ
TETRABUTYLTIN	NA	7.4 UJ	NA	NA	5.7 UJ
TRIBUTYLTIN	NA	6.5 UJ	NA	NA	5 UJ
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	27	24	21	30	28
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	47000 J	46000 J
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-41	SD-42	SD-43	SD-44	SD-45
SAMPLE ID	SD-41-SS	SD-42-SS	SD-43-SS	SD-44-SS	SD-45-SS
SAMPLE DATE	20051021	20051021	20081117	20081117	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	19 UJ	13 U	NA	NA	NA
1,1,1-TRICHLOROETHANE	19 UJ	13 U	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	19 UJ	13 UJ	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	19 UJ	13 U	NA	NA	NA
1,1-DICHLOROETHANE	19 UJ	13 U	NA	NA	NA
1,1-DICHLOROETHENE	19 UJ	13 U	NA	NA	NA
1,1-DICHLOROPROPENE	19 UJ	13 U	NA	NA	NA
1,2,3-TRICHLOROBENZENE	19 UJ	13 UJ	NA	NA	NA
1,2,3-TRICHLOROPROPANE	19 UJ	13 UJ	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	19 UJ	13 UJ	NA	NA	NA
1,2,4-TRICHLOROBENZENE	19 UJ	13 UJ	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	19 UJ	13 UJ	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	19 UJ	13 UJ	NA	NA	NA
1,2-DIBROMOETHANE	19 UJ	13 U	NA	NA	NA
1,2-DICHLOROBENZENE	19 UJ	13 UJ	NA	NA	NA
1,2-DICHLOROETHANE	19 UJ	13 U	NA	NA	NA
1,2-DICHLOROPROPANE	19 UJ	13 U	NA	NA	NA
1,3-DICHLOROBENZENE	19 UJ	13 UJ	NA	NA	NA
1,3-DICHLOROPROPANE	19 UJ	13 U	NA	NA	NA
1,4-DICHLOROBENZENE	19 UJ	13 UJ	NA	NA	NA
2,2-DICHLOROPROPANE	19 UJ	13 U	NA	NA	NA
2-BUTANONE	94 UR	63 UR	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	19 UJ	13 U	NA	NA	NA
2-CHLOROTOLUENE	19 UJ	13 U	NA	NA	NA
2-HEXANONE	94 UJ	63 U	NA	NA	NA
4-CHLOROTOLUENE	19 UJ	13 UJ	NA	NA	NA
4-ISOPROPYLTOLUENE	19 UJ	13 UJ	NA	NA	NA
4-METHYL-2-PENTANONE	94 UJ	63 U	NA	NA	NA
ACETONE	65 J	59 J	NA	NA	NA
BENZENE	19 UJ	13 U	NA	NA	NA
BROMOBENZENE	19 UJ	13 UJ	NA	NA	NA
BROMOCHLOROMETHANE	19 UJ	13 U	NA	NA	NA
BROMODICHLOROMETHANE	19 UJ	13 U	NA	NA	NA
BROMOFORM	19 UJ	13 U	NA	NA	NA
BROMOMETHANE	38 UJ	25 U	NA	NA	NA
CARBON DISULFIDE	19 UJ	13 U	NA	NA	NA
CARBON TETRACHLORIDE	19 UJ	13 U	NA	NA	NA
CHLOROBENZENE	19 UJ	13 U	NA	NA	NA
CHLORODIBROMOMETHANE	19 UJ	13 U	NA	NA	NA
CHLOROETHANE	38 UJ	25 U	NA	NA	NA
CHLOROFORM	19 UJ	13 U	NA	NA	NA
CHLOROMETHANE	38 UJ	25 U	NA	NA	NA
CIS-1,2-DICHLOROETHENE	19 UJ	13 U	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	19 UJ	13 U	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	19 UJ	13 U	NA	NA	NA
DICHLORODIFLUOROMETHANE	38 UJ	25 U	NA	NA	NA
DIISOPROPYL ETHER	19 UJ	13 U	NA	NA	NA
ETHYL TERT-BUTYL ETHER	19 UJ	13 U	NA	NA	NA
ETHYLBENZENE	19 UJ	13 U	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-41	SD-42	SD-43	SD-44	SD-45
SAMPLE ID	SD-41-SS	SD-42-SS	SD-43-SS	SD-44-SS	SD-45-SS
SAMPLE DATE	20051021	20051021	20081117	20081117	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	19 UJ	13 UJ	NA	NA	NA
ISOPROPYLBENZENE	19 UJ	13 UJ	NA	NA	NA
M+P-XYLENES	38 UJ	25 U	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	5 J	4 J	NA	NA	NA
METHYLENE CHLORIDE	19 UJ	13 U	NA	NA	NA
NAPHTHALENE	19 UJ	13 UJ	NA	NA	NA
N-BUTYLBENZENE	19 UJ	13 UJ	NA	NA	NA
N-PROPYLBENZENE	19 UJ	13 UJ	NA	NA	NA
O-XYLENE	19 UJ	13 U	NA	NA	NA
SEC-BUTYLBENZENE	19 UJ	13 UJ	NA	NA	NA
STYRENE	19 UJ	13 U	NA	NA	NA
TERT-AMYL METHYL ETHER	19 UJ	13 U	NA	NA	NA
TERT-BUTYLBENZENE	19 UJ	13 U	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	38 UR	25 UR	NA	NA	NA
TETRACHLOROETHENE	19 UJ	13 U	NA	NA	NA
TOLUENE	19 UJ	3 J	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	38 UJ	25 U	NA	NA	NA
TOTAL XYLENES	56 UJ	38 U	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	19 UJ	13 U	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	19 UJ	13 U	NA	NA	NA
TRICHLOROETHENE	19 UJ	13 U	NA	NA	NA
TRICHLOROFLUOROMETHANE	38 UJ	25 U	NA	NA	NA
VINYL ACETATE	19 UJ	13 U	NA	NA	NA
VINYL CHLORIDE	38 UJ	25 U	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	380 U	39 J	590 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	380 U	420 U	590 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-41	SD-42	SD-43	SD-44	SD-45
SAMPLE ID	SD-41-SS	SD-42-SS	SD-43-SS	SD-44-SS	SD-45-SS
SAMPLE DATE	20051021	20051021	20081117	20081117	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	380 U	73 J	590 U
ACENAPHTHYLENE	NA	NA	380 U	420 U	590 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	180 J	300 J	100 J
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	NA	NA	1337	1258	1302
BAP EQUIVALENT-POSITIVE RESULTS	NA	NA	1147	1048	1007
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	1100	950	770
BENZO(A)PYRENE	NA	NA	880	850	790
BENZO(B)FLUORANTHENE	NA	NA	950	580	830
BENZO(G,H,I)PERYLENE	NA	NA	550	450	560 J
BENZO(K)FLUORANTHENE	NA	NA	710	620	890
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	1200	1000	930
DIBENZO(A,H)ANTHRACENE	NA	NA	380 U	420 U	590 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	1400	1100	1100
FLUORENE	NA	NA	38 J	120 J	590 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	540	380 J	470 J
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	380 U	420 U	590 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	670	1200	500 J
PHENOL	NA	NA	NA	NA	NA
PYRENE	NA	NA	1800	2500	1900
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	NA	NA	10018	10123	8840

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-41	SD-42	SD-43	SD-44	SD-45
SAMPLE ID	SD-41-SS	SD-42-SS	SD-43-SS	SD-44-SS	SD-45-SS
SAMPLE DATE	20051021	20051021	20081117	20081117	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	NA	NA	24 U	21 U	30 U
AROCLOR-1221	NA	NA	24 U	21 U	30 U
AROCLOR-1232	NA	NA	24 U	21 U	30 U
AROCLOR-1242	NA	NA	24 U	21 U	30 U
AROCLOR-1248	NA	NA	24 U	21 U	30 U
AROCLOR-1254	NA	NA	400 J	21 U	30 U
AROCLOR-1260	NA	NA	24 U	21 U	270
TOTAL AROCLOR	NA	NA	400	0 U	270
METALS (MG/KG)					
ANTIMONY	0.89 UJ	0.88 U	2.7	0.7	2.3
ARSENIC	6 J	4.2	6.1	4.8	4.8
BARIUM	41.7 J	44	91.9 J	103	29.4
BERYLLIUM	1.6 J	1.5	0.74 J	1.3	0.87
CADMIUM	10.6 J	32.9	296	12.7	22.5
CHROMIUM	173 J	354	699 J	42.4	224
COBALT	14.5 J	17	8.6	9.8	13
COPPER	105 J	101	66.9 J	14.4	72.2
HEXAVALENT CHROMIUM	1.9 UJ	1.2 U	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	108 J	162	178 J	43.5	102
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.35 J	0.29	0.39	0.022	0.18
MOLYBDENUM	1.3 J	1.6	0.59	0.05 U	2.1
NICKEL	29.8 J	33.8	16.1	15.5	20.9
SELENIUM	1 J	0.77 U	0.92	0.51	0.92
SILVER	1.6 B	2.7	0.22 B	0.18	1.2
THALLIUM	1.33 UJ	1.31 U	0.24 U	0.22 U	0.51
VANADIUM	33.6 J	33.2	27.6 J	30.7	28.8
ZINC	313 J	475	287	116	382
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	26	40	70	79	56
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	23000
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-46	SD-47	SD-48	SD-48	SD-48
SAMPLE ID	SD-46-SS	SD-47-SS	SD-48-SS	SD-48-SS-AVG	SD-48-SS-D
SAMPLE DATE	20081115	20081115	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-46	SD-47	SD-48	SD-48	SD-48
SAMPLE ID	SD-46-SS	SD-47-SS	SD-48-SS	SD-48-SS-AVG	SD-48-SS-D
SAMPLE DATE	20081115	20081115	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	690 U	580 U	490 U	495 U	500 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	690 U	580 U	490 U	495 U	500 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-46	SD-47	SD-48	SD-48	SD-48
SAMPLE ID	SD-46-SS	SD-47-SS	SD-48-SS	SD-48-SS-AVG	SD-48-SS-D
SAMPLE DATE	20081115	20081115	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	690 U	580 U	490 U	495 U	500 U
ACENAPHTHYLENE	690 U	580 U	490 U	495 U	500 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	690 U	110 J	490 U	495 U	500 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	787	659	490 U	495 U	500 U
BAP EQUIVALENT-POSITIVE RESULTS	62.8	50.4	490 U	495 U	500 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	690 U	580 U	490 U	495 U	500 U
BENZO(A)PYRENE	690 U	580 U	490 U	495 U	500 U
BENZO(B)FLUORANTHENE	380 J	310 J	490 U	495 U	500 U
BENZO(G,H,I)PERYLENE	230 J	580 U	490 U	495 U	500 U
BENZO(K)FLUORANTHENE	340 J	300 J	490 U	495 U	500 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	420 J	390 J	490 U	495 U	500 U
DIBENZO(A,H)ANTHRACENE	690 U	580 U	490 U	495 U	500 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	660 J	710	490 U	495 U	500 U
FLUORENE	690 U	580 U	490 U	495 U	500 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	210 J	160 J	490 U	495 U	500 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	690 U	580 U	490 U	495 U	500 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	280 J	400 J	490 U	495 U	500 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	750	770	490 U	495 U	500 U
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	3270	3150	0 U	0 U	0 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-46	SD-47	SD-48	SD-48	SD-48
SAMPLE ID	SD-46-SS	SD-47-SS	SD-48-SS	SD-48-SS-AVG	SD-48-SS-D
SAMPLE DATE	20081115	20081115	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	35 U	29 U	25 U	25 U	25 U
AROCLOR-1221	35 U	29 U	25 U	25 U	25 U
AROCLOR-1232	35 U	29 U	25 U	25 U	25 U
AROCLOR-1242	35 U	29 U	25 U	25 U	25 U
AROCLOR-1248	35 U	29 U	25 U	25 U	25 U
AROCLOR-1254	35 U	29 U	25 U	25 U	25 U
AROCLOR-1260	160	80	25 U	25 U	25 U
TOTAL AROCLOR	160	80	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.71 L	0.47 L	0.15 UL	0.15 UL	0.15 UL
ARSENIC	6.1	4.1	2.4	2.3	2.2
BARIUM	43.5	27.4	10.6	11.25	11.9
BERYLLIUM	1.3	1.4	1.6	1.55	1.5
CADMIUM	51.7	13.9	0.24	0.18	0.12
CHROMIUM	592	235	11.3	11.1	10.9
COBALT	16	9.7	4.8	4.8	4.8
COPPER	97.2	40.4	7.1	6.7	6.3
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	249	203	4	3.95	3.9
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.39	0.21	0.013 B	0.0107 B	0.0084 U
MOLYBDENUM	1.6	1.2	1.6	1.65	1.7
NICKEL	34.5	17.1	7.5	7.5	7.5
SELENIUM	0.92	1.5	0.49 U	0.495 U	0.5 U
SILVER	2.3	0.81	0.093 U	0.094 U	0.095 U
THALLIUM	0.34 U	0.29 U	0.25 U	0.255 U	0.26 U
VANADIUM	41	22	17.5	15.45	13.4
ZINC	524	296	30.6	26.5	22.4
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	48	57	68	67.5	67
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	7400	7400	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-49	SD-50	SD-51	SD-53	SD-53
SAMPLE ID	SD-49-SS	SD-50-SS	SD-51-SS	SD-53-SS	SD-53-SS-AVG
SAMPLE DATE	20081115	20081114	20081115	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-49	SD-50	SD-51	SD-53	SD-53
SAMPLE ID	SD-49-SS	SD-50-SS	SD-51-SS	SD-53-SS	SD-53-SS-AVG
SAMPLE DATE	20081115	20081114	20081115	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	540 U	1500 UJ	1300 UJ	780 U	780 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	540 U	1500 UJ	1300 UJ	780 U	780 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-49	SD-50	SD-51	SD-53	SD-53
SAMPLE ID	SD-49-SS	SD-50-SS	SD-51-SS	SD-53-SS	SD-53-SS-AVG
SAMPLE DATE	20081115	20081114	20081115	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	540 U	1500 UJ	1300 UJ	780 U	780 U
ACENAPHTHYLENE	540 U	1500 UJ	1300 UJ	780 U	780 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	540 U	1500 UJ	1300 UJ	780 U	780 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	540 U	1689	1300 U	780 U	780 U
BAP EQUIVALENT-POSITIVE RESULTS	540 U	39.2	1300 U	780 U	780 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	540 U	1500 UJ	1300 UJ	780 U	780 U
BENZO(A)PYRENE	540 U	1500 UJ	1300 UJ	780 U	780 U
BENZO(B)FLUORANTHENE	540 U	360 J	1300 UJ	780 U	780 U
BENZO(G,H,I)PERYLENE	540 U	1500 UJ	1300 UJ	780 U	780 U
BENZO(K)FLUORANTHENE	540 U	280 J	1300 UJ	780 U	780 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	540 U	380 J	1300 UJ	780 U	780 U
DIBENZO(A,H)ANTHRACENE	540 U	1500 UJ	1300 UJ	780 U	780 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	540 U	500 J	1300 UJ	780 U	780 U
FLUORENE	540 U	1500 UJ	1300 UJ	780 U	780 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	540 U	1500 UJ	1300 UJ	780 U	780 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	540 U	1500 UJ	1300 UJ	780 U	780 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	540 U	1500 UJ	1300 UJ	780 U	780 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	540 U	630 J	1300 UJ	780 U	780 U
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	2150	0 U	0 U	0 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-49	SD-50	SD-51	SD-53	SD-53
SAMPLE ID	SD-49-SS	SD-50-SS	SD-51-SS	SD-53-SS	SD-53-SS-AVG
SAMPLE DATE	20081115	20081114	20081115	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	33 U	370 UJ	65 UJ	39 U	39 U
AROCLOR-1221	33 U	7400 UJ	65 UJ	39 U	39 U
AROCLOR-1232	33 U	7400 UJ	65 UJ	39 U	39 U
AROCLOR-1242	33 U	7400 UJ	65 UJ	39 U	39 U
AROCLOR-1248	33 U	7400 UJ	65 UJ	39 U	39 U
AROCLOR-1254	33 U	7400 UJ	65 UJ	39 U	39 U
AROCLOR-1260	33 U	2300 J	65 UJ	39 U	39 U
TOTAL AROCLOR	0 U	2300	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.21 U	0.44 UJ	0.39 UJ	0.24 UL	0.235 UL
ARSENIC	2.4	12.2 J	11.6 J	6.1	6.4
BARIUM	90.9 J	57.6 J	55.9 J	31.8	30.9
BERYLLIUM	1.4 J	2.2 J	2.1 J	1.9	1.95
CADMIUM	0.42	5.7 J	7.8 J	0.31	0.17225
CHROMIUM	16.1 J	161 J	192 J	36.3	35.35
COBALT	9.3	20.4 J	21.5 J	12.3	12.35
COPPER	26.9 J	152 J	131 J	21.6	21.35
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	60 J	130 J	136 J	17.6	16.8
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.035 B	0.45 J	0.53 J	0.061	0.1155
MOLYBDENUM	0.082 U	1.3 J	1.6 J	0.96	0.7175
NICKEL	17.7	41.8 J	39.5 J	20.4	21.05
SELENIUM	0.67 U	1.6 J	2.2 J	1.7	1.04
SILVER	0.17 B	2.1 J	2.6 J	0.15 U	0.15 U
THALLIUM	0.35 U	0.75 UJ	0.66 UJ	0.41 U	0.405 U
VANADIUM	15 J	62.1 J	60.8 J	36.4	37.05
ZINC	116	375 J	374 J	70.6	68.45
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	50	NA	26	42	42
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-53	SD-54	SD-55	SD-56	SD-57
SAMPLE ID	SD-53-SS-D	SD-54-SS	SD-55-SS	SD-56-SS	SD-57-SS
SAMPLE DATE	20081114	20081114	20081113	20081113	20081114
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-53	SD-54	SD-55	SD-56	SD-57
SAMPLE ID	SD-53-SS-D	SD-54-SS	SD-55-SS	SD-56-SS	SD-57-SS
SAMPLE DATE	20081114	20081114	20081113	20081113	20081114
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	780 U	1600 UJ	1400 UJ	940 U	830 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	780 U	1600 UJ	1400 UJ	940 U	830 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-53	SD-54	SD-55	SD-56	SD-57
SAMPLE ID	SD-53-SS-D	SD-54-SS	SD-55-SS	SD-56-SS	SD-57-SS
SAMPLE DATE	20081114	20081114	20081113	20081113	20081114
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	780 U	1600 UJ	1400 UJ	940 U	830 U
ACENAPHTHYLENE	780 U	1600 UJ	1400 UJ	940 U	830 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	780 U	1600 UJ	1400 UJ	82 J	830 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	780 U	1813	1561	1075	830 U
BAP EQUIVALENT-POSITIVE RESULTS	780 U	52.8	19.9	87.6	830 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	780 U	1600 UJ	1400 UJ	940 U	830 U
BENZO(A)PYRENE	780 U	1600 UJ	1400 UJ	940 U	830 U
BENZO(B)FLUORANTHENE	780 U	480 J	180 J	530 J	830 U
BENZO(G,H,I)PERYLENE	780 U	1600 UJ	1400 UJ	300 J	830 U
BENZO(K)FLUORANTHENE	780 U	440 J	190 J	410 J	830 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	780 U	420 J	1400 UJ	460 J	830 U
DIBENZO(A,H)ANTHRACENE	780 U	1600 UJ	1400 UJ	940 U	830 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	780 U	590 J	270 J	700 J	830 U
FLUORENE	780 U	1600 UJ	1400 UJ	940 U	830 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	780 U	1600 UJ	1400 UJ	300 J	830 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	780 U	1600 UJ	1400 UJ	940 U	830 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	780 U	300 J	1400 UJ	240 J	830 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	780 U	1100 J	470 J	910 J	830 U
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	3330	1110	3932	0 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-53	SD-54	SD-55	SD-56	SD-57
SAMPLE ID	SD-53-SS-D	SD-54-SS	SD-55-SS	SD-56-SS	SD-57-SS
SAMPLE DATE	20081114	20081114	20081113	20081113	20081114
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	39 U	79 UJ	71 UJ	47 U	41 U
AROCLOR-1221	39 U	79 UJ	71 UJ	47 U	410 UJ
AROCLOR-1232	39 U	79 UJ	71 UJ	47 U	410 UJ
AROCLOR-1242	39 U	79 UJ	71 UJ	47 U	410 UJ
AROCLOR-1248	39 U	79 UJ	71 UJ	47 U	410 UJ
AROCLOR-1254	39 U	79 UJ	71 UJ	47 U	410 UJ
AROCLOR-1260	39 U	79 UJ	180 J	36 J	41 U
TOTAL AROCLOR	0 U	0 U	180	36	0 U
METALS (MG/KG)					
ANTIMONY	0.23 UL	0.63 J	0.45 UJ	0.28 UL	0.25 UJ
ARSENIC	6.7	12.1 J	12.9 J	8.7	7.4
BARIUM	30	61.8 J	62.4 J	36.9	34.2
BERYLLIUM	2	2.1 J	2.3 J	1.5	2.1
CADMIUM	0.069 B	3.7 J	5.1 J	3.7	0.015 U
CHROMIUM	34.4	138 J	166 J	91.1	37.7
COBALT	12.4	20.2 J	21.2 J	14.1	14.8
COPPER	21.1	164 J	169 J	100	20.4
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	16	119 J	133 J	79.6	15.4
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.17	0.43 J	0.45 J	0.24	0.036
MOLYBDENUM	0.95 B	1.1 J	1.4 J	0.94	0.87 B
NICKEL	21.7	39.5 J	42.4 J	27.2	24.3
SELENIUM	0.76 U	2.5 J	2.6 J	1.3	0.83 U
SILVER	0.15 U	1.9 J	2.2 J	1.2	0.16 U
THALLIUM	0.4 U	0.8 UJ	0.77 UJ	0.48 U	0.43 U
VANADIUM	37.7	61.1 J	67.6 J	44.5	42.2
ZINC	66.3	347 J	378 J	250	72.2
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	21	24	36	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	25000	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-58	SD-59	SD-60	SD-61	SD-62
SAMPLE ID	SD-58-SS	SD-59-SS	SD-60-SS	SD-61-SS	SD-62-SS
SAMPLE DATE	20081114	20081115	20081112	20081113	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-58	SD-59	SD-60	SD-61	SD-62
SAMPLE ID	SD-58-SS	SD-59-SS	SD-60-SS	SD-61-SS	SD-62-SS
SAMPLE DATE	20081114	20081115	20081112	20081113	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	1300 UJ	750 U	850 U	1400 UJ	890 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	1300 UJ	750 U	850 U	1400 UJ	890 UJ
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-58	SD-59	SD-60	SD-61	SD-62
SAMPLE ID	SD-58-SS	SD-59-SS	SD-60-SS	SD-61-SS	SD-62-SS
SAMPLE DATE	20081114	20081115	20081112	20081113	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	1300 UJ	750 U	850 U	1400 UJ	890 UJ
ACENAPHTHYLENE	1300 UJ	750 U	850 U	1400 UJ	890 UJ
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	1300 UJ	750 U	850 U	400 J	890 UJ
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	1453	840	982	2244	890 U
BAP EQUIVALENT-POSITIVE RESULTS	22.9	53.0	0.17	1544	890 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1300 UJ	750 U	850 U	1300 J	890 UJ
BENZO(A)PYRENE	1300 UJ	750 U	850 U	1200 J	890 UJ
BENZO(B)FLUORANTHENE	210 J	330 J	850 U	1300 J	890 UJ
BENZO(G,H,I)PERYLENE	1300 UJ	750 U	850 U	700 J	890 UJ
BENZO(K)FLUORANTHENE	160 J	260 J	850 U	1300 J	890 UJ
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	280 J	380 J	170 J	1500 J	890 UJ
DIBENZO(A,H)ANTHRACENE	1300 UJ	750 U	850 U	1400 UJ	890 UJ
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	300 J	480 J	200 J	2600 J	890 UJ
FLUORENE	1300 UJ	750 U	850 U	130 J	890 UJ
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	1300 UJ	170 J	850 U	690 J	890 UJ
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	1300 UJ	750 U	850 U	1400 UJ	890 UJ
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	1300 UJ	240 J	850 U	1700 J	890 UJ
PHENOL	NA	NA	NA	NA	NA
PYRENE	340 J	680 J	330 J	3700 J	890 UJ
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	1290	2540	700	16520	0 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-58	SD-59	SD-60	SD-61	SD-62
SAMPLE ID	SD-58-SS	SD-59-SS	SD-60-SS	SD-61-SS	SD-62-SS
SAMPLE DATE	20081114	20081115	20081112	20081113	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	1300 UJ	230 U	53 U	68 UJ	56 UJ
AROCLOR-1221	1300 UJ	230 U	53 U	68 UJ	56 UJ
AROCLOR-1232	1300 UJ	230 U	53 U	68 UJ	56 UJ
AROCLOR-1242	1300 UJ	230 U	53 U	68 UJ	56 UJ
AROCLOR-1248	1300 UJ	230 U	53 U	68 UJ	56 UJ
AROCLOR-1254	1300 UJ	230 U	53 U	68 UJ	56 UJ
AROCLOR-1260	6300 J	4200	53 U	370 J	56 UJ
TOTAL AROCLOR	6300	4200	0 U	370	0 U
METALS (MG/KG)					
ANTIMONY	0.37 UJ	0.27 U	1.7 J	0.9 J	0.92 J
ARSENIC	12.8 J	9	9.5	11.7 J	9.5 J
BARIUM	61.9 J	54.8 J	52.8 J	52.8 J	46.5 J
BERYLLIUM	2.3 J	2.1 J	1.9 J	2.1 J	1.9 J
CADMIUM	7.1 J	20.1	14.7	5.8 J	5.4 J
CHROMIUM	180 J	397 J	272 J	154 J	118 J
COBALT	23.5 J	19.8	19.2 J	19.4 J	17.1 J
COPPER	144 J	94.4 J	96.5 J	142 J	104 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	181 J	167 J	132	121 J	98.9 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.47 J	0.9	0.7	0.37 J	0.35 J
MOLYBDENUM	1.3 B	0.86	1.2	1.5 J	1.2 J
NICKEL	46.3 J	42.8	41.7 J	38.2 J	36.1 J
SELENIUM	1.5 J	2.4	2.1	2.3 J	1.9 J
SILVER	2.3 J	7.5	5.8	2.4 J	2.3 J
THALLIUM	0.64 UJ	0.46 U	0.56 U	0.74 UJ	0.58 UJ
VANADIUM	64.3 J	64.3 J	56.1 J	60.3 J	52.9 J
ZINC	441 J	433	404 J	361 J	325 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	36	31	24	30
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	22000	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-63	SD-64	SD-65	SD-66	SD-67
SAMPLE ID	SD-63-SS	SD-64-SS	SD-65-SS	SD-66-SS	SD-67-SS
SAMPLE DATE	20081112	20081112	20081111	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-63	SD-64	SD-65	SD-66	SD-67
SAMPLE ID	SD-63-SS	SD-64-SS	SD-65-SS	SD-66-SS	SD-67-SS
SAMPLE DATE	20081112	20081112	20081111	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	940 UJ	850 U	1300 UJ	1100 UJ	1400 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	940 UJ	850 U	1300 UJ	1100 UJ	1400 UJ
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-63	SD-64	SD-65	SD-66	SD-67
SAMPLE ID	SD-63-SS	SD-64-SS	SD-65-SS	SD-66-SS	SD-67-SS
SAMPLE DATE	20081112	20081112	20081111	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	940 UJ	850 U	1300 UJ	1100 UJ	1400 UJ
ACENAPHTHYLENE	940 UJ	850 U	1300 UJ	1100 UJ	1400 UJ
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	940 UJ	140 J	1300 UJ	1100 UJ	1400 UJ
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	1032	1648	1300 U	1100 U	1400 U
BAP EQUIVALENT-POSITIVE RESULTS	45.5	1181	1300 U	1100 U	1400 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	940 UJ	850 U	1300 UJ	1100 UJ	1400 UJ
BENZO(A)PYRENE	940 UJ	1000	1300 UJ	1100 UJ	1400 UJ
BENZO(B)FLUORANTHENE	320 J	1100	1300 UJ	1100 UJ	1400 UJ
BENZO(G,H,I)PERYLENE	940 UJ	700 J	1300 UJ	1100 UJ	1400 UJ
BENZO(K)FLUORANTHENE	220 J	860	1300 UJ	1100 UJ	1400 UJ
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	260 J	960	1300 UJ	1100 UJ	1400 UJ
DIBENZO(A,H)ANTHRACENE	940 UJ	850 U	1300 UJ	1100 UJ	1400 UJ
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	340 J	1200	1300 UJ	1100 UJ	1400 UJ
FLUORENE	940 UJ	850 U	1300 UJ	1100 UJ	1400 UJ
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	110 J	610 J	1300 UJ	1100 UJ	1400 UJ
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	940 UJ	850 U	1300 UJ	1100 UJ	1400 UJ
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	940 UJ	500 J	1300 UJ	1100 UJ	1400 UJ
PHENOL	NA	NA	NA	NA	NA
PYRENE	620 J	2600 J	1300 UJ	1100 UJ	1400 UJ
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	1870	9670	0 U	0 U	0 U

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-63	SD-64	SD-65	SD-66	SD-67
SAMPLE ID	SD-63-SS	SD-64-SS	SD-65-SS	SD-66-SS	SD-67-SS
SAMPLE DATE	20081112	20081112	20081111	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	59 UJ	53 U	63 UJ	71 UJ	69 UJ
AROCLOR-1221	59 UJ	53 U	63 UJ	71 UJ	69 UJ
AROCLOR-1232	59 UJ	53 U	63 UJ	71 UJ	69 UJ
AROCLOR-1242	59 UJ	53 U	63 UJ	71 UJ	69 UJ
AROCLOR-1248	59 UJ	53 U	63 UJ	71 UJ	69 UJ
AROCLOR-1254	59 UJ	53 U	63 UJ	71 UJ	69 UJ
AROCLOR-1260	560 J	1600	130 J	71 UJ	120 J
TOTAL AROCLOR	560	1600	130	0 U	120
METALS (MG/KG)					
ANTIMONY	1.3 J	1.4 J	0.36 UJ	1.2 J	0.4 UJ
ARSENIC	10.5 J	10.4	12 J	12.3 J	11 J
BARIUM	52.3 J	54.6 J	52.3 J	58.6 J	58 J
BERYLLIUM	2.1 J	2.1 J	2.2 J	2.3 J	2.2 J
CADMIUM	6.3 J	9.5 J	4.6 J	7.4 J	6.7 J
CHROMIUM	134 J	194 J	120 J	137 J	149 J
COBALT	19.4 J	19.4 J	18.1 J	20.8 J	19.7 J
COPPER	134 J	95.6 J	130 J	140 J	118 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	117 J	175 J	110 J	125 J	123 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.41 J	0.51	0.36 J	0.44 J	0.42 J
MOLYBDENUM	1.5 J	1.5 J	1.5 B	2.2 J	1.6 B
NICKEL	40.3 J	45.7 J	37.3 J	44.2 J	41.5 J
SELENIUM	2.4 J	2.6 J	1.8 J	3.1 J	1.8 J
SILVER	2.6 J	4.1 J	2.1 J	2.5 J	3.5 J
THALLIUM	0.61 UJ	0.57 U	0.62 U	0.72 UJ	0.68 UJ
VANADIUM	60.3 J	68.8 J	60.4 J	65.1 J	61.3 J
ZINC	393 J	367 J	348 J	456 J	395 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	28	32	NA	23	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	24000 J
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-68	SD-69	SD-69	SD-69	SD-70
SAMPLE ID	SD-68-SS	SD-69-SS	SD-69-SS-AVG	SD-69-SS-D	SD-70-SS
SAMPLE DATE	20081112	20081111	20081111	20081111	20081111
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-68	SD-69	SD-69	SD-69	SD-70
SAMPLE ID	SD-68-SS	SD-69-SS	SD-69-SS-AVG	SD-69-SS-D	SD-70-SS
SAMPLE DATE	20081112	20081111	20081111	20081111	20081111
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-68	SD-69	SD-69	SD-69	SD-70
SAMPLE ID	SD-68-SS	SD-69-SS	SD-69-SS-AVG	SD-69-SS-D	SD-70-SS
SAMPLE DATE	20081112	20081111	20081111	20081111	20081111
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
ACENAPHTHYLENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	1271	450 U	450 U	450 U	6400 U
BAP EQUIVALENT-POSITIVE RESULTS	0.18	450 U	450 U	450 U	6400 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
BENZO(A)PYRENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
BENZO(B)FLUORANTHENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
BENZO(G,H,I)PERYLENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
BENZO(K)FLUORANTHENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	180 J	450 U	450 UJ	450 UJ	6400 UJ
DIBENZO(A,H)ANTHRACENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	190 J	450 U	450 UJ	450 UJ	820 J
FLUORENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	1100 UJ	450 U	450 UJ	450 UJ	6400 UJ
PHENOL	NA	NA	NA	NA	NA
PYRENE	430 J	450 U	450 UJ	450 UJ	6400 UJ
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	800	0 U	0 U	0 U	820

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-68	SD-69	SD-69	SD-69	SD-70
SAMPLE ID	SD-68-SS	SD-69-SS	SD-69-SS-AVG	SD-69-SS-D	SD-70-SS
SAMPLE DATE	20081112	20081111	20081111	20081111	20081111
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	67 UJ	23 U	23 U	23 U	64 UJ
AROCLOR-1221	67 UJ	23 U	23 U	23 U	64 UJ
AROCLOR-1232	67 UJ	23 U	23 U	23 U	64 UJ
AROCLOR-1242	67 UJ	23 U	23 U	23 U	64 UJ
AROCLOR-1248	67 UJ	23 U	23 U	23 U	64 UJ
AROCLOR-1254	67 UJ	23 U	23 U	23 U	64 UJ
AROCLOR-1260	67 UJ	23 U	23 U	23 U	290 J
TOTAL AROCLOR	0 U	0 U	0 U	0 U	290
METALS (MG/KG)					
ANTIMONY	1.2 J	2.3 L	1.1825 JL	0.13 UJ	1.1 J
ARSENIC	11.4 J	6.6	6.55	6.5	12.2 J
BARIUM	59.6 J	16.5	17.55	18.6	56 J
BERYLLIUM	2.3 J	5.3	6.1	6.9	2.2 J
CADMIUM	6.2 J	0.07	0.03695	0.0078 U	5.7 J
CHROMIUM	135 J	18.1	17.4	16.7	129 J
COBALT	20.5 J	28.1	28.3	28.5	19.8 J
COPPER	129 J	19.8	16.95 J	14.1 J	138 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	122 J	57.2	32.5 J	7.8 J	122 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.41 J	0.013 B	0.00925	0.012	0.4 J
MOLYBDENUM	1.8 J	0.81	0.55	0.58 B	2 J
NICKEL	43.1 J	49.3	50.1 J	50.9 J	42.5 J
SELENIUM	2.8 J	0.42 UL	0.345 JL	0.48 J	1.2 UJ
SILVER	2.5 J	0.081 U	0.082 U	0.083 U	2.3 J
THALLIUM	0.69 UJ	0.22 U	0.225 U	0.23 U	0.63 UJ
VANADIUM	64.9 J	27.1 K	28.85 K	30.6	65.4 J
ZINC	433 J	148	158 J	168 J	401 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	25	74	74	NA	26
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-71	SD-72	SD-73	SD-74	SD-75
SAMPLE ID	SD-71-SS	SD-72-SS	SD-73-SS	SD-74-SS	SD-75-SS
SAMPLE DATE	20081111	20081112	20081111	20081111	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-71	SD-72	SD-73	SD-74	SD-75
SAMPLE ID	SD-71-SS	SD-72-SS	SD-73-SS	SD-74-SS	SD-75-SS
SAMPLE DATE	20081111	20081112	20081111	20081111	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	1300 UJ	350 U	750 U	490 U	490 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	1300 UJ	350 U	750 U	490 U	490 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-71	SD-72	SD-73	SD-74	SD-75
SAMPLE ID	SD-71-SS	SD-72-SS	SD-73-SS	SD-74-SS	SD-75-SS
SAMPLE DATE	20081111	20081112	20081111	20081111	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	1300 UJ	350 U	750 U	490 U	130 J
ACENAPHTHYLENE	1300 UJ	350 U	750 U	490 U	490 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	1300 UJ	350 U	750 U	64 J	280 J
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	1300 U	350 U	830	562.9	2165
BAP EQUIVALENT-POSITIVE RESULTS	1300 U	350 U	42.1	48.4	1920
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1300 UJ	350 U	750 U	490 U	1400
BENZO(A)PYRENE	1300 UJ	350 U	750 U	490 U	1500
BENZO(B)FLUORANTHENE	1300 UJ	350 U	330 J	300 J	1800 J
BENZO(G,H,I)PERYLENE	1300 UJ	350 U	750 U	140 J	850
BENZO(K)FLUORANTHENE	1300 UJ	350 U	99 J	300 J	1600
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	1300 UJ	350 U	220 J	360 J	1800
DIBENZO(A,H)ANTHRACENE	1300 UJ	350 U	750 U	490 U	490 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	1300 UJ	350 U	400 J	620	2400
FLUORENE	1300 UJ	350 U	750 U	490 U	110 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	1300 UJ	350 U	79 J	150 J	820
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	1300 UJ	350 U	750 U	490 U	490 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	1300 UJ	350 U	750 U	250 J	1500
PHENOL	NA	NA	NA	NA	NA
PYRENE	1300 UJ	350 UJ	390 J	660	3400 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	0 U	1518	2844	17590

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-71	SD-72	SD-73	SD-74	SD-75
SAMPLE ID	SD-71-SS	SD-72-SS	SD-73-SS	SD-74-SS	SD-75-SS
SAMPLE DATE	20081111	20081112	20081111	20081111	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	65 UJ	22 U	37 U	24 U	30 U
AROCLOR-1221	65 UJ	22 U	37 U	24 U	30 U
AROCLOR-1232	65 UJ	22 U	37 U	24 U	30 U
AROCLOR-1242	65 UJ	22 U	37 U	24 U	30 U
AROCLOR-1248	65 UJ	22 U	37 U	24 U	30 U
AROCLOR-1254	65 UJ	22 U	37 U	24 U	30 U
AROCLOR-1260	65 UJ	22 U	37 U	21 J	530 J
TOTAL AROCLOR	0 U	0 U	0 U	21	530
METALS (MG/KG)					
ANTIMONY	1.4 B	0.13 UL	0.22 UL	0.61 L	1.3 J
ARSENIC	10.3 J	4.7	6.4	5.4	5.5
BARIUM	53.1 J	17.2 J	22.4	64.8	38.9 J
BERYLLIUM	2 J	1 J	1.8	1.8	0.83 J
CADMIUM	3.6 J	0.0079 UL	0.3	2.7	2.6
CHROMIUM	102 J	25.4 J	57.2	67.6	65.2 J
COBALT	17.1 J	3 J	11.9	12.8	10 J
COPPER	129 J	21.2 J	22.6	67.1	84.2 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	99.1 J	7.2 J	13.5	58.4	79.9
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.33 J	0.024 B	0.038 B	0.3	0.25
MOLYBDENUM	1.2 B	0.64 J	2.2	0.74	1.9
NICKEL	35.2 J	9.4 J	35.3	23.1	23.4 J
SELENIUM	1.4 J	0.64 J	0.72 UL	0.46 UL	2
SILVER	1.5 J	0.084 UL	0.14 U	4.3	1.9
THALLIUM	0.65 UJ	0.23 U	0.38 U	0.24 U	0.31 U
VANADIUM	55.3 J	46.1 J	42 K	34.2 K	29.7 J
ZINC	342 J	26 J	71.8	90.3	224 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	77	44	68	55
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	1600	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-76	SD-77	SD-79	SD-80	SD-81
SAMPLE ID	SD-76-SS	SD-77-SS	SD-79-SS	SD-80-SS	SD-81-SS
SAMPLE DATE	20081111	20081110	20081114	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-76	SD-77	SD-79	SD-80	SD-81
SAMPLE ID	SD-76-SS	SD-77-SS	SD-79-SS	SD-80-SS	SD-81-SS
SAMPLE DATE	20081111	20081110	20081114	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	5200 U	3200 U	790 U	920 U	460 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	5200 U	3200 U	790 U	920 U	460 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-76	SD-77	SD-79	SD-80	SD-81
SAMPLE ID	SD-76-SS	SD-77-SS	SD-79-SS	SD-80-SS	SD-81-SS
SAMPLE DATE	20081111	20081110	20081114	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	5200 U	3200 U	790 U	920 U	460 U
ACENAPHTHYLENE	5200 U	3200 U	790 U	920 U	460 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	5200 U	500 J	790 U	920 U	460 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	5664	4021	790 U	920 U	530
BAP EQUIVALENT-POSITIVE RESULTS	204	661	790 U	920 U	0.73
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	5200 U	3200 U	790 U	920 U	460 U
BENZO(A)PYRENE	5200 U	3200 U	790 U	920 U	460 U
BENZO(B)FLUORANTHENE	1300 J	4800 J	790 U	920 U	460 U
BENZO(G,H,I)PERYLENE	580 J	1600 J	790 U	920 U	460 U
BENZO(K)FLUORANTHENE	1500 J	1700 J	790 U	920 U	65 J
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	1700 J	4200	790 U	920 U	84 J
DIBENZO(A,H)ANTHRACENE	5200 U	3200 U	790 U	920 U	460 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	2700 J	6800	790 U	920 U	100 J
FLUORENE	5200 U	3200 U	790 U	920 U	460 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	570 J	1600 J	790 U	920 U	460 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	5200 U	3200 U	790 U	920 U	460 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	5200 U	2800 J	790 U	920 U	460 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	3100 J	7100	790 U	920 U	150 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	11450	31100	0 U	0 U	399

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-76	SD-77	SD-79	SD-80	SD-81
SAMPLE ID	SD-76-SS	SD-77-SS	SD-79-SS	SD-80-SS	SD-81-SS
SAMPLE DATE	20081111	20081110	20081114	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	52 U	32 U	39 U	46 U	23 U
AROCLOR-1221	52 U	32 U	39 U	46 U	230 UJ
AROCLOR-1232	52 U	32 U	39 U	46 U	230 UJ
AROCLOR-1242	52 U	32 U	39 U	46 U	230 UJ
AROCLOR-1248	52 U	32 U	39 U	46 U	230 UJ
AROCLOR-1254	52 U	32 U	39 U	46 U	230 UJ
AROCLOR-1260	83	170 J	39 U	46 U	52
TOTAL AROCLOR	83	170	0 U	0 U	52
METALS (MG/KG)					
ANTIMONY	1.2 L	0.94 L	0.32 B	0.27 UJ	0.15 B
ARSENIC	10.8	5	6.5	8.7	1.5
BARIUM	48.4	112	37.8	43.2	6.2
BERYLLIUM	1.6	1	1.2	1.7	0.19
CADMIUM	3.5	14.7	1.8	0.016 U	1.1
CHROMIUM	65.6	145	43.6	36.2	19.9
COBALT	16.2	7.6	12.7	14.9	3.2
COPPER	105	101	30.6	20	19.9
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	97.5	191	28.2	16.9	23.7
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.24	0.64	0.096	0.038	0.067
MOLYBDENUM	1.4	1.6	0.73 B	0.63 B	0.23 B
NICKEL	32.8	32.5	21.6	24.1	4.8
SELENIUM	1 UL	1.5 K	0.79 U	1.4	0.46 U
SILVER	1	15.7	0.15 U	0.17 U	0.2 B
THALLIUM	0.53 U	0.63 U	0.41 U	0.47 U	0.24 U
VANADIUM	50.4 K	53.5 K	35.9	47.5	6.5
ZINC	360	275	94.2	72.6	52.2
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	32	52	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-82	SD-83	SD-84	SD-85	SD-86
SAMPLE ID	SD-82-SS	SD-83-SS	SD-84-SS	SD-85-SS	SD-86-SS
SAMPLE DATE	20081114	20100820	20100820	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-82	SD-83	SD-84	SD-85	SD-86
SAMPLE ID	SD-82-SS	SD-83-SS	SD-84-SS	SD-85-SS	SD-86-SS
SAMPLE DATE	20081114	20100820	20100820	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	930 U	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	930 U	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-82	SD-83	SD-84	SD-85	SD-86
SAMPLE ID	SD-82-SS	SD-83-SS	SD-84-SS	SD-85-SS	SD-86-SS
SAMPLE DATE	20081114	20100820	20100820	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	930 U	11 U	540	22 J	84 J
ACENAPHTHYLENE	930 U	13 U	790	140	120 J
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	930 U	46 J	2300	170	350
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	930 U	466	6326	875	2702
BAP EQUIVALENT-POSITIVE RESULTS	930 U	466	6325	875	2702
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	930 U	160	5000	390	1600
BENZO(A)PYRENE	930 U	160	4400	450	1500
BENZO(B)FLUORANTHENE	930 U	290	4700	540	2600
BENZO(G,H,I)PERYLENE	930 U	310	2900	550	1700
BENZO(K)FLUORANTHENE	930 U	23 U	22 U	190	41 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	930 U	180	5400	520	1700
DIBENZO(A,H)ANTHRACENE	930 U	230	720	280	630
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	160 J	290	10000	570	2700
FLUORENE	930 U	15 U	1400	43 J	100 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	930 U	310	2300	500	1500
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	930 U	9.8 U	200	29 J	52 J
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	930 U	140	12000	290	1500
PHENOL	NA	NA	NA	NA	NA
PYRENE	930 U	290	11000	770	3300
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	160	2406	63650	5454	19436

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-82	SD-83	SD-84	SD-85	SD-86
SAMPLE ID	SD-82-SS	SD-83-SS	SD-84-SS	SD-85-SS	SD-86-SS
SAMPLE DATE	20081114	20100820	20100820	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	47 U	1.7 U	1.6 U	1.7 U	3 U
AROCLOR-1221	840 UJ	2.2 U	2.1 U	2.1 U	3.9 U
AROCLOR-1232	840 UJ	2 U	1.9 U	1.9 U	3.5 U
AROCLOR-1242	840 UJ	1.9 U	1.8 U	1.8 U	3.3 U
AROCLOR-1248	840 UJ	1.1 U	1 U	1.1 U	1.9 U
AROCLOR-1254	840 UJ	1.6 U	1.5 U	1.6 U	2.9 U
AROCLOR-1260	200	35	83	35	290 J
TOTAL AROCLOR	200	35	83	35	290
METALS (MG/KG)					
ANTIMONY	0.29 UJ	0.2 B	2320 L	1.1 L	1.9 J
ARSENIC	9.1	1.8 L	11 L	3.4 L	6
BARIUM	32.1	NA	NA	NA	NA
BERYLLIUM	1	0.59	1.2 L	0.77	1.4 J
CADMIUM	6.4	0.39 L	29.5 L	8.5 L	41.2
CHROMIUM	129	12.1	76.6	55.3	296 K
COBALT	13.6	NA	NA	NA	NA
COPPER	135	23.2 L	37 L	16.9 L	97.1
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	98.1	67.6	31500	53.1	202
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.35	0.035	0.19	0.081	0.27
MOLYBDENUM	0.9 B	NA	NA	NA	NA
NICKEL	26.1	11.6 L	13.4 L	16.6 L	35.5
SELENIUM	0.94 U	0.39 L	0.83 L	0.47 L	1.3
SILVER	1.3 B	0.069	2.2 L	0.16	2.7 J
THALLIUM	0.49 U	0.049 J	0.12	0.059 J	0.17
VANADIUM	32.9	NA	NA	NA	NA
ZINC	246	81.5 L	163 L	127 L	595
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	6710	7230 L	9890	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	1.5	NA
CADMIUM	NA	NA	NA	0.085 J	NA
CHROMIUM	NA	NA	NA	0.61 J	NA
COPPER	NA	NA	NA	0.12	NA
LEAD	NA	NA	NA	0.16 J	NA
NICKEL	NA	NA	NA	0.096 J	NA
SILVER	NA	NA	NA	0.00072	NA
ZINC	NA	NA	NA	1.2 J	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-87	SD-88	SD-89	SD-90	SD-91
SAMPLE ID	SD-87-SS	SD-88-SS	SD-89-SS	SD-90-SS	SD-91-SS
SAMPLE DATE	20100818	20100819	20100819	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-87	SD-88	SD-89	SD-90	SD-91
SAMPLE ID	SD-87-SS	SD-88-SS	SD-89-SS	SD-90-SS	SD-91-SS
SAMPLE DATE	20100818	20100819	20100819	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-87	SD-88	SD-89	SD-90	SD-91
SAMPLE ID	SD-87-SS	SD-88-SS	SD-89-SS	SD-90-SS	SD-91-SS
SAMPLE DATE	20100818	20100819	20100819	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	85 J	120	38 J	62 J	2.3 U
ACENAPHTHYLENE	120 J	210	110 J	120 J	2.7 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	300	320	160 J	190 J	2.3 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	2392	1630	572	1737	3.4
BAP EQUIVALENT-POSITIVE RESULTS	2391	1630	565	1737	0.56
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1200	890	390 J	810 J	5.6 J
BENZO(A)PYRENE	1300	920	400 J	1100 J	2.4 U
BENZO(B)FLUORANTHENE	2100	1700	760 J	2000 J	3.7 U
BENZO(G,H,I)PERYLENE	1400	880	550 J	1100 J	2.4 U
BENZO(K)FLUORANTHENE	45 U	22 U	23 UJ	12 UJ	4.8 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	1400	1100	460 J	1200 J	2.8 U
DIBENZO(A,H)ANTHRACENE	630	370	13 UJ	270 J	2.6 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	1700	1800	750 J	2500 J	8 J
FLUORENE	67 J	100 J	62 J	82 J	3.1 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	1300	800	500 J	850 J	2.4 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	62 J	140	95 J	88 J	2 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	830	630	270 J	650 J	3.8 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	2000	1500	670 J	1600 J	6.2 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	14494	11480	5215	12622	19.8

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-87	SD-88	SD-89	SD-90	SD-91
SAMPLE ID	SD-87-SS	SD-88-SS	SD-89-SS	SD-90-SS	SD-91-SS
SAMPLE DATE	20100818	20100819	20100819	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	3.3 U	3.9 U	4.3 UJ	4.6 UJ	1.8 U
AROCLOR-1221	4.2 U	5 U	5.5 UJ	5.8 UJ	2.3 U
AROCLOR-1232	3.8 U	4.5 U	5 UJ	5.2 UJ	2 U
AROCLOR-1242	3.6 U	4.3 U	4.7 UJ	5 UJ	1.9 U
AROCLOR-1248	2.1 U	2.5 U	2.7 UJ	2.9 UJ	1.1 U
AROCLOR-1254	3.1 U	3.7 U	4.1 UJ	4.4 UJ	1.7 U
AROCLOR-1260	380	6600	1800 J	690 J	1.7 U
TOTAL AROCLOR	380	6600	1800	690	0 U
METALS (MG/KG)					
ANTIMONY	1 L	0.75 J	0.9 J	1.4 J	0.2 J
ARSENIC	6.2	7.8 L	9.8 J	8.9 J	3.6
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1.3	1.8 L	2.1 J	1.8 J	2.4
CADMIUM	32.9	19.3 J	11.9 J	5.2 J	0.18
CHROMIUM	277	336 L	251 J	110 J	21
COBALT	NA	NA	NA	NA	NA
COPPER	108	94.2 L	118 J	116 J	21.7
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	142 K	170	147 J	111 J	6.6 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.3	1.1	0.76 J	0.43 J	0.0078 U
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	32.8	40.3 L	42.9 J	36.4 J	15
SELENIUM	1.2	1.9 L	2 J	1.8 J	0.76
SILVER	1.4	7.2 L	5.6 J	2.8 J	0.029 J
THALLIUM	0.2	0.29 K	0.32 J	0.24 J	0.084 J
VANADIUM	NA	NA	NA	NA	NA
ZINC	524	404 L	415 J	382 J	40.2
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	58100	31600	28600	28000 J	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	18.4	3.3	11.9	22.6 J	NA
CADMIUM	0.25	0.15	0.087	0.034 J	NA
CHROMIUM	1.6	2.5	1.7	0.71 J	NA
COPPER	0.011 B	0.53	0.68	0.086 J	NA
LEAD	0.52	0.63	0.5	0.36 J	NA
NICKEL	0.14	0.19	0.16	0.17 J	NA
SILVER	0.00036 U	0.011	0.0093	0.0005 UJ	NA
ZINC	6.8	4.1	4	3.9 J	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-92	SD-93	SD-94	SD-95	SD-96
SAMPLE ID	SD-92-SS	SD-93-SS	SD-94-SS	SD-95-SS	SD-96-SS
SAMPLE DATE	20100817	20100817	20100817	20100817	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-92	SD-93	SD-94	SD-95	SD-96
SAMPLE ID	SD-92-SS	SD-93-SS	SD-94-SS	SD-95-SS	SD-96-SS
SAMPLE DATE	20100817	20100817	20100817	20100817	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-92	SD-93	SD-94	SD-95	SD-96
SAMPLE ID	SD-92-SS	SD-93-SS	SD-94-SS	SD-95-SS	SD-96-SS
SAMPLE DATE	20100817	20100817	20100817	20100817	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	1.2 U	3.9 J	4.5 U	26 J	38 J
ACENAPHTHYLENE	1.4 U	8.7 J	5.3 U	33 J	110 J
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	2.6 J	15 J	4.6 U	73 J	170 J
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	15.7	136	37.2	552	722
BAP EQUIVALENT-POSITIVE RESULTS	15.0	136	34.6	552	715
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	8.7 J	55	16 J	250 J	380 J
BENZO(A)PYRENE	9.4 J	60	22 J	290 J	500 J
BENZO(B)FLUORANTHENE	14	130	27 J	560 J	1100 J
BENZO(G,H,I)PERYLENE	29	78	67	340 J	730 J
BENZO(K)FLUORANTHENE	2.5 U	3.8 U	9.7 J	10 UJ	28 UJ
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	9.1 J	75	21 J	310 J	530 J
DIBENZO(A,H)ANTHRACENE	1.4 U	49	5.2 U	150 J	15 UJ
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	16	110	41 J	470 J	870 J
FLUORENE	2.2 J	5.3 J	6.1 U	29 J	63 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	33	80	82	310 J	660 J
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	2.8 J	5.1 J	4 U	48 J	100 J
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	7.2 J	36	7.4 U	180 J	330 J
PHENOL	NA	NA	NA	NA	NA
PYRENE	18	100	28 J	520 J	770 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	152	811	313.7	3589	6351

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-92	SD-93	SD-94	SD-95	SD-96
SAMPLE ID	SD-92-SS	SD-93-SS	SD-94-SS	SD-95-SS	SD-96-SS
SAMPLE DATE	20100817	20100817	20100817	20100817	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	2.3 U	1.8 U	3.5 U	4.7 UJ	5.1 UJ
AROCLOR-1221	3 U	2.3 U	4.4 U	6 UJ	6.6 UJ
AROCLOR-1232	2.7 U	2 U	4 U	5.4 UJ	5.9 UJ
AROCLOR-1242	2.5 U	1.9 U	3.8 U	5.1 UJ	5.6 UJ
AROCLOR-1248	1.5 U	1.1 U	2.2 U	3 UJ	3.3 UJ
AROCLOR-1254	2.2 U	1.7 U	3.3 U	4.5 UJ	4.9 UJ
AROCLOR-1260	2.2 U	73	44	720 J	1800 J
TOTAL AROCLOR	0 U	73	44	720	1800
METALS (MG/KG)					
ANTIMONY	0.13 B	0.27 L	0.11 J	0.57 J	0.55 J
ARSENIC	3.9	4.2	4.6	8.4 J	9.7 J
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1.5	0.81	1.7	1.9 J	1.7 J
CADMIUM	0.21	1.1	0.88	7.7 J	5.2 J
CHROMIUM	15	17.9	30.9	165 J	120 J
COBALT	NA	NA	NA	NA	NA
COPPER	12.8	21.8	25.1	96.9 J	130 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	5.1 K	21.5 K	15.9 J	118 J	112 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.024 J	0.048	0.056	0.54 J	0.51 J
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	12.5	10.4	20.2	37.6 J	35.1 J
SELENIUM	0.68	0.42	1.2	1.7 J	1.9 J
SILVER	0.033 J	0.19	0.15	3.7 J	2 J
THALLIUM	0.066 J	0.053 J	0.16 J	0.25 J	0.24 J
VANADIUM	NA	NA	NA	NA	NA
ZINC	40.4	100	77.3	360 J	350 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-97	SD-98	SD-99	SD-100	SD-101
SAMPLE ID	SD-97-SS	SD-98-SS	SD-99-SS	SD-100-SS	SD-101-SS
SAMPLE DATE	20100817	20100819	20100819	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-97	SD-98	SD-99	SD-100	SD-101
SAMPLE ID	SD-97-SS	SD-98-SS	SD-99-SS	SD-100-SS	SD-101-SS
SAMPLE DATE	20100817	20100819	20100819	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-97	SD-98	SD-99	SD-100	SD-101
SAMPLE ID	SD-97-SS	SD-98-SS	SD-99-SS	SD-100-SS	SD-101-SS
SAMPLE DATE	20100817	20100819	20100819	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	6.9 UJ	38 J	8.3 U	10 J	18 J
ACENAPHTHYLENE	38 J	100 J	9.9 U	50	53 J
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	49 J	170	8.5 U	47	87 J
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	369	811	8.7 U	291	313
BAP EQUIVALENT-POSITIVE RESULTS	369	810	8.7 U	291	305
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	130 J	300	11 U	170	220 J
BENZO(A)PYRENE	170 J	400	8.7 U	160	200 J
BENZO(B)FLUORANTHENE	320 J	820	14 U	300	420 J
BENZO(G,H,I)PERYLENE	250 J	530	8.6 U	150	400 J
BENZO(K)FLUORANTHENE	14 UJ	22 U	18 U	5.1 U	28 UJ
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	190 J	430	10 U	160	220 J
DIBENZO(A,H)ANTHRACENE	130 J	250	9.6 U	70	15 UJ
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	370 J	660	9.3 U	250	340 J
FLUORENE	23 J	60 J	11 U	19 J	37 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	240 J	480	8.9 U	140	410 J
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	53 J	92 J	7.5 U	20 J	58 J
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	120 J	260	14 U	97	150 J
PHENOL	NA	NA	NA	NA	NA
PYRENE	250 J	690	8.8 U	210	350 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	2333	5280	0 U	1853	2963

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-97	SD-98	SD-99	SD-100	SD-101
SAMPLE ID	SD-97-SS	SD-98-SS	SD-99-SS	SD-100-SS	SD-101-SS
SAMPLE DATE	20100817	20100819	20100819	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	5.3 UJ	4 U	3.2 U	1.9 U	5.1 UJ
AROCLOR-1221	6.8 UJ	5.2 U	4.1 U	2.4 U	6.5 UJ
AROCLOR-1232	6.1 UJ	4.7 U	3.7 U	2.2 U	5.9 UJ
AROCLOR-1242	5.8 UJ	4.4 U	3.5 U	2.1 U	5.6 UJ
AROCLOR-1248	3.4 UJ	2.6 U	2 U	1.2 U	3.2 UJ
AROCLOR-1254	5.1 UJ	3.9 U	3 U	1.8 U	4.9 UJ
AROCLOR-1260	620 J	2700 J	14 J	99	190 J
TOTAL AROCLOR	620	2700	14	99	190
METALS (MG/KG)					
ANTIMONY	0.71 J	0.8 J	0.099 B	0.15 J	0.61 J
ARSENIC	10.9 J	10.1 L	4.7	2.1 L	10 J
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	2.1 J	1.9 L	1.7	0.38 L	1.7 J
CADMIUM	6.7 J	7.7 J	0.61 L	3.6 J	4.6 J
CHROMIUM	171 J	167 L	29.6	42.7 L	133 J
COBALT	NA	NA	NA	NA	NA
COPPER	145 J	129 L	21 L	17.5 L	156 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	141 J	131	14.3	32.2	120 J
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.52 J	0.54	0.039 J	0.15	0.45 J
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	43 J	39.7 L	21.2 L	8.7 L	37.7 J
SELENIUM	2.1 J	1.8 L	0.99 L	0.48 L	1.8 J
SILVER	2.3 J	3.2 L	0.091 J	0.46 L	1.6 J
THALLIUM	0.27 J	0.28 K	0.19 K	0.08 K	0.24 J
VANADIUM	NA	NA	NA	NA	NA
ZINC	415 J	375 L	69.7	80.9 L	350 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	31300	NA	50300 J
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	0.41 U	NA	44.6 J
CADMIUM	NA	NA	0.0035	NA	0.033 J
CHROMIUM	NA	NA	0.064	NA	1 J
COPPER	NA	NA	0.12	NA	0.48 J
LEAD	NA	NA	0.037	NA	0.44 J
NICKEL	NA	NA	0.077	NA	0.2 J
SILVER	NA	NA	0.00035 U	NA	0.0011 J
ZINC	NA	NA	0.43	NA	3.7 J

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-102	SD-103	SD-104	SD-104	SD-104
SAMPLE ID	SD-102-SS	SD-103-SS	SD-104-SS	SD-104-SS-AVG	SD-104-SS-D
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
CYCLOHEXANE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-102	SD-103	SD-104	SD-104	SD-104
SAMPLE ID	SD-102-SS	SD-103-SS	SD-104-SS	SD-104-SS-AVG	SD-104-SS-D
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL ACETATE	NA	NA	NA	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-102	SD-103	SD-104	SD-104	SD-104
SAMPLE ID	SD-102-SS	SD-103-SS	SD-104-SS	SD-104-SS-AVG	SD-104-SS-D
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	11 UJ	2.9 U	1.8 U	6.95 J	13 J
ACENAPHTHYLENE	14 UJ	3.5 U	15 J	15.5 J	16 J
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	29 J	5.6 J	26	31.5 J	37 J
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	163	39.9	123	170	217
BAP EQUIVALENT-POSITIVE RESULTS	157	38.2	123	170	217
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	85 J	25 J	60	69	78
BENZO(A)PYRENE	99 J	24 J	56	69	82
BENZO(B)FLUORANTHENE	200 J	41	130	120	110
BENZO(G,H,I)PERYLENE	240 J	66	71 J	110.5 J	150 J
BENZO(K)FLUORANTHENE	24 UJ	16 J	3.8 U	6.9 U	10 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	120 J	26 J	71	85.5	100
DIBENZO(A,H)ANTHRACENE	13 UJ	3.4 U	41 J	70.5 J	100 J
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	170 J	37	130	140	150
FLUORENE	16 UJ	4 U	21	28.5 J	36 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	290 J	74	72 J	116 J	160 J
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	10 UJ	2.6 U	42	56.5	71
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	66 J	9.7 J	79	104.5	130
PHENOL	NA	NA	NA	NA	NA
PYRENE	170 J	32	110	140	170
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	1469	356.3	924	1163.95	1403

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-102	SD-103	SD-104	SD-104	SD-104
SAMPLE ID	SD-102-SS	SD-103-SS	SD-104-SS	SD-104-SS-AVG	SD-104-SS-D
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6
PCBS (UG/KG)					
AROCLOR-1016	4.4 UJ	2.3 U	3.5 U	3.6 U	3.7 U
AROCLOR-1221	5.7 UJ	2.9 U	4.5 U	4.6 U	4.7 U
AROCLOR-1232	5.1 UJ	2.6 U	4.1 U	4.15 U	4.2 U
AROCLOR-1242	4.8 UJ	2.5 U	3.9 U	3.95 U	4 U
AROCLOR-1248	2.8 UJ	1.4 U	2.2 U	2.25 U	2.3 U
AROCLOR-1254	4.2 UJ	2.2 U	3.4 U	3.45 U	3.5 U
AROCLOR-1260	200 J	2.2 U	30	25 J	20 J
TOTAL AROCLOR	200	0 U	30	25	20
METALS (MG/KG)					
ANTIMONY	0.83 J	0.22 J	0.5 J	0.545 J	0.59 J
ARSENIC	10.2 J	4.2	9	9.35	9.7
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1.8 J	0.78 J	1.8 J	1.9 J	2 J
CADMIUM	4.6 J	0.47	8.8	7.95	7.1
CHROMIUM	136 J	22	236 K	233 K	230 K
COBALT	NA	NA	NA	NA	NA
COPPER	151 J	16.5	60.4	62.4	64.4
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA
LEAD	123 J	13.1	117	123.5	130
MANGANESE	NA	NA	NA	NA	NA
MERCURY	0.5 J	0.039	0.5	0.48	0.46
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	37.3 J	12.8	34.4	35.9	37.4
SELENIUM	1.8 J	0.64	1.9	2.05	2.2
SILVER	1.7 J	0.064 J	2 J	1.85 J	1.7 J
THALLIUM	0.26 J	0.12	0.24	0.25	0.26
VANADIUM	NA	NA	NA	NA	NA
ZINC	337 J	52.4	238	243	248
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-105	SD-106
SAMPLE ID	SD-105-SS	SD-106-SS
SAMPLE DATE	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL
MATRIX	SD	SD
SAMPLE TYPE	NORMAL	NORMAL
SUBMATRIX	SS	SS
TOP DEPTH	0	0
BOTTOM DEPTH	6	6
VOLATILES (UG/KG)		
1,1,1,2-TETRACHLOROETHANE	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA
1,1-DICHLOROETHANE	NA	NA
1,1-DICHLOROETHENE	NA	NA
1,1-DICHLOROPROPENE	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA
1,2-DIBROMOETHANE	NA	NA
1,2-DICHLOROBENZENE	NA	NA
1,2-DICHLOROETHANE	NA	NA
1,2-DICHLOROPROPANE	NA	NA
1,3-DICHLOROBENZENE	NA	NA
1,3-DICHLOROPROPANE	NA	NA
1,4-DICHLOROBENZENE	NA	NA
2,2-DICHLOROPROPANE	NA	NA
2-BUTANONE	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA
2-CHLOROTOLUENE	NA	NA
2-HEXANONE	NA	NA
4-CHLOROTOLUENE	NA	NA
4-ISOPROPYLTOLUENE	NA	NA
4-METHYL-2-PENTANONE	NA	NA
ACETONE	NA	NA
BENZENE	NA	NA
BROMOBENZENE	NA	NA
BROMOCHLOROMETHANE	NA	NA
BROMODICHLOROMETHANE	NA	NA
BROMOFORM	NA	NA
BROMOMETHANE	NA	NA
CARBON DISULFIDE	NA	NA
CARBON TETRACHLORIDE	NA	NA
CHLOROBENZENE	NA	NA
CHLORODIBROMOMETHANE	NA	NA
CHLOROETHANE	NA	NA
CHLOROFORM	NA	NA
CHLOROMETHANE	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA
CYCLOHEXANE	NA	NA
DIBROMOMETHANE	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA
DIISOPROPYL ETHER	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA
ETHYLBENZENE	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-105**	**SD-106**
SAMPLE ID	**SD-105-SS**	**SD-106-SS**
SAMPLE DATE	**20100818**	**20100818**
SAMPLE CODE	**NORMAL**	**NORMAL**
MATRIX	**SD**	**SD**
SAMPLE TYPE	**NORMAL**	**NORMAL**
SUBMATRIX	**SS**	**SS**
TOP DEPTH	**0**	**0**
BOTTOM DEPTH	**6**	**6**
HEXACHLOROBUTADIENE	NA	NA
ISOPROPYLBENZENE	NA	NA
M+P-XYLENES	NA	NA
METHYL ACETATE	NA	NA
METHYL CYCLOHEXANE	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA
METHYLENE CHLORIDE	NA	NA
NAPHTHALENE	NA	NA
N-BUTYLBENZENE	NA	NA
N-PROPYLBENZENE	NA	NA
O-XYLENE	NA	NA
SEC-BUTYLBENZENE	NA	NA
STYRENE	NA	NA
TERT-AMYL METHYL ETHER	NA	NA
TERT-BUTYLBENZENE	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA
TETRACHLOROETHENE	NA	NA
TOLUENE	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA
TOTAL XYLENES	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA
TRICHLOROETHENE	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA
VINYL ACETATE	NA	NA
VINYL CHLORIDE	NA	NA
SEMIVOLATILES (UG/KG)		
1,2,4-TRICHLOROBENZENE	NA	NA
1,2-DICHLOROBENZENE	NA	NA
1,2-DIPHENYLHYDRAZINE	NA	NA
1,3-DICHLOROBENZENE	NA	NA
1,4-DICHLOROBENZENE	NA	NA
1,4-DIOXANE	NA	NA
1-METHYLNAPHTHALENE	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA
2,4-DICHLOROPHENOL	NA	NA
2,4-DIMETHYLPHENOL	NA	NA
2,4-DINITROPHENOL	NA	NA
2,4-DINITROTOLUENE	NA	NA
2,6-DINITROTOLUENE	NA	NA
2-CHLORONAPHTHALENE	NA	NA
2-CHLOROPHENOL	NA	NA
2-METHYLNAPHTHALENE	NA	NA
2-METHYLPHENOL	NA	NA
2-NITROANILINE	NA	NA
2-NITROPHENOL	NA	NA
3&4-METHYLPHENOL	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA
3-NITROANILINE	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA
4-CHLOROANILINE	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-105**	**SD-106**
SAMPLE ID	**SD-105-SS**	**SD-106-SS**
SAMPLE DATE	**20100818**	**20100818**
SAMPLE CODE	**NORMAL**	**NORMAL**
MATRIX	**SD**	**SD**
SAMPLE TYPE	**NORMAL**	**NORMAL**
SUBMATRIX	**SS**	**SS**
TOP DEPTH	**0**	**0**
BOTTOM DEPTH	**6**	**6**
4-CHLOROPHENYL PHENYL ETHER	NA	NA
4-METHYLPHENOL	NA	NA
4-NITROANILINE	NA	NA
4-NITROPHENOL	NA	NA
ACENAPHTHENE	16 J	9.5 U
ACENAPHTHYLENE	21 J	17 J
ANILINE	NA	NA
ANTHRACENE	51 J	29 J
AZOBENZENE	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	342	46.2
BAP EQUIVALENT-POSITIVE RESULTS	342	35.7
BENZIDINE	NA	NA
BENZO(A)ANTHRACENE	150 J	57 J
BENZO(A)PYRENE	170 J	9.9 U
BENZO(B)FLUORANTHENE	350 J	69 J
BENZO(G,H,I)PERYLENE	220 J	9.8 U
BENZO(K)FLUORANTHENE	9.2 UJ	20 U
BENZOIC ACID	NA	NA
BENZYL ALCOHOL	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA
CARBAZOLE	NA	NA
CHRYSENE	200 J	52 J
DIBENZO(A,H)ANTHRACENE	100 J	11 U
DIBENZOFURAN	NA	NA
DIETHYL PHTHALATE	NA	NA
DIMETHYL PHTHALATE	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA
FLUORANTHENE	230 J	110
FLUORENE	27 J	13 U
HEXACHLOROBENZENE	NA	NA
HEXACHLOROBUTADIENE	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA
HEXACHLOROETHANE	NA	NA
INDENO(1,2,3-CD)PYRENE	220 J	230
ISOPHORONE	NA	NA
NAPHTHALENE	42 J	59 J
NITROBENZENE	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA
PENTACHLOROPHENOL	NA	NA
PHENANTHRENE	120 J	110
PHENOL	NA	NA
PYRENE	350 J	90 J
PYRIDINE	NA	NA
TOTAL PAHS	2267	823

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-105	SD-106
SAMPLE ID	SD-105-SS	SD-106-SS
SAMPLE DATE	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL
MATRIX	SD	SD
SAMPLE TYPE	NORMAL	NORMAL
SUBMATRIX	SS	SS
TOP DEPTH	0	0
BOTTOM DEPTH	6	6
PCBS (UG/KG)		
AROCLOR-1016	4.2 UJ	3.6 U
AROCLOR-1221	5.4 UJ	4.6 U
AROCLOR-1232	4.8 UJ	4.2 U
AROCLOR-1242	4.6 UJ	4 U
AROCLOR-1248	2.7 UJ	2.3 U
AROCLOR-1254	4 UJ	3.5 U
AROCLOR-1260	170 J	3.5 U
TOTAL AROCLOR	170	0 U
METALS (MG/KG)		
ANTIMONY	0.64 J	0.28 J
ARSENIC	37.2 J	9.3 L
BARIUM	NA	NA
BERYLLIUM	1.7 J	1.9 L
CADMIUM	3 J	0.83 J
CHROMIUM	150 J	44.6 L
COBALT	NA	NA
COPPER	183 J	41.1 L
HEXAVALENT CHROMIUM	NA	NA
IRON	NA	NA
LEAD	114 J	52.8
MANGANESE	NA	NA
MERCURY	0.41 J	0.17
MOLYBDENUM	NA	NA
NICKEL	37.4 J	31.1 L
SELENIUM	1.8 J	1.7 L
SILVER	1.3 J	0.22 L
THALLIUM	0.23 J	0.29 K
VANADIUM	NA	NA
ZINC	334 J	122 L
METALS (UG/KG)		
DIBUTYLTIN	NA	NA
MONOBUTYLTIN	NA	NA
TETRABUTYLTIN	NA	NA
TRIBUTYLTIN	NA	NA
MISCELLANEOUS PARAMETERS (%)		
PERCENT SOLIDS	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)		
TOTAL ORGANIC CARBON	NA	NA
AVS/SEM (UMOLES/G)		
ACID VOLATILE SULFIDE	NA	NA
CADMIUM	NA	NA
CHROMIUM	NA	NA
COPPER	NA	NA
LEAD	NA	NA
NICKEL	NA	NA
SILVER	NA	NA
ZINC	NA	NA

Table A-1
Summary of Analytical Results for Surface Sediment, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Definitions:
B = Blank contamination
J = Estimated
K = Biased high
L = Biased low
NA = Not Applicable or Not Available
R = Rejected
SD = Sediment
SS = Surface sediment
U = Non-detected

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-78	SD-13
SAMPLE ID	BOWLEYS_QUARTERS-01	MIDDLE_RIVER_DOWNSTREAM-01	MARSHY_POINT-01	SD-78-01	SD-13-01
SAMPLE DATE	20100821	20100820	20100821	20081117	20051020
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	BACKGROUND	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	10	12
BOTTOM DEPTH	12	12	12	14	12
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	15 UL
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	15 UL
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	15 UL
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	15 UL
1,1-DICHLOROETHANE	NA	NA	NA	NA	15 UL
1,1-DICHLOROETHENE	NA	NA	NA	NA	15 UL
1,1-DICHLOROPROPENE	NA	NA	NA	NA	15 UL
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	15 UL
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	15 UL
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	15 UL
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	15 UL
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	15 UL
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	15 UL
1,2-DIBROMOETHANE	NA	NA	NA	NA	15 UL
1,2-DICHLOROBENZENE	NA	NA	NA	NA	15 UL
1,2-DICHLOROETHANE	NA	NA	NA	NA	15 UL
1,2-DICHLOROPROPANE	NA	NA	NA	NA	15 UL
1,3-DICHLOROBENZENE	NA	NA	NA	NA	15 UL
1,3-DICHLOROPROPANE	NA	NA	NA	NA	15 UL
1,4-DICHLOROBENZENE	NA	NA	NA	NA	15 UL
2,2-DICHLOROPROPANE	NA	NA	NA	NA	15 UL
2-BUTANONE	NA	NA	NA	NA	76 UR
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	15 UL
2-CHLOROTOLUENE	NA	NA	NA	NA	15 UL
2-HEXANONE	NA	NA	NA	NA	76 UL
4-CHLOROTOLUENE	NA	NA	NA	NA	15 UL
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	15 UL
4-METHYL-2-PENTANONE	NA	NA	NA	NA	76 UL
ACETONE	NA	NA	NA	NA	76 B
BENZENE	NA	NA	NA	NA	15 UL
BROMOBENZENE	NA	NA	NA	NA	15 UL
BROMOCHLOROMETHANE	NA	NA	NA	NA	15 UL
BROMODICHLOROMETHANE	NA	NA	NA	NA	15 UL
BROMOFORM	NA	NA	NA	NA	15 UL
BROMOMETHANE	NA	NA	NA	NA	30 UL
CARBON DISULFIDE	NA	NA	NA	NA	15 UL
CARBON TETRACHLORIDE	NA	NA	NA	NA	15 UL
CHLOROBENZENE	NA	NA	NA	NA	15 UL
CHLORODIBROMOMETHANE	NA	NA	NA	NA	15 UL
CHLOROETHANE	NA	NA	NA	NA	30 UL
CHLOROFORM	NA	NA	NA	NA	15 UL
CHLOROMETHANE	NA	NA	NA	NA	30 UL
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	15 UL
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	15 UL
DIBROMOMETHANE	NA	NA	NA	NA	15 UL
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	30 UL
DIISOPROPYL ETHER	NA	NA	NA	NA	15 UL
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	15 UL
ETHYLBENZENE	NA	NA	NA	NA	15 UL
HEXACHLOROBUTADIENE	NA	NA	NA	NA	15 UL

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-78	SD-13
SAMPLE ID	BOWLEYS_QUARTERS-01	MIDDLE_RIVER_DOWNSTREAM-01	MARSHY_POINT-01	SD-78-01	SD-13-01
SAMPLE DATE	20100821	20100820	20100821	20081117	20051020
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	BACKGROUND	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	10	12
BOTTOM DEPTH	12	12	12	14	12
ISOPROPYLBENZENE	NA	NA	NA	NA	3 J
M+P-XYLENES	NA	NA	NA	NA	30 UL
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	30 UL
METHYLENE CHLORIDE	NA	NA	NA	NA	15 B
NAPHTHALENE	NA	NA	NA	NA	15 UL
N-BUTYLBENZENE	NA	NA	NA	NA	15 UL
N-PROPYLBENZENE	NA	NA	NA	NA	15 UL
O-XYLENE	NA	NA	NA	NA	15 UL
SEC-BUTYLBENZENE	NA	NA	NA	NA	20 L
STYRENE	NA	NA	NA	NA	15 UL
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	15 UL
TERT-BUTYLBENZENE	NA	NA	NA	NA	15 UL
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	30 UR
TETRACHLOROETHENE	NA	NA	NA	NA	15 UL
TOLUENE	NA	NA	NA	NA	15 UL
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	30 UL
TOTAL XYLENES	NA	NA	NA	NA	46 UL
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	15 UL
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	15 UL
TRICHLOROETHENE	NA	NA	NA	NA	15 UL
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	30 UL
VINYL ACETATE	NA	NA	NA	NA	15 UL
VINYL CHLORIDE	NA	NA	NA	NA	30 UL
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	1000 U
1,2-DICHLOROBENZENE	NA	NA	NA	NA	260 J
1,3-DICHLOROBENZENE	NA	NA	NA	NA	1000 U
1,4-DICHLOROBENZENE	NA	NA	NA	NA	180 J
1,4-DIOXANE	NA	NA	NA	NA	1000 U
1-METHYLNAPHTHALENE	NA	NA	NA	1800 U	1000 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	1000 U
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	2500 U
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	1000 U
2,4-DICHLOROPHENOL	NA	NA	NA	NA	1000 U
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	1000 U
2,4-DINITROPHENOL	NA	NA	NA	NA	2500 U
2,4-DINITROTOLUENE	NA	NA	NA	NA	1000 U
2,6-DINITROTOLUENE	NA	NA	NA	NA	1000 U
2-CHLORONAPHTHALENE	NA	NA	NA	NA	1000 U
2-CHLOROPHENOL	NA	NA	NA	NA	1000 U
2-METHYLNAPHTHALENE	NA	NA	NA	1800 U	340 J
2-METHYLPHENOL	NA	NA	NA	NA	1000 U
2-NITROANILINE	NA	NA	NA	NA	2500 U
2-NITROPHENOL	NA	NA	NA	NA	1000 U
3&4-METHYLPHENOL	NA	NA	NA	NA	1000 U
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	1000 UJ
3-NITROANILINE	NA	NA	NA	NA	2500 U
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	2500 UJ
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	1000 UJ
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	1000 U
4-CHLOROANILINE	NA	NA	NA	NA	1000 U

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-78	SD-13
SAMPLE ID	BOWLEYS_QUARTERS-01	MIDDLE_RIVER_DOWNSTREAM-01	MARSHY_POINT-01	SD-78-01	SD-13-01
SAMPLE DATE	20100821	20100820	20100821	20081117	20051020
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	BACKGROUND	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	10	12
BOTTOM DEPTH	12	12	12	14	12
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	1000 U
4-NITROANILINE	NA	NA	NA	NA	2500 U
4-NITROPHENOL	NA	NA	NA	NA	2500 U
ACENAPHTHENE	5.1 U	11 J	4.6 U	1800 U	750 J
ACENAPHTHYLENE	29 J	17 J	5.5 U	1800 U	1000 U
ANILINE	NA	NA	NA	NA	1000 U
ANTHRACENE	47 J	26 J	15 J	1800 U	1600 J
AZOBENZENE	NA	NA	NA	NA	1000 U
BAP EQUIVALENT-1/2 NON-DETECTS	106	73.1	7.8	1978	10464
BAP EQUIVALENT-POSITIVE RESULTS	103	71.3	2.0	87.7	10464
BENZIDINE	NA	NA	NA	NA	2500 UJ
BENZO(A)ANTHRACENE	70	54	20 J	1800 U	7600 J
BENZO(A)PYRENE	74	47	4.8 U	1800 U	7300 J
BENZO(B)FLUORANTHENE	110	89	7.6 U	580 J	10000 J
BENZO(G,H,I)PERYLENE	110	92	4.8 U	1800 U	4800 J
BENZO(K)FLUORANTHENE	11 U	6.8 U	9.7 U	500 J	4500 J
BENZOIC ACID	NA	NA	NA	NA	2500 U
BENZYL ALCOHOL	NA	NA	NA	NA	1000 UJ
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	1000 U
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	1000 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	3400 J
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	830 J
CARBAZOLE	NA	NA	NA	NA	1000 J
CHRYSENE	63	56	21 J	710 J	9300 J
DIBENZO(A,H)ANTHRACENE	5.9 U	3.7 U	5.4 U	1800 U	790 J
DIBENZOFURAN	NA	NA	NA	NA	400 J
DIETHYL PHTHALATE	NA	NA	NA	NA	1000 U
DIMETHYL PHTHALATE	NA	NA	NA	NA	1000 U
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	1000 UJ
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	1000 UJ
FLUORANTHENE	200	92	61	1200 J	11000 J
FLUORENE	51 J	21 J	13 J	1800 U	570 J
HEXACHLOROBENZENE	NA	NA	NA	NA	1000 UJ
HEXACHLOROBUTADIENE	NA	NA	NA	NA	1000 U
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	1000 U
HEXACHLOROETHANE	NA	NA	NA	NA	1000 U
INDENO(1,2,3-CD)PYRENE	110	99	5 U	240 J	5600 J
ISOPHORONE	NA	NA	NA	NA	1000 U
NAPHTHALENE	110	48	42 J	1800 U	550 J
NITROBENZENE	NA	NA	NA	NA	1000 U
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	1000 U
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	1000 U
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	1000 UJ
PENTACHLOROPHENOL	NA	NA	NA	NA	2500 UJ
PHENANTHRENE	140	71	57	630 J	7900 J
PHENOL	NA	NA	NA	NA	1000 U
PYRENE	130	96	37 J	1200 J	24000 J
PYRIDINE	NA	NA	NA	NA	1000 U
TOTAL PAHS	1244	819	266	5060	96600

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-78	SD-13
SAMPLE ID	BOWLEYS_QUARTERS-01	MIDDLE_RIVER_DOWNSTREAM-01	MARSHY_POINT-01	SD-78-01	SD-13-01
SAMPLE DATE	20100821	20100820	20100821	20081117	20051020
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	BACKGROUND	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	10	12
BOTTOM DEPTH	12	12	12	14	12
PCBS (UG/KG)					
AROCLOR-1016	3.9 U	4.1 U	3.6 U	22 U	53 U
AROCLOR-1221	5 U	5.3 U	4.6 U	22 U	53 U
AROCLOR-1232	4.5 U	4.8 U	4.1 U	22 U	53 U
AROCLOR-1242	4.3 U	4.5 U	3.9 U	22 U	53 U
AROCLOR-1248	2.5 U	2.6 U	2.3 U	22 U	53 U
AROCLOR-1254	3.8 U	4 U	3.4 U	22 U	53 U
AROCLOR-1260	3.8 U	65	3.4 U	22 U	2500
TOTAL AROCLOR	0 U	65	0 U	0 U	2500
METALS (MG/KG)					
ANTIMONY	0.32	1.7 L	0.3	0.13 U	2
ARSENIC	9.2	11 L	10.5	2.1	6.9
BARIUM	NA	NA	NA	58.9 J	68.9
BERYLLIUM	1.7	1.9	2	1 J	1.8
CADMIUM	0.91	7.7 L	0.67	0.44	13.6
CHROMIUM	33.2	246	37.6	66.8 J	227
COBALT	NA	NA	NA	7.4	14.5
COPPER	54	122 L	39.9	15.7 J	107
HEXAVALENT CHROMIUM	NA	NA	NA	NA	1.5 UL
LEAD	75.1	201	45.2	95.5 J	242
MERCURY	0.29	1.1	0.26	0.035 B	0.73 L
MOLYBDENUM	NA	NA	NA	0.51	1.9
NICKEL	42.3	50.3 L	40.4	42.5	49.6
SELENIUM	2.5	2.3 L	2.4	0.63	0.79 UL
SILVER	0.24	2.7	0.17	2.5	16.2
THALLIUM	0.33	0.29	0.39	0.23 U	1.36 U
VANADIUM	NA	NA	NA	14.5 J	82.2
ZINC	209	417 L	167	86	423
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	75	32
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	41900	NA	8700	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-14	SD-16	SD-19	SD-27	SD-28
SAMPLE ID	SD-14-01	SD-16-01	SD-19-01	SD-27-01	SD-28-01
SAMPLE DATE	20051020	20051020	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	54 U	16 U	15 U	14 UL	13 U
1,1,1-TRICHLOROETHANE	54 U	16 U	15 U	14 UL	13 U
1,1,2,2-TETRACHLOROETHANE	54 U	16 U	15 U	14 UL	13 U
1,1,2-TRICHLOROTRIFLUOROETHANE	54 U	16 U	15 U	14 UL	13 U
1,1-DICHLOROETHANE	54 U	16 U	15 U	14 UL	13 U
1,1-DICHLOROETHENE	54 U	16 U	15 U	14 UL	13 U
1,1-DICHLOROPROPENE	54 U	16 U	15 U	14 UL	13 U
1,2,3-TRICHLOROBENZENE	54 U	16 U	15 U	14 UL	13 U
1,2,3-TRICHLOROPROPANE	54 U	16 U	15 U	14 UL	13 U
1,2,3-TRIMETHYLBENZENE	54 U	16 U	15 U	14 UL	13 U
1,2,4-TRICHLOROBENZENE	54 U	16 U	15 U	14 UL	13 U
1,2,4-TRIMETHYLBENZENE	54 U	16 U	15 U	14 UL	13 U
1,2-DIBROMO-3-CHLOROPROPANE	54 U	16 U	15 U	14 UL	13 U
1,2-DIBROMOETHANE	54 U	16 U	15 U	14 UL	13 U
1,2-DICHLOROBENZENE	54 U	16 U	15 U	14 UL	0.9 B
1,2-DICHLOROETHANE	54 U	16 U	15 U	14 UL	13 U
1,2-DICHLOROPROPANE	54 U	16 U	15 U	14 UL	13 U
1,3-DICHLOROBENZENE	54 U	16 U	15 U	14 UL	13 U
1,3-DICHLOROPROPANE	54 U	16 U	15 U	14 UL	13 U
1,4-DICHLOROBENZENE	54 U	16 U	15 U	14 UL	13 U
2,2-DICHLOROPROPANE	54 U	16 U	15 U	14 UL	13 U
2-BUTANONE	270 UR	18 J	37 J	70 UR	27 J
2-CHLOROETHYL VINYL ETHER	54 U	16 U	15 U	14 UL	13 U
2-CHLOROTOLUENE	54 U	16 U	15 U	14 UL	13 U
2-HEXANONE	270 U	80 U	74 U	70 UL	65 U
4-CHLOROTOLUENE	54 U	16 U	15 U	14 UL	13 U
4-ISOPROPYLTOLUENE	54 U	16 U	15 U	14 UL	13 U
4-METHYL-2-PENTANONE	270 U	80 U	74 U	70 UL	65 U
ACETONE	270 B	100 B	220	50 B	130 B
BENZENE	54 U	16 U	15 U	14 UL	13 U
BROMOBENZENE	54 U	16 U	15 U	14 UL	13 U
BROMOCHLOROMETHANE	54 U	16 U	15 U	14 UL	13 U
BROMODICHLOROMETHANE	54 U	16 U	15 U	14 UL	13 U
BROMOFORM	54 U	16 U	15 U	14 UL	13 U
BROMOMETHANE	110 U	32 U	30 U	28 UL	26 U
CARBON DISULFIDE	19 J	7 J	6 J	14 UL	6 J
CARBON TETRACHLORIDE	54 U	16 U	15 U	14 UL	13 U
CHLOROBENZENE	54 U	16 U	15 U	14 UL	13 U
CHLORODIBROMOMETHANE	54 U	16 U	15 U	14 UL	13 U
CHLOROETHANE	110 U	32 U	30 U	28 UL	26 U
CHLOROFORM	54 U	16 U	15 U	14 UL	13 U
CHLOROMETHANE	110 U	32 U	30 U	28 UL	26 U
CIS-1,2-DICHLOROETHENE	54 U	16 U	15 U	14 UL	13 U
CIS-1,3-DICHLOROPROPENE	54 U	16 U	15 U	14 UL	13 U
DIBROMOMETHANE	54 U	16 U	15 U	14 UL	13 U
DICHLORODIFLUOROMETHANE	110 U	32 U	30 U	28 UL	26 U
DIISOPROPYL ETHER	54 U	16 U	15 U	14 UL	13 U
ETHYL TERT-BUTYL ETHER	54 U	16 U	15 U	14 UL	13 U
ETHYLBENZENE	54 U	16 U	15 U	14 UL	13 U
HEXACHLOROBUTADIENE	54 U	16 U	15 U	14 UL	13 U

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-14	SD-16	SD-19	SD-27	SD-28
SAMPLE ID	SD-14-01	SD-16-01	SD-19-01	SD-27-01	SD-28-01
SAMPLE DATE	20051020	20051020	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
ISOPROPYLBENZENE	54 U	16 U	10 J	14 UL	13 U
M+P-XYLENES	110 U	32 U	30 U	28 UL	26 U
METHYL TERT-BUTYL ETHER	110 U	4 J	30 U	28 UL	26 U
METHYLENE CHLORIDE	54 B	16 B	17 B	14 UL	9 B
NAPHTHALENE	54 U	16 U	15 U	14 UL	13 U
N-BUTYLBENZENE	54 U	16 U	15 U	14 UL	13 U
N-PROPYLBENZENE	54 U	16 U	15 U	14 UL	13 U
O-XYLENE	54 U	16 U	15 U	14 UL	13 U
SEC-BUTYLBENZENE	54 U	16 U	33	14 UL	13 U
STYRENE	54 U	16 U	15 U	14 UL	13 U
TERT-AMYL METHYL ETHER	54 U	16 U	15 U	14 UL	13 U
TERT-BUTYLBENZENE	54 U	16 U	2 J	14 UL	13 U
TERTIARY-BUTYL ALCOHOL	110 UR	32 UR	30 UR	28 UR	26 UR
TETRACHLOROETHENE	54 U	16 U	15 U	14 UL	13 U
TOLUENE	54 U	16 U	15 U	14 UL	13 U
TOTAL 1,2-DICHLOROETHENE	110 U	32 U	30 U	28 UL	26 U
TOTAL XYLENES	160 U	48 U	45 U	42 UL	39 U
TRANS-1,2-DICHLOROETHENE	54 U	16 U	15 U	14 UL	13 U
TRANS-1,3-DICHLOROPROPENE	54 U	16 U	15 U	14 UL	13 U
TRICHLOROETHENE	54 U	16 U	15 U	14 UL	13 U
TRICHLOROFLUOROMETHANE	110 U	32 U	30 U	28 UL	26 U
VINYL ACETATE	54 U	16 U	15 U	14 UL	13 U
VINYL CHLORIDE	110 U	32 U	30 U	28 UL	26 U
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	710 U	1000 U	1000 U	940 U	850 U
1,2-DICHLOROBENZENE	710 U	1000 U	1000 U	940 U	850 U
1,3-DICHLOROBENZENE	710 U	1000 U	1000 U	940 U	850 U
1,4-DICHLOROBENZENE	710 U	1000 U	1000 U	940 U	100 J
1,4-DIOXANE	710 U	1000 U	1000 U	940 U	850 U
1-METHYLNAPHTHALENE	710 U	1000 U	1000 U	940 U	850 U
2,2'-OXYBIS(1-CHLOROPROPANE)	710 U	1000 U	1000 U	940 U	850 U
2,4,5-TRICHLOROPHENOL	1800 U	2600 U	2600 U	2300 U	2100 U
2,4,6-TRICHLOROPHENOL	710 U	1000 U	1000 U	940 U	850 U
2,4-DICHLOROPHENOL	710 U	1000 U	1000 U	940 U	850 U
2,4-DIMETHYLPHENOL	710 U	1000 U	1000 U	940 U	850 U
2,4-DINITROPHENOL	1800 U	2600 U	2600 U	2300 U	2100 U
2,4-DINITROTOLUENE	710 U	1000 U	1000 U	940 U	850 U
2,6-DINITROTOLUENE	710 U	1000 U	1000 U	940 U	850 U
2-CHLORONAPHTHALENE	710 U	1000 U	1000 U	940 U	850 U
2-CHLOROPHENOL	710 U	1000 U	1000 U	940 U	850 U
2-METHYLNAPHTHALENE	710 U	220 J	1000 U	940 U	850 U
2-METHYLPHENOL	710 U	1000 U	1000 U	940 U	850 U
2-NITROANILINE	1800 U	2600 U	2600 U	2300 U	2100 U
2-NITROPHENOL	710 U	1000 U	1000 U	940 U	850 U
3&4-METHYLPHENOL	710 U	1000 U	1000 U	940 U	850 U
3,3'-DICHLOROBENZIDINE	710 U	1000 UJ	1000 U	940 U	850 U
3-NITROANILINE	1800 U	2600 U	2600 U	2300 U	2100 U
4,6-DINITRO-2-METHYLPHENOL	1800 U	2600 UJ	2600 U	2300 U	2100 U
4-BROMOPHENYL PHENYL ETHER	710 U	1000 UJ	1000 U	940 U	850 U
4-CHLORO-3-METHYLPHENOL	710 U	1000 U	1000 U	940 U	850 U
4-CHLOROANILINE	710 U	1000 U	1000 U	940 U	850 U

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-14	SD-16	SD-19	SD-27	SD-28
SAMPLE ID	SD-14-01	SD-16-01	SD-19-01	SD-27-01	SD-28-01
SAMPLE DATE	20051020	20051020	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
4-CHLOROPHENYL PHENYL ETHER	710 U	1000 U	1000 U	940 U	850 U
4-NITROANILINE	1800 U	2600 U	2600 U	2300 U	2100 U
4-NITROPHENOL	1800 U	2600 U	2600 U	2300 U	2100 U
ACENAPHTHENE	710 U	480 J	190 J	940 U	710 J
ACENAPHTHYLENE	710 U	1000 U	1000 U	940 U	850 U
ANILINE	710 U	1000 U	1000 U	940 U	850 U
ANTHRACENE	710 U	820 J	640 J	940 U	1400
AZOBENZENE	710 U	1000 U	1000 U	940 U	850 U
BAP EQUIVALENT-1/2 NON-DETECTS	710 U	4399	3536	1351	6280
BAP EQUIVALENT-POSITIVE RESULTS	710 U	3899	3536	881	6280
BENZIDINE	1800 U	2600 UJ	2600 U	2300 U	2100 U
BENZO(A)ANTHRACENE	710 U	2600 J	2300	580 J	5100
BENZO(A)PYRENE	710 U	3000 J	2300 J	670 J	4200
BENZO(B)FLUORANTHENE	710 U	4600 J	3100 J	890 J	5400
BENZO(G,H,I)PERYLENE	710 U	1800 J	1800 J	590 J	2300
BENZO(K)FLUORANTHENE	710 U	1600 J	1300 J	360 J	2500
BENZOIC ACID	1800 U	2600 U	2600 U	2300 U	2100 U
BENZYL ALCOHOL	710 UJ	1000 UJ	1000 U	940 U	850 U
BIS(2-CHLOROETHOXY)METHANE	710 U	1000 U	1000 U	940 U	850 U
BIS(2-CHLOROETHYL)ETHER	710 U	1000 U	1000 U	940 U	850 U
BIS(2-ETHYLHEXYL)PHTHALATE	710 U	1100 J	360 J	520 J	850 U
BUTYL BENZYL PHTHALATE	710 U	1000 UJ	1000 U	940 U	850 U
CARBAZOLE	710 U	310 J	310 J	940 U	760 J
CHRYSENE	710 U	2900 J	2800	750 J	5200
DIBENZO(A,H)ANTHRACENE	710 U	1000 UJ	480 J	940 U	700 J
DIBENZOFURAN	710 U	1000 U	1000 U	940 U	270 J
DIETHYL PHTHALATE	710 U	1000 U	1000 U	940 U	850 U
DIMETHYL PHTHALATE	710 U	1000 U	1000 U	940 U	850 U
DI-N-BUTYL PHTHALATE	710 U	1000 UJ	1000 U	940 U	850 U
DI-N-OCTYL PHTHALATE	710 U	1000 UJ	1000 UJ	940 U	850 U
FLUORANTHENE	710 U	3500 J	4400	1100	9300
FLUORENE	710 U	330 J	290 J	940 U	550 J
HEXACHLOROBENZENE	710 U	1000 UJ	1000 U	940 U	850 U
HEXACHLOROBUTADIENE	710 U	1000 U	1000 U	940 U	850 U
HEXACHLOROCYCLOPENTADIENE	710 U	1000 U	1000 U	940 U	850 U
HEXACHLOROETHANE	710 U	1000 U	1000 U	940 U	850 U
INDENO(1,2,3-CD)PYRENE	710 U	1600 J	2000 J	600 J	3000
ISOPHORONE	710 U	1000 U	1000 U	940 U	850 U
NAPHTHALENE	710 U	360 J	300 J	940 U	240 J
NITROBENZENE	710 U	1000 U	1000 U	940 U	850 U
N-NITROSODIMETHYLAMINE	710 U	1000 U	1000 U	940 U	850 U
N-NITROSO-DI-N-PROPYLAMINE	710 U	1000 U	1000 U	940 U	850 U
N-NITROSODIPHENYLAMINE	710 U	1000 UJ	1000 U	940 U	850 U
PENTACHLOROPHENOL	1800 U	2600 UJ	2600 U	2300 U	2100 U
PHENANTHRENE	710 U	3200 J	2800	580 J	4900
PHENOL	710 U	1000 U	1000 U	940 U	850 U
PYRENE	710 U	11000 J	6000	1600	10000
PYRIDINE	710 U	1000 U	1000 U	940 U	850 U
TOTAL PAHS	0 U	38010	30700	7720	55500

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-14	SD-16	SD-19	SD-27	SD-28
SAMPLE ID	SD-14-01	SD-16-01	SD-19-01	SD-27-01	SD-28-01
SAMPLE DATE	20051020	20051020	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
PCBS (UG/KG)					
AROCLOR-1016	37 U	54 U	54 U	48 U	44 U
AROCLOR-1221	37 U	54 U	54 U	48 U	44 U
AROCLOR-1232	37 U	54 U	54 U	48 U	44 U
AROCLOR-1242	37 U	54 U	54 U	48 U	44 U
AROCLOR-1248	37 U	54 U	54 U	48 U	44 U
AROCLOR-1254	37 U	54 U	54 U	48 U	44 U
AROCLOR-1260	37 U	1400	330 J	670 J	610 J
TOTAL AROCLOR	0 U	1400	330	670	610
METALS (MG/KG)					
ANTIMONY	0.72 U	1.5	2	1.1 L	0.57 UL
ARSENIC	3.9	6.6	3	7.8	5
BARIUM	27.9	71.9	85.1	61.6	38.1
BERYLLIUM	1.9	2.2	1.8	2.2	1.4
CADMIUM	0.07	26.8	34.4	27.9	8.4
CHROMIUM	28	443	756	503 K	140 K
COBALT	11.3	17.8	13.2	22.1	11.7
COPPER	16	109	57.6	128 J	86.2 J
HEXAVALENT CHROMIUM	1 UL	1.6 UL	1.6 UL	1.4 UL	1.2 UL
LEAD	8.9	251	130	215	86.9
MERCURY	0.06 L	3.5 L	1 L	1.5 K	0.43 K
MOLYBDENUM	0.88	1.8	1	2.4	0.65
NICKEL	19.1	69.1	35.1	59.8	24.2
SELENIUM	0.63 UL	0.94 UL	0.9 UL	1.4 B	0.73 B
SILVER	0.49 L	27.3	11.5	15.6	0.74 L
THALLIUM	1.08 U	2.1	1.53 U	1.5 U	0.85 U
VANADIUM	27.8	110	49.2	98.8	32.5
ZINC	54	484	458	531	258
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	3.5 U
MONOBUTYLTIN	NA	NA	NA	NA	4.6 U
TETRABUTYLTIN	NA	NA	NA	NA	4.6 U
TRIBUTYLTIN	NA	NA	NA	NA	4.1 U
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	46	32	32	35	39
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	33000	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-29	SD-31	SD-40	SD-42	SD-43
SAMPLE ID	SD-29-01	SD-31-01	SD-40-01	SD-42-01	SD-43-01
SAMPLE DATE	20051021	20051021	20051021	20051021	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	10
BOTTOM DEPTH	12	12	12	12	14
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	13 UJ	10 UJ	13 U	9 U	NA
1,1,1-TRICHLOROETHANE	13 UJ	10 UJ	13 U	9 U	NA
1,1,2,2-TETRACHLOROETHANE	13 UJ	10 UJ	13 U	9 UJ	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	13 UJ	10 UJ	13 U	9 U	NA
1,1-DICHLOROETHANE	13 UJ	10 UJ	13 U	9 U	NA
1,1-DICHLOROETHENE	13 UJ	10 UJ	13 U	9 U	NA
1,1-DICHLOROPROPENE	13 UJ	10 UJ	13 U	9 U	NA
1,2,3-TRICHLOROBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
1,2,3-TRICHLOROPROPANE	13 UJ	10 UJ	13 U	9 UJ	NA
1,2,3-TRIMETHYLBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
1,2,4-TRICHLOROBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
1,2,4-TRIMETHYLBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
1,2-DIBROMO-3-CHLOROPROPANE	13 UJ	10 UJ	13 U	9 UJ	NA
1,2-DIBROMOETHANE	13 UJ	10 UJ	13 U	9 U	NA
1,2-DICHLOROBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
1,2-DICHLOROETHANE	13 UJ	10 UJ	13 U	9 U	NA
1,2-DICHLOROPROPANE	13 UJ	10 UJ	13 U	9 U	NA
1,3-DICHLOROBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
1,3-DICHLOROPROPANE	13 UJ	10 UJ	13 U	9 U	NA
1,4-DICHLOROBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
2,2-DICHLOROPROPANE	13 UJ	10 UJ	13 U	9 U	NA
2-BUTANONE	64 UJ	52 UJ	66 UR	47 UR	NA
2-CHLOROETHYL VINYL ETHER	13 UJ	10 UJ	13 U	9 U	NA
2-CHLOROTOLUENE	13 UJ	10 UJ	13 U	9 UJ	NA
2-HEXANONE	64 UJ	52 UJ	66 U	47 U	NA
4-CHLOROTOLUENE	13 UJ	10 UJ	13 U	9 UJ	NA
4-ISOPROPYLTOLUENE	13 UJ	10 UJ	13 U	9 UJ	NA
4-METHYL-2-PENTANONE	64 UJ	52 UJ	66 U	47 U	NA
ACETONE	150 B	65 B	200 J	36 J	NA
BENZENE	13 UJ	10 UJ	13 U	9 U	NA
BROMOBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
BROMOCHLOROMETHANE	13 UJ	10 UJ	13 U	9 U	NA
BROMODICHLOROMETHANE	13 UJ	10 UJ	13 U	9 U	NA
BROMOFORM	13 UJ	10 UJ	13 U	9 U	NA
BROMOMETHANE	25 UJ	21 UJ	26 U	19 U	NA
CARBON DISULFIDE	13 UJ	5 J	13 U	5 J	NA
CARBON TETRACHLORIDE	13 UJ	10 UJ	13 U	9 U	NA
CHLOROBENZENE	13 UJ	10 UJ	13 U	9 U	NA
CHLORODIBROMOMETHANE	13 UJ	10 UJ	13 U	9 U	NA
CHLOROETHANE	25 UJ	21 UJ	26 U	19 U	NA
CHLOROFORM	13 UJ	10 UJ	13 U	9 U	NA
CHLOROMETHANE	25 UJ	21 UJ	26 U	19 U	NA
CIS-1,2-DICHLOROETHENE	13 UJ	10 UJ	13 U	9 U	NA
CIS-1,3-DICHLOROPROPENE	13 UJ	10 UJ	13 U	9 U	NA
DIBROMOMETHANE	13 UJ	10 UJ	13 U	9 U	NA
DICHLORODIFLUOROMETHANE	25 UJ	21 UJ	26 U	19 U	NA
DIISOPROPYL ETHER	13 UJ	10 UJ	13 U	9 U	NA
ETHYL TERT-BUTYL ETHER	13 UJ	10 UJ	13 U	9 U	NA
ETHYLBENZENE	13 UJ	10 UJ	13 U	9 U	NA
HEXACHLOROBUTADIENE	13 UJ	10 UJ	13 U	9 UJ	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-29	SD-31	SD-40	SD-42	SD-43
SAMPLE ID	SD-29-01	SD-31-01	SD-40-01	SD-42-01	SD-43-01
SAMPLE DATE	20051021	20051021	20051021	20051021	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	10
BOTTOM DEPTH	12	12	12	12	14
ISOPROPYLBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
M+P-XYLENES	25 UJ	21 UJ	26 U	19 U	NA
METHYL TERT-BUTYL ETHER	25 UJ	21 UJ	26 U	3 J	NA
METHYLENE CHLORIDE	6 B	10 UJ	13 U	9 U	NA
NAPHTHALENE	13 UJ	10 UJ	13 U	9 UJ	NA
N-BUTYLBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
N-PROPYLBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
O-XYLENE	13 UJ	10 UJ	13 U	9 U	NA
SEC-BUTYLBENZENE	13 UJ	10 UJ	13 U	9 UJ	NA
STYRENE	13 UJ	10 UL	13 U	9 U	NA
TERT-AMYL METHYL ETHER	13 UJ	10 UJ	13 U	9 U	NA
TERT-BUTYLBENZENE	13 UJ	10 UJ	13 U	9 U	NA
TERTIARY-BUTYL ALCOHOL	25 UR	21 UR	26 UR	19 UR	NA
TETRACHLOROETHENE	13 UJ	10 UJ	13 U	9 U	NA
TOLUENE	13 UJ	2 J	13 U	9 U	NA
TOTAL 1,2-DICHLOROETHENE	25 UJ	21 UJ	26 U	19 U	NA
TOTAL XYLENES	38 UJ	31 UJ	39 U	28 U	NA
TRANS-1,2-DICHLOROETHENE	13 UJ	10 UJ	13 U	9 U	NA
TRANS-1,3-DICHLOROPROPENE	13 UJ	10 UJ	13 U	9 U	NA
TRICHLOROETHENE	13 UJ	10 UJ	13 U	9 U	NA
TRICHLOROFLUOROMETHANE	25 UJ	21 UJ	26 U	19 U	NA
VINYL ACETATE	13 UJ	10 UJ	13 U	9 U	NA
VINYL CHLORIDE	25 UJ	21 UJ	26 U	19 U	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	900 U	740 U	860 U	NA	NA
1,2-DICHLOROBENZENE	900 U	740 U	860 U	NA	NA
1,3-DICHLOROBENZENE	900 U	740 U	860 U	NA	NA
1,4-DICHLOROBENZENE	900 U	740 U	100 B	NA	NA
1,4-DIOXANE	900 U	740 U	860 U	NA	NA
1-METHYLNAPHTHALENE	900 U	740 U	860 U	NA	410 U
2,2'-OXYBIS(1-CHLOROPROPANE)	900 U	740 U	860 U	NA	NA
2,4,5-TRICHLOROPHENOL	2200 U	1800 U	2100 U	NA	NA
2,4,6-TRICHLOROPHENOL	900 U	740 U	860 U	NA	NA
2,4-DICHLOROPHENOL	900 U	740 U	860 U	NA	NA
2,4-DIMETHYLPHENOL	900 U	740 U	860 U	NA	NA
2,4-DINITROPHENOL	2200 U	1800 U	2100 U	NA	NA
2,4-DINITROTOLUENE	900 U	740 U	860 U	NA	NA
2,6-DINITROTOLUENE	900 U	740 U	860 U	NA	NA
2-CHLORONAPHTHALENE	900 U	740 U	860 U	NA	NA
2-CHLOROPHENOL	900 U	740 U	860 U	NA	NA
2-METHYLNAPHTHALENE	900 U	740 U	860 U	NA	410 U
2-METHYLPHENOL	900 U	740 U	860 U	NA	NA
2-NITROANILINE	2200 U	1800 U	2100 U	NA	NA
2-NITROPHENOL	900 U	740 U	860 U	NA	NA
3&4-METHYLPHENOL	900 U	740 U	860 U	NA	NA
3,3'-DICHLOROBENZIDINE	900 U	740 U	860 U	NA	NA
3-NITROANILINE	2200 U	1800 U	2100 U	NA	NA
4,6-DINITRO-2-METHYLPHENOL	2200 U	1800 U	2100 U	NA	NA
4-BROMOPHENYL PHENYL ETHER	900 U	740 U	860 U	NA	NA
4-CHLORO-3-METHYLPHENOL	900 U	740 U	860 U	NA	NA
4-CHLOROANILINE	900 U	740 U	860 U	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-29	SD-31	SD-40	SD-42	SD-43
SAMPLE ID	SD-29-01	SD-31-01	SD-40-01	SD-42-01	SD-43-01
SAMPLE DATE	20051021	20051021	20051021	20051021	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	10
BOTTOM DEPTH	12	12	12	12	14
4-CHLOROPHENYL PHENYL ETHER	900 U	740 U	860 U	NA	NA
4-NITROANILINE	2200 U	1800 U	2100 U	NA	NA
4-NITROPHENOL	2200 U	1800 U	2100 U	NA	NA
ACENAPHTHENE	900 U	740 U	180 B	NA	410 U
ACENAPHTHYLENE	900 U	740 U	860 U	NA	410 U
ANILINE	900 U	740 U	860 U	NA	NA
ANTHRACENE	900 U	740 U	170 J	NA	410 U
AZOBENZENE	900 U	740 U	860 U	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	1308	740 U	1076	NA	450
BAP EQUIVALENT-POSITIVE RESULTS	858	740 U	642	NA	19.5
BENZIDINE	2200 U	1800 U	2100 U	NA	NA
BENZO(A)ANTHRACENE	610 J	740 U	410 J	NA	410 U
BENZO(A)PYRENE	650 J	740 U	480 J	NA	410 U
BENZO(B)FLUORANTHENE	920 J	740 U	750 J	NA	120 J
BENZO(G,H,I)PERYLENE	410 J	740 U	440 J	NA	410 U
BENZO(K)FLUORANTHENE	490 J	740 U	860 U	NA	100 J
BENZOIC ACID	2200 U	1800 U	2100 U	NA	NA
BENZYL ALCOHOL	900 U	740 UJ	860 UJ	NA	NA
BIS(2-CHLOROETHOXY)METHANE	900 U	740 U	860 U	NA	NA
BIS(2-CHLOROETHYL)ETHER	900 U	740 U	860 U	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	340 J	740 U	760 J	NA	NA
BUTYL BENZYL PHTHALATE	900 U	740 U	860 U	NA	NA
CARBAZOLE	900 U	740 U	860 U	NA	NA
CHRYSENE	660 J	740 U	670 J	NA	150 J
DIBENZO(A,H)ANTHRACENE	900 UJ	740 U	860 U	NA	410 U
DIBENZOFURAN	900 U	740 U	860 U	NA	NA
DIETHYL PHTHALATE	900 U	740 U	860 U	NA	NA
DIMETHYL PHTHALATE	900 U	740 U	860 U	NA	NA
DI-N-BUTYL PHTHALATE	900 U	740 U	860 U	NA	NA
DI-N-OCTYL PHTHALATE	900 UJ	740 U	860 U	NA	NA
FLUORANTHENE	1200	740 U	670 J	NA	160 J
FLUORENE	900 U	740 U	860 U	NA	410 U
HEXACHLOROBENZENE	900 U	740 U	860 U	NA	NA
HEXACHLOROBUTADIENE	900 U	740 U	860 U	NA	NA
HEXACHLOROCYCLOPENTADIENE	900 U	740 U	860 U	NA	NA
HEXACHLOROETHANE	900 U	740 U	860 U	NA	NA
INDENO(1,2,3-CD)PYRENE	490 J	740 U	450 J	NA	63 J
ISOPHORONE	900 U	740 U	860 U	NA	NA
NAPHTHALENE	180 J	740 U	860 U	NA	410 U
NITROBENZENE	900 U	740 U	860 U	NA	NA
N-NITROSODIMETHYLAMINE	900 U	740 U	860 U	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	900 U	740 U	860 U	NA	NA
N-NITROSODIPHENYLAMINE	900 U	740 U	860 U	NA	NA
PENTACHLOROPHENOL	2200 U	1800 U	2100 U	NA	NA
PHENANTHRENE	550 J	740 U	300 J	NA	91 J
PHENOL	900 U	740 U	860 U	NA	NA
PYRENE	1400	740 U	1200	NA	240 J
PYRIDINE	900 U	740 U	860 U	NA	NA
TOTAL PAHS	7560	0 U	5540	NA	924

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-29	SD-31	SD-40	SD-42	SD-43
SAMPLE ID	SD-29-01	SD-31-01	SD-40-01	SD-42-01	SD-43-01
SAMPLE DATE	20051021	20051021	20051021	20051021	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	10
BOTTOM DEPTH	12	12	12	12	14
PCBS (UG/KG)					
AROCLOR-1016	47 U	38 U	44 U	NA	25 U
AROCLOR-1221	47 U	38 U	44 U	NA	25 U
AROCLOR-1232	47 U	38 U	44 U	NA	25 U
AROCLOR-1242	47 U	38 U	44 U	NA	25 U
AROCLOR-1248	47 U	38 U	44 U	NA	25 U
AROCLOR-1254	47 U	38 U	44 U	NA	25 U
AROCLOR-1260	210	38 U	400	NA	25 U
TOTAL AROCLOR	210	0 U	400	NA	0 U
METALS (MG/KG)					
ANTIMONY	1.2 L	1.64 UL	0.66 U	0.58 U	0.15 U
ARSENIC	3.9	12.6	5.4	1.46 U	6.6
BARIUM	63.5	76.6	52.4	54.2	75.8 J
BERYLLIUM	2.1	3.6	2.2	1.2	1.8 J
CADMIUM	40.5	0.28	31.2	157	6.2
CHROMIUM	817 K	75 K	475	1100	250 J
COBALT	17.3	29	20.9	12	16.1
COPPER	67.5 J	38.7 J	93.7	95.6	33.9 J
HEXAVALENT CHROMIUM	1.4 UL	1.1 UL	1.3 U	1.6	NA
LEAD	136	52.3	182	256	73.6 J
MERCURY	0.1 B	0.09 B	0.67	0.52	0.21
MOLYBDENUM	1.7	2.2	1.4	1.7	0.49
NICKEL	43.1	46.1	45.8	39.3	18.7
SELENIUM	1.3 B	1.44 U	0.61	0.51 U	1.4
SILVER	12.6	0.42 UL	5.4	7.5	0.15 B
THALLIUM	1.3 U	2.45 U	1 B	0.87 U	0.25 U
VANADIUM	57	72.9	50.7	42.3	36.2 J
ZINC	456	179	430	598	127
METALS (UG/KG)					
DIBUTYLTIN	NA	3 U	5	NA	NA
MONOBUTYLTIN	NA	3.9 U	4.2 U	NA	NA
TETRABUTYLTIN	NA	3.9 U	4.2 U	NA	NA
TRIBUTYLTIN	NA	3.4 U	3.7 U	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	36	45	38	53	65
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	46000	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-44	SD-45	SD-46	SD-46	SD-46
SAMPLE ID	SD-44-01	SD-45-01	SD-46-01	SD-46-01-AVG	SD-46-01-D
SAMPLE DATE	20081117	20081117	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	8	8	8
BOTTOM DEPTH	14	14	16	16	16
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-44	SD-45	SD-46	SD-46	SD-46
SAMPLE ID	SD-44-01	SD-45-01	SD-46-01	SD-46-01-AVG	SD-46-01-D
SAMPLE DATE	20081117	20081117	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	8	8	8
BOTTOM DEPTH	14	14	16	16	16
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	390 U	650 U	710 U	705 U	700 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	390 U	650 U	710 U	705 U	700 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-44	SD-45	SD-46	SD-46	SD-46
SAMPLE ID	SD-44-01	SD-45-01	SD-46-01	SD-46-01-AVG	SD-46-01-D
SAMPLE DATE	20081117	20081117	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	8	8	8
BOTTOM DEPTH	14	14	16	16	16
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	390 U	650 U	710 U	705 U	700 U
ACENAPHTHYLENE	390 U	650 U	710 U	705 U	700 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	390 U	650 U	89 J	94.5 J	100 J
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	390 U	725	828	1050	1239
BAP EQUIVALENT-POSITIVE RESULTS	390 U	42.0	82.5	697	889
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	390 U	650 U	710 U	680 J	680 J
BENZO(A)PYRENE	390 U	650 U	710 U	532.5	710
BENZO(B)FLUORANTHENE	390 U	240 J	470 J	550 J	630 J
BENZO(G,H,I)PERYLENE	390 U	160 J	310 J	375 J	440 J
BENZO(K)FLUORANTHENE	390 U	270 J	480 J	580 J	680 J
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	390 U	340 J	650 J	735 J	820
DIBENZO(A,H)ANTHRACENE	390 U	650 U	710 U	705 U	700 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	390 U	440 J	960	1080	1200
FLUORENE	390 U	650 U	710 U	705 U	700 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	390 U	150 J	300 J	350 J	400 J
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	390 U	650 U	710 U	705 U	700 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	390 U	220 J	360 J	385 J	410 J
PHENOL	NA	NA	NA	NA	NA
PYRENE	390 U	680	1300	1500	1700
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	2500	4919	6862	7770

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-44	SD-45	SD-46	SD-46	SD-46
SAMPLE ID	SD-44-01	SD-45-01	SD-46-01	SD-46-01-AVG	SD-46-01-D
SAMPLE DATE	20081117	20081117	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	8	8	8
BOTTOM DEPTH	14	14	16	16	16
PCBS (UG/KG)					
AROCLOR-1016	20 U	32 U	36 U	35.5 U	35 U
AROCLOR-1221	20 U	32 U	36 U	35.5 U	35 U
AROCLOR-1232	20 U	32 U	36 U	35.5 U	35 U
AROCLOR-1242	20 U	32 U	36 U	35.5 U	35 U
AROCLOR-1248	20 U	32 U	36 U	35.5 U	35 U
AROCLOR-1254	20 U	32 U	36 U	35.5 U	35 U
AROCLOR-1260	20 U	85	180	215	250
TOTAL AROCLOR	0 U	85	180	215	250
METALS (MG/KG)					
ANTIMONY	0.12 U	3.5	6.2 L	6.3 L	6.4 L
ARSENIC	2.6	7.8	10.1	10.05	10
BARIUM	16	61.8	80.2	80.75	81.3
BERYLLIUM	0.95	1.7	1.6	1.65	1.7
CADMIUM	0.089	120	306	303	300
CHROMIUM	14.5	1290	2460	2410	2360
COBALT	12.7	15.6	15.4	15.4	15.4
COPPER	8.1	82.1	167	168	169
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	5.8	151	407	410.5	414
MERCURY	0.015	0.44	0.73	0.745	0.76
MOLYBDENUM	0.25 B	1.5	1.3	1.4	1.5
NICKEL	9.8	30.7	70.4	69.8	69.2
SELENIUM	0.51	1.3	0.92	1.16	1.4
SILVER	0.086	8.2	8.9	10.1	11.3
THALLIUM	0.21 U	0.32 U	0.44	0.425	0.41
VANADIUM	23.5	46.3	71.5	74.2	76.9
ZINC	29.1	447	1150	1125	1100
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	85	51	47	47.5	48
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-47	SD-48	SD-49	SD-50	SD-50
SAMPLE ID	SD-47-01	SD-48-01	SD-49-01	SD-50-01	SD-50-01-AVG
SAMPLE DATE	20081115	20081115	20081115	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	8	8
BOTTOM DEPTH	14	14	14	16	16
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-47	SD-48	SD-49	SD-50	SD-50
SAMPLE ID	SD-47-01	SD-48-01	SD-49-01	SD-50-01	SD-50-01-AVG
SAMPLE DATE	20081115	20081115	20081115	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	8	8
BOTTOM DEPTH	14	14	14	16	16
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	710 U	430 U	560 U	1200 UJ	1200 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	710 U	430 U	560 U	1200 UJ	1200 UJ
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-47	SD-48	SD-49	SD-50	SD-50
SAMPLE ID	SD-47-01	SD-48-01	SD-49-01	SD-50-01	SD-50-01-AVG
SAMPLE DATE	20081115	20081115	20081115	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	8	8
BOTTOM DEPTH	14	14	14	16	16
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	710 U	430 U	560 U	1200 UJ	1200 UJ
ACENAPHTHYLENE	710 U	430 U	560 U	1200 UJ	1200 UJ
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	710 U	430 U	560 U	1200 UJ	1200 UJ
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	710 U	430 U	560 U	1311	1328
BAP EQUIVALENT-POSITIVE RESULTS	710 U	430 U	560 U	50.5	67.9
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	710 U	430 U	560 U	1200 UJ	1200 UJ
BENZO(A)PYRENE	710 U	430 U	560 U	1200 UJ	1200 UJ
BENZO(B)FLUORANTHENE	710 U	430 U	560 U	320 J	425 J
BENZO(G,H,I)PERYLENE	710 U	430 U	560 U	1200 UJ	1200 UJ
BENZO(K)FLUORANTHENE	710 U	430 U	560 U	310 J	395 J
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	710 U	430 U	560 U	410 J	460 J
DIBENZO(A,H)ANTHRACENE	710 U	430 U	560 U	1200 UJ	1200 UJ
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	710 U	430 U	560 U	470 J	590 J
FLUORENE	710 U	430 U	560 U	1200 UJ	1200 UJ
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	710 U	430 U	560 U	150 J	210 J
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	710 U	430 U	560 U	1200 UJ	1200 UJ
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	710 U	430 U	560 U	1200 UJ	270 J
PHENOL	NA	NA	NA	NA	NA
PYRENE	710 U	430 U	560 U	680 J	840 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	0 U	0 U	2340	3190

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-47	SD-48	SD-49	SD-50	SD-50
SAMPLE ID	SD-47-01	SD-48-01	SD-49-01	SD-50-01	SD-50-01-AVG
SAMPLE DATE	20081115	20081115	20081115	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	8	8
BOTTOM DEPTH	14	14	14	16	16
PCBS (UG/KG)					
AROCLOR-1016	36 U	22 U	35 U	300 UJ	295 UJ
AROCLOR-1221	36 U	22 U	35 U	3000 UJ	1645 UJ
AROCLOR-1232	36 U	22 U	35 U	3000 UJ	1645 UJ
AROCLOR-1242	36 U	22 U	35 U	3000 UJ	1645 UJ
AROCLOR-1248	36 U	22 U	35 U	3000 UJ	1645 UJ
AROCLOR-1254	36 U	22 U	35 U	3000 UJ	1645 UJ
AROCLOR-1260	36 U	22 U	35 U	2400 J	1900 J
TOTAL AROCLOR	0 U	0 U	0 U	2400	1900
METALS (MG/KG)					
ANTIMONY	0.21 UL	0.13 UL	0.21 U	0.36 UJ	0.385 BJ
ARSENIC	3.6	1.4	5.3	10.6 J	11.3 J
BARIUM	26.9	8.1	30.4 J	72.9 J	64.35 J
BERYLLIUM	1.5	1.1	1.6 J	2.1 J	2.15 J
CADMIUM	0.33	0.045	0.037 B	9.5 J	9.45 J
CHROMIUM	24.2	8.9	23.5 J	220 J	217.5 J
COBALT	9.2	2.2	13.6	21.1 J	21.65 J
COPPER	14.7	5.1	13.7 J	115 J	119.5 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	12.5	2.9	8 J	128 J	129 J
MERCURY	0.041 B	0.011 B	0.031 B	0.51 J	0.515 J
MOLYBDENUM	1.5	0.94	1.2	0.87 B	0.985 B
NICKEL	14.3	5.5	15.9	41.2 J	42.5 J
SELENIUM	1.1	0.42 U	1.1	1.7 J	1.5 J
SILVER	0.19	0.08 U	0.14 B	3.6 J	3.5 J
THALLIUM	0.37 U	0.22 U	0.35 U	0.62 UJ	0.62 UJ
VANADIUM	33.8	13	25.2 J	57.1 J	58.2 J
ZINC	36.2	10.8	59	357 J	369 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	47	77	47	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-50	SD-51	SD-53	SD-54	SD-55
SAMPLE ID	SD-50-01-D	SD-51-01	SD-53-01	SD-54-01	SD-55-01
SAMPLE DATE	20081114	20081115	20081114	20081114	20081113
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	8	10	10	10	10
BOTTOM DEPTH	16	14	14	14	14
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-50	SD-51	SD-53	SD-54	SD-55
SAMPLE ID	SD-50-01-D	SD-51-01	SD-53-01	SD-54-01	SD-55-01
SAMPLE DATE	20081114	20081115	20081114	20081114	20081113
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	8	10	10	10	10
BOTTOM DEPTH	16	14	14	14	14
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-50	SD-51	SD-53	SD-54	SD-55
SAMPLE ID	SD-50-01-D	SD-51-01	SD-53-01	SD-54-01	SD-55-01
SAMPLE DATE	20081114	20081115	20081114	20081114	20081113
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	8	10	10	10	10
BOTTOM DEPTH	16	14	14	14	14
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
ACENAPHTHYLENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	1345	1100 U	910 U	1564	1228
BAP EQUIVALENT-POSITIVE RESULTS	85.3	1100 U	910 U	93.8	72.5
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
BENZO(A)PYRENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
BENZO(B)FLUORANTHENE	530 J	1100 U	910 U	580 J	430 J
BENZO(G,H,I)PERYLENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
BENZO(K)FLUORANTHENE	480 J	1100 U	910 U	520 J	410 J
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	510 J	1100 U	910 U	560 J	440 J
DIBENZO(A,H)ANTHRACENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	710 J	1100 U	910 U	680 J	580 J
FLUORENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	270 J	1100 U	910 U	300 J	250 J
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	1200 UJ	1100 U	910 U	1400 UJ	1100 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	270 J	1100 U	910 U	330 J	270 J
PHENOL	NA	NA	NA	NA	NA
PYRENE	1000 J	1100 U	910 U	1300 J	1100 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	3770	0 U	0 U	4270	3480

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-50	SD-51	SD-53	SD-54	SD-55
SAMPLE ID	SD-50-01-D	SD-51-01	SD-53-01	SD-54-01	SD-55-01
SAMPLE DATE	20081114	20081115	20081114	20081114	20081113
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	8	10	10	10	10
BOTTOM DEPTH	16	14	14	14	14
PCBS (UG/KG)					
AROCLOR-1016	290 UJ	53 U	45 U	69 UJ	55 U
AROCLOR-1221	290 UJ	53 U	45 U	69 UJ	55 U
AROCLOR-1232	290 UJ	53 U	45 U	69 UJ	55 U
AROCLOR-1242	290 UJ	53 U	45 U	69 UJ	55 U
AROCLOR-1248	290 UJ	53 U	45 U	69 UJ	55 U
AROCLOR-1254	290 UJ	53 U	45 U	69 UJ	55 U
AROCLOR-1260	1400 J	53 U	45 U	110 J	440
TOTAL AROCLOR	1400	0 U	0 U	110	440
METALS (MG/KG)					
ANTIMONY	0.41 B	0.33 UL	0.28 UL	0.41 UJ	0.33 UL
ARSENIC	12 J	8.9	7.1	11.3 J	9.5
BARIUM	55.8 J	47.3	39.5	63 J	52.2
BERYLLIUM	2.2 J	1.9	2.1	2.4 J	2.1
CADMIUM	9.4 J	15.7	0.12	7.7 J	7.8
CHROMIUM	215 J	314	37.6	181 J	180
COBALT	22.2 J	18.4	15.8	24 J	19.2
COPPER	124 J	86.1	19.8	134 J	92.6
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	130 J	137	14.6	137 J	111
MERCURY	0.52 J	0.68	0.056	0.49 J	0.42
MOLYBDENUM	1.1 B	1.5	0.92	1.5 J	1.3
NICKEL	43.8 J	38.4	25.4	46 J	38
SELENIUM	1.3 J	2.5	1.3	2.5 J	2
SILVER	3.4 J	5.4	0.18 U	2.7 J	3.5
THALLIUM	0.62 UJ	0.56 U	0.48 U	0.71 UJ	0.57 U
VANADIUM	59.3 J	54.1	42.7	65.4 J	55.7
ZINC	381 J	338	81	420 J	322
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	32	37	24	30
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-56	SD-57	SD-58	SD-59	SD-60
SAMPLE ID	SD-56-01	SD-57-01	SD-58-01	SD-59-01	SD-60-01
SAMPLE DATE	20081113	20081114	20081114	20081115	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-56	SD-57	SD-58	SD-59	SD-60
SAMPLE ID	SD-56-01	SD-57-01	SD-58-01	SD-59-01	SD-60-01
SAMPLE DATE	20081113	20081114	20081114	20081115	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	910 U	840 U	150 J	820 U	790 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	910 U	840 U	980 U	820 U	790 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-56	SD-57	SD-58	SD-59	SD-60
SAMPLE ID	SD-56-01	SD-57-01	SD-58-01	SD-59-01	SD-60-01
SAMPLE DATE	20081113	20081114	20081114	20081115	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	910 U	840 U	2400 J	820 U	790 U
ACENAPHTHYLENE	910 U	840 U	980 U	820 U	790 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	97 J	840 U	4400 J	820 U	790 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	1049	840 U	12075	927.8	905
BAP EQUIVALENT-POSITIVE RESULTS	93.1	840 U	12075	66.8	35.6
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	910 U	840 U	12000	820 U	790 U
BENZO(A)PYRENE	910 U	840 U	9000	820 U	790 U
BENZO(B)FLUORANTHENE	580 J	840 U	9400	420 J	330 J
BENZO(G,H,I)PERYLENE	340 J	840 U	4600	820 U	790 U
BENZO(K)FLUORANTHENE	560 J	840 U	7300	330 J	230 J
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	530 J	840 U	12000	450 J	320 J
DIBENZO(A,H)ANTHRACENE	910 U	840 U	380 J	820 U	790 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	830 J	840 U	20000 J	540 J	390 J
FLUORENE	910 U	840 U	2000 J	820 U	790 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	290 J	840 U	4700	210 J	790 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	910 U	840 U	290 J	820 U	790 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	300 J	840 U	15000 J	250 J	240 J
PHENOL	NA	NA	NA	NA	NA
PYRENE	1100	840 U	15000	900	660 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	4627	0 U	118470	3100	2170

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-56	SD-57	SD-58	SD-59	SD-60
SAMPLE ID	SD-56-01	SD-57-01	SD-58-01	SD-59-01	SD-60-01
SAMPLE DATE	20081113	20081114	20081114	20081115	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
PCBS (UG/KG)					
AROCLOR-1016	46 U	42 U	980 U	51 U	50 U
AROCLOR-1221	46 U	42 U	980 U	51 U	50 U
AROCLOR-1232	46 U	42 U	980 U	51 U	50 U
AROCLOR-1242	46 U	42 U	980 U	51 U	50 U
AROCLOR-1248	46 U	42 U	980 U	51 U	50 U
AROCLOR-1254	46 U	42 U	980 U	51 U	50 U
AROCLOR-1260	310	42 U	14000	1300	50 U
TOTAL AROCLOR	310	0 U	14000	1300	0 U
METALS (MG/KG)					
ANTIMONY	0.38 L	0.26 UJ	0.29 UJ	0.3 U	1.5 J
ARSENIC	8	8	10	10.6	12.1
BARIUM	41.2	30.8	236	57.6 J	59.8 J
BERYLLIUM	1.8	2.1	1.8	2.3 J	2.1 J
CADMIUM	9.7	0.015 U	17.2	11.8	17.7
CHROMIUM	193	33.1	1290	261 J	327 J
COBALT	17	13.7	16.8	21.5	21.3 J
COPPER	79.3	18.4	132	101 J	126 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	107	11.7	159	200 J	207
MERCURY	0.51	0.016	1.5	0.57	0.91
MOLYBDENUM	1.1	0.39 B	0.87 B	1.4	1.7
NICKEL	34.3	23.3	40	46.2	52.3 J
SELENIUM	1.7	1	0.96	2.2	2.3
SILVER	4.3	0.16 U	5.6	3.9	7.7
THALLIUM	0.47 U	0.44 U	0.49 U	0.51 U	0.51 U
VANADIUM	54.7	38.5	50.6	69.8 J	86 J
ZINC	308	68	1300	399	463 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	37	NA	NA	32	34
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	19000	23000	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-61	SD-62	SD-63	SD-64	SD-65
SAMPLE ID	SD-61-01	SD-62-01	SD-63-01	SD-64-01	SD-65-01
SAMPLE DATE	20081113	20081112	20081112	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-61	SD-62	SD-63	SD-64	SD-65
SAMPLE ID	SD-61-01	SD-62-01	SD-63-01	SD-64-01	SD-65-01
SAMPLE DATE	20081113	20081112	20081112	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	1000 U	790 U	800 U	630 U	1000 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	1000 U	790 U	800 U	630 U	1000 UJ
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-61	SD-62	SD-63	SD-64	SD-65
SAMPLE ID	SD-61-01	SD-62-01	SD-63-01	SD-64-01	SD-65-01
SAMPLE DATE	20081113	20081112	20081112	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	1000 U	790 U	800 U	630 U	1000 UJ
ACENAPHTHYLENE	1000 U	790 U	800 U	630 U	1000 UJ
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	160 J	790 U	210 J	110 J	1000 UJ
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	1194	899	2010	1048	1000 U
BAP EQUIVALENT-POSITIVE RESULTS	144	30.2	1610	702	1000 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1000 U	790 U	1100	630 U	1000 UJ
BENZO(A)PYRENE	1000 U	790 U	1300	600 J	1000 UJ
BENZO(B)FLUORANTHENE	800 J	270 J	1100	630	1000 UJ
BENZO(G,H,I)PERYLENE	630 J	790 U	820	380 J	1000 UJ
BENZO(K)FLUORANTHENE	800 J	290 J	1300	620 J	1000 UJ
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	880 J	260 J	1400	640	1000 UJ
DIBENZO(A,H)ANTHRACENE	1000 U	790 U	800 U	630 U	1000 UJ
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	1200	290 J	1700	950	270 J
FLUORENE	1000 U	790 U	100 J	630 U	1000 UJ
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	550 J	790 U	760 J	320 J	1000 UJ
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	1000 U	790 U	800 U	630 U	1000 UJ
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	540 J	790 U	1000	440 J	1000 UJ
PHENOL	NA	NA	NA	NA	NA
PYRENE	2000	580 J	3900 J	1700 J	400 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	7560	1690	14690	6390	670

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-61	SD-62	SD-63	SD-64	SD-65
SAMPLE ID	SD-61-01	SD-62-01	SD-63-01	SD-64-01	SD-65-01
SAMPLE DATE	20081113	20081112	20081112	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
PCBS (UG/KG)					
AROCLOR-1016	52 U	49 U	50 U	39 U	51 U
AROCLOR-1221	52 U	49 U	50 U	39 U	51 U
AROCLOR-1232	52 U	49 U	50 U	39 U	51 U
AROCLOR-1242	52 U	49 U	50 U	39 U	51 U
AROCLOR-1248	52 U	49 U	50 U	39 U	51 U
AROCLOR-1254	52 U	49 U	50 U	39 U	51 U
AROCLOR-1260	1000	49 U	1100	190 J	51 U
TOTAL AROCLOR	1000	0 U	1100	190	0 U
METALS (MG/KG)					
ANTIMONY	0.63 L	0.98 J	2.2 J	2.1 J	0.31 UJ
ARSENIC	8.8	9.8	10.3	7.7	10.4
BARIUM	53.7	47.5 J	61.3 J	41.8 J	56.4
BERYLLIUM	2.2	1.9 J	1.8 J	1.9 J	2
CADMIUM	16.5	9.9	31 J	14.4 J	19.2
CHROMIUM	335	196 J	444 J	298 J	332
COBALT	19.8	17.2 J	16.4 J	14.2 J	17.1
COPPER	96.2	90.6 J	108 J	49.2 J	178 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	148	159	183 J	84.1 J	201
MERCURY	0.82	0.51	2	0.25	1
MOLYBDENUM	1	1.3	1.6 J	1.4 J	1.9
NICKEL	42.6	41.1 J	50.7 J	35.7 J	51.7 J
SELENIUM	1.8	2.1	2.4 J	1.3 J	2.4 J
SILVER	7.6	3.7	20.8 J	15.3 J	12.9
THALLIUM	0.55 U	0.53 U	0.51 U	0.41 U	0.54 U
VANADIUM	61.3	65.8 J	88.8 J	57.2 J	89
ZINC	406	323 J	464 J	248 J	386 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	32	34	33	42	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	21000	NA	16000	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-66	SD-67	SD-68	SD-68	SD-68
SAMPLE ID	SD-66-01	SD-67-01	SD-68-01	SD-68-01-AVG	SD-68-01-D
SAMPLE DATE	20081112	20081111	20081112	20081112	20081112
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	8	8	8
BOTTOM DEPTH	14	14	16	16	16
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-66	SD-67	SD-68	SD-68	SD-68
SAMPLE ID	SD-66-01	SD-67-01	SD-68-01	SD-68-01-AVG	SD-68-01-D
SAMPLE DATE	20081112	20081111	20081112	20081112	20081112
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	8	8	8
BOTTOM DEPTH	14	14	16	16	16
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-66	SD-67	SD-68	SD-68	SD-68
SAMPLE ID	SD-66-01	SD-67-01	SD-68-01	SD-68-01-AVG	SD-68-01-D
SAMPLE DATE	20081112	20081111	20081112	20081112	20081112
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	8	8	8
BOTTOM DEPTH	14	14	16	16	16
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
ACENAPHTHYLENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	988	1100 U	1030	1019	1040
BAP EQUIVALENT-POSITIVE RESULTS	63.5	1100 U	17.9	17.9	0.13
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
BENZO(A)PYRENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
BENZO(B)FLUORANTHENE	420 J	1100 UJ	160 J	160 J	900 UJ
BENZO(G,H,I)PERYLENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
BENZO(K)FLUORANTHENE	310 J	1100 UJ	170 J	170 J	900 UJ
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	400 K	1100 UJ	170 J	150 J	130 J
DIBENZO(A,H)ANTHRACENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	450 J	1100 UJ	210 J	185 J	160 J
FLUORENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	180 J	1100 UJ	920 UJ	910 UJ	900 UJ
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	880 U	1100 UJ	920 UJ	910 UJ	900 UJ
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	230 J	1100 UJ	920 UJ	910 UJ	900 UJ
PHENOL	NA	NA	NA	NA	NA
PYRENE	1000 J	1100 UJ	400 J	345 J	290 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	2990	0 U	1110	1010	580

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-66	SD-67	SD-68	SD-68	SD-68
SAMPLE ID	SD-66-01	SD-67-01	SD-68-01	SD-68-01-AVG	SD-68-01-D
SAMPLE DATE	20081112	20081111	20081112	20081112	20081112
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	8	8	8
BOTTOM DEPTH	14	14	16	16	16
PCBS (UG/KG)					
AROCLOR-1016	55 U	57 UJ	57 UJ	56.5 UJ	56 UJ
AROCLOR-1221	55 U	57 UJ	57 UJ	56.5 UJ	56 UJ
AROCLOR-1232	55 U	57 UJ	57 UJ	56.5 UJ	56 UJ
AROCLOR-1242	55 U	57 UJ	57 UJ	56.5 UJ	56 UJ
AROCLOR-1248	55 U	57 UJ	57 UJ	56.5 UJ	56 UJ
AROCLOR-1254	55 U	57 UJ	57 UJ	56.5 UJ	56 UJ
AROCLOR-1260	370 J	140 J	57 UJ	56.5 UJ	56 UJ
TOTAL AROCLOR	370	140	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	1.6 J	0.44 B	1.1 J	1.45 J	1.8 J
ARSENIC	11.2	10.5 J	12.3 J	11.95 J	11.6 J
BARIUM	60.3 J	55.2 J	66.5 J	64.25 J	62 J
BERYLLIUM	2.1 J	2.1 J	2.2 J	2.15 J	2.1 J
CADMIUM	9.8	7.7 J	12.3 J	12.05 J	11.8 J
CHROMIUM	172 J	162 J	265 J	252 J	239 J
COBALT	19.3 J	18.5 J	19.3 J	18.9 J	18.5 J
COPPER	92.7 J	88.6 J	126 J	124 J	122 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	196	174 J	285 J	244 J	203 J
MERCURY	0.52	0.41 J	0.76 J	0.785 J	0.81 J
MOLYBDENUM	1.5	1.7 B	1.9 J	1.8 J	1.7 J
NICKEL	47 J	43.9 J	51.9 J	50.6 J	49.3 J
SELENIUM	2.6	1.9 J	2.4 J	1.95 J	1.5 J
SILVER	3.8	4 J	5.6 J	5.6 J	5.6 J
THALLIUM	0.55 U	0.58 UJ	0.56 UJ	0.575 UJ	0.59 UJ
VANADIUM	70.5 J	66.3 J	88.9 J	84.9 J	80.9 J
ZINC	405 J	365 J	431 J	418 J	405 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	30	NA	29	29.5	30
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-69	SD-70	SD-71	SD-72	SD-73
SAMPLE ID	SD-69-01	SD-70-01	SD-71-01	SD-72-01	SD-73-01
SAMPLE DATE	20081111	20081111	20081111	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-69	SD-70	SD-71	SD-72	SD-73
SAMPLE ID	SD-69-01	SD-70-01	SD-71-01	SD-72-01	SD-73-01
SAMPLE DATE	20081111	20081111	20081111	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	440 U	1000 UJ	1100 UJ	320 U	740 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	440 U	1000 UJ	1100 UJ	320 U	740 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-69	SD-70	SD-71	SD-72	SD-73
SAMPLE ID	SD-69-01	SD-70-01	SD-71-01	SD-72-01	SD-73-01
SAMPLE DATE	20081111	20081111	20081111	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	440 U	1000 UJ	1100 UJ	320 U	740 U
ACENAPHTHYLENE	440 U	1000 UJ	1100 UJ	320 U	740 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	440 U	1000 UJ	1100 UJ	320 U	740 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	440 U	1000 U	1100 U	320 U	740 U
BAP EQUIVALENT-POSITIVE RESULTS	440 U	1000 U	1100 U	320 U	740 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	440 U	1000 UJ	1100 UJ	320 U	740 U
BENZO(A)PYRENE	440 U	1000 UJ	1100 UJ	320 U	740 U
BENZO(B)FLUORANTHENE	440 U	1000 UJ	1100 UJ	320 U	740 U
BENZO(G,H,I)PERYLENE	440 U	1000 UJ	1100 UJ	320 U	740 U
BENZO(K)FLUORANTHENE	440 U	1000 UJ	1100 UJ	320 U	740 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	440 U	1000 UJ	1100 UJ	320 U	740 U
DIBENZO(A,H)ANTHRACENE	440 U	1000 UJ	1100 UJ	320 U	740 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	440 U	490 J	210 J	320 U	740 U
FLUORENE	440 U	1000 UJ	1100 UJ	320 U	740 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	440 U	1000 UJ	1100 UJ	320 U	740 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	440 U	1000 UJ	1100 UJ	320 U	740 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	440 U	220 J	1100 UJ	320 U	740 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	440 U	800 J	460 J	320 UJ	740 U
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	1510	670	0 U	0 U

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-69	SD-70	SD-71	SD-72	SD-73
SAMPLE ID	SD-69-01	SD-70-01	SD-71-01	SD-72-01	SD-73-01
SAMPLE DATE	20081111	20081111	20081111	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
PCBS (UG/KG)					
AROCLOR-1016	22 U	52 U	53 U	20 UJ	37 U
AROCLOR-1221	22 U	52 U	53 U	20 UJ	37 U
AROCLOR-1232	22 U	52 U	53 U	20 UJ	37 U
AROCLOR-1242	22 U	52 U	53 U	20 UJ	37 U
AROCLOR-1248	22 U	52 U	53 U	20 UJ	37 U
AROCLOR-1254	22 U	52 U	53 U	20 UJ	37 U
AROCLOR-1260	22 U	420	380	20 UJ	37 U
TOTAL AROCLOR	0 U	420	380	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.32 L	0.31 UJ	0.32 UJ	0.12 UL	0.21 UL
ARSENIC	3.8	12.3	10.2	3	4.5
BARIUM	65.8	60.3	52.9	17.5 J	24.2
BERYLLIUM	6.9	2.2	2.1	0.51 J	1.8
CADMIUM	0.0074 U	9.7	7.8	0.0069 UL	0.026
CHROMIUM	21.9	223	169	13.4 J	24.9
COBALT	33	18.1	16.5	1.6 J	11.9
COPPER	17	108 J	87.7 J	10.6 J	17.6
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	8.9	214	158	4.5 J	8.9
MERCURY	0.015 B	0.67	0.44	0.0089 B	0.029 B
MOLYBDENUM	0.18	1.6 B	1.8	0.25 J	1.5
NICKEL	67.1	46.6 J	39.9 J	4.1 J	20.1
SELENIUM	0.41 UL	2.3 J	1.3 J	0.38 UL	0.7 UL
SILVER	0.079 U	5.7	6.4	0.074 UL	0.13 U
THALLIUM	0.21 U	0.53 U	0.55 U	0.2 U	0.36 U
VANADIUM	35.6 K	79.2	63.5	19.6 J	35.5 K
ZINC	147	390 J	352 J	12.6 J	50.2
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	76	NA	NA	82	45
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	2200	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-74	SD-75	SD-76	SD-77	SD-79
SAMPLE ID	SD-74-01	SD-75-01	SD-76-01	SD-77-01	SD-79-01
SAMPLE DATE	20081111	20081112	20081111	20081110	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-74	SD-75	SD-76	SD-77	SD-79
SAMPLE ID	SD-74-01	SD-75-01	SD-76-01	SD-77-01	SD-79-01
SAMPLE DATE	20081111	20081112	20081111	20081110	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	400 U	520 U	3900 U	460 U	820 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	400 U	520 U	3900 U	460 U	820 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-74	SD-75	SD-76	SD-77	SD-79
SAMPLE ID	SD-74-01	SD-75-01	SD-76-01	SD-77-01	SD-79-01
SAMPLE DATE	20081111	20081112	20081111	20081110	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	400 U	94 J	3900 U	120 J	820 U
ACENAPHTHYLENE	400 U	520 U	3900 U	460 U	820 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	400 U	120 J	440 J	270 J	820 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	462	923	4480	906	820 U
BAP EQUIVALENT-POSITIVE RESULTS	0.093	637	385	906	820 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	400 U	520 U	3900 U	680	820 U
BENZO(A)PYRENE	400 U	510 J	3900 U	570	820 U
BENZO(B)FLUORANTHENE	400 U	800 J	2400 J	670 J	820 U
BENZO(G,H,I)PERYLENE	400 U	420 J	1200 J	330 J	820 U
BENZO(K)FLUORANTHENE	400 U	830	2200 J	600	820 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	93 J	850	3000 J	900	820 U
DIBENZO(A,H)ANTHRACENE	400 U	520 U	3900 U	160 J	820 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	150 J	830	4800	1700	820 U
FLUORENE	400 U	50 J	3900 U	130 J	820 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	400 U	380 J	1200 J	340 J	820 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	400 U	520 U	3900 U	460 U	820 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	92 J	520 J	2000 J	920	820 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	160 J	1300 J	7200	1800	820 U
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	495	6704	24440	9190	0 U

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-74	SD-75	SD-76	SD-77	SD-79
SAMPLE ID	SD-74-01	SD-75-01	SD-76-01	SD-77-01	SD-79-01
SAMPLE DATE	20081111	20081112	20081111	20081110	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	10	10
BOTTOM DEPTH	14	14	14	14	14
PCBS (UG/KG)					
AROCLOR-1016	20 U	33 U	39 U	23 U	41 U
AROCLOR-1221	20 U	33 U	39 U	23 U	41 U
AROCLOR-1232	20 U	33 U	39 U	23 U	41 U
AROCLOR-1242	20 U	33 U	39 U	23 U	41 U
AROCLOR-1248	20 U	33 U	39 U	23 U	41 U
AROCLOR-1254	20 U	33 U	39 U	23 U	41 U
AROCLOR-1260	22	160 J	150	18 J	41 U
TOTAL AROCLOR	22	160	150	18	0 U
METALS (MG/KG)					
ANTIMONY	0.36 L	55.1 J	0.88 L	0.63 L	0.24 UL
ARSENIC	4.3	7.3	8	6.6	8
BARIUM	20.4	54.6 J	40.3	87.2	36.2
BERYLLIUM	2	1.1 J	1.2	1.5	1.5
CADMIUM	0.78	17.4	3.7	2.3	0.014 U
CHROMIUM	31	209 J	59.8	65.7	30.4
COBALT	12.6	10.3 J	12.7	8.5	13.9
COPPER	20.9	113 J	72.5	35.6	17
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	21	1370	82.7	48.6	13.5
MERCURY	0.19	1.6	0.14	0.33	0.027
MOLYBDENUM	0.79	3.3	1.4	2.8	0.65 B
NICKEL	22.5	47.9 J	32.3	21.8	22.4
SELENIUM	0.38 UL	1.4	0.85 L	0.47 UL	0.78 U
SILVER	2.2	37.2	1.5	2.8	0.15 U
THALLIUM	0.2 U	0.34 U	0.39 U	0.25 U	0.41 U
VANADIUM	31.3 K	91.8 J	45.6 K	34.6 K	44.1
ZINC	61.7	371 J	290	155	62
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	83	51	43	73	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	4600	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-80	SD-81	SD-82	SD-83	SD-84
SAMPLE ID	SD-80-01	SD-81-01	SD-82-01	SD-83-01	SD-84-01
SAMPLE DATE	20081114	20081114	20081114	20100820	20100820
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	12	12
BOTTOM DEPTH	14	14	14	12	12
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-80	SD-81	SD-82	SD-83	SD-84
SAMPLE ID	SD-80-01	SD-81-01	SD-82-01	SD-83-01	SD-84-01
SAMPLE DATE	20081114	20081114	20081114	20100820	20100820
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	12	12
BOTTOM DEPTH	14	14	14	12	12
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	980 U	510 U	780 U	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	980 U	510 U	780 U	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-80	SD-81	SD-82	SD-83	SD-84
SAMPLE ID	SD-80-01	SD-81-01	SD-82-01	SD-83-01	SD-84-01
SAMPLE DATE	20081114	20081114	20081114	20100820	20100820
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	12	12
BOTTOM DEPTH	14	14	14	12	12
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	980 U	510 U	780 U	16 J	29 J
ACENAPHTHYLENE	980 U	510 U	780 U	68	140
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	980 U	510 U	780 U	63	88
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	980 U	576	877	373	622
BAP EQUIVALENT-POSITIVE RESULTS	980 U	14.5	58.3	373	622
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	980 U	510 U	780 U	190	330
BENZO(A)PYRENE	980 U	510 U	780 U	210	320
BENZO(B)FLUORANTHENE	980 U	130 J	400 J	380	660
BENZO(G,H,I)PERYLENE	980 U	59 J	780 U	210	350
BENZO(K)FLUORANTHENE	980 U	140 J	290 J	5.4 U	12 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	980 U	140 J	370 J	260	400
DIBENZO(A,H)ANTHRACENE	980 U	510 U	780 U	88	170
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	980 U	260 J	500 J	330	500
FLUORENE	980 U	510 U	780 U	24 J	42 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	980 U	510 U	150 J	180	330
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	980 U	510 U	780 U	30	45 J
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	980 U	150 J	780 U	180	260
PHENOL	NA	NA	NA	NA	NA
PYRENE	980 U	410 J	670 J	290	430
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	1289	2380	2519	4094

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-80	SD-81	SD-82	SD-83	SD-84
SAMPLE ID	SD-80-01	SD-81-01	SD-82-01	SD-83-01	SD-84-01
SAMPLE DATE	20081114	20081114	20081114	20100820	20100820
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	10	10	10	12	12
BOTTOM DEPTH	14	14	14	12	12
PCBS (UG/KG)					
AROCLOR-1016	49 U	25 U	39 U	2 U	2.2 U
AROCLOR-1221	49 U	25 U	390 UJ	2.5 U	2.8 U
AROCLOR-1232	49 U	25 U	390 UJ	2.3 U	2.5 U
AROCLOR-1242	49 U	25 U	390 UJ	2.2 U	2.4 U
AROCLOR-1248	49 U	25 U	390 UJ	1.3 U	1.4 U
AROCLOR-1254	49 U	25 U	390 UJ	1.9 U	2.1 U
AROCLOR-1260	49 U	70	270	17	2.1 U
TOTAL AROCLOR	0 U	70	270	17	0 U
METALS (MG/KG)					
ANTIMONY	0.28 UJ	0.16 UJ	0.24 UJ	0.78 L	2.4 L
ARSENIC	7.8	1.9	6.1	5.3 L	5.1 L
BARIUM	41.7	13.4	34.4	NA	NA
BERYLLIUM	1.9	0.34	1.2	1.4	2.4
CADMIUM	0.017 U	12.3	14.6	0.83 L	113 L
CHROMIUM	37.3	120	229	38.6	1750
COBALT	16.1	4.2	16.2	NA	NA
COPPER	18.9	24	92.7	27.9 L	77 L
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	14.8	59	143	66.5	107
MERCURY	0.027	0.23	0.52	0.35	0.32
MOLYBDENUM	0.79 B	0.21 B	0.54 B	NA	NA
NICKEL	26.4	9.1	31.5	21.7 L	29.6 L
SELENIUM	1.5	0.58	1.3	0.99 L	1.1 L
SILVER	0.18 U	1.6	2.2	0.23	0.19
THALLIUM	0.48 U	0.27 U	0.4 U	0.13	0.18
VANADIUM	46.2	11	35.6	NA	NA
ZINC	78.7	113	310	124 L	177 L
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	20000	NA	NA	22900	42300
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-85	SD-86	SD-87	SD-88	SD-89
SAMPLE ID	SD-85-01	SD-86-01	SD-87-01	SD-88-01	SD-89-01
SAMPLE DATE	20100819	20100818	20100818	20100819	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-85	SD-86	SD-87	SD-88	SD-89
SAMPLE ID	SD-85-01	SD-86-01	SD-87-01	SD-88-01	SD-89-01
SAMPLE DATE	20100819	20100818	20100818	20100819	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-85	SD-86	SD-87	SD-88	SD-89
SAMPLE ID	SD-85-01	SD-86-01	SD-87-01	SD-88-01	SD-89-01
SAMPLE DATE	20100819	20100818	20100818	20100819	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	1.2 J	350	410	76 J	56 J
ACENAPHTHYLENE	1.1 U	150	140 J	220	140
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	0.98 U	620	660	320	200
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	1 U	3652	3232	1564	1001
BAP EQUIVALENT-POSITIVE RESULTS	1 U	3652	3232	1564	1001
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1.3 U	2400	2300	760	480
BENZO(A)PYRENE	1 U	2200	2000	880	520
BENZO(B)FLUORANTHENE	1.6 U	3400	3200	1600	880
BENZO(G,H,I)PERYLENE	0.99 U	2000	1600	910	610
BENZO(K)FLUORANTHENE	2 U	30 U	31 U	22 U	22 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	1.2 U	2300	2000	930	510
DIBENZO(A,H)ANTHRACENE	1.1 U	700	540	370	290
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	1.9 J	3900	3800	1600	850
FLUORENE	1.3 U	190	240	100 J	59 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	1 U	1700	1400	770	540
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	0.86 U	100 J	89 J	180	98 J
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	3.4 J	2300	2300	600	350
PHENOL	NA	NA	NA	NA	NA
PYRENE	1.5 J	4000	3500	1400	830
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	8	26310	24179	10716	6413

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-85	SD-86	SD-87	SD-88	SD-89
SAMPLE ID	SD-85-01	SD-86-01	SD-87-01	SD-88-01	SD-89-01
SAMPLE DATE	20100819	20100818	20100818	20100819	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
PCBS (UG/KG)					
AROCLOR-1016	1.9 U	2.3 U	2.3 U	4 U	4 U
AROCLOR-1221	2.4 U	2.9 U	2.9 U	5.1 U	5.1 U
AROCLOR-1232	2.1 U	2.6 U	2.6 U	4.6 U	4.6 U
AROCLOR-1242	2 U	2.5 U	2.5 U	4.4 U	4.3 U
AROCLOR-1248	1.2 U	2300	550	2.5 U	2.5 U
AROCLOR-1254	1.8 U	2.2 U	2.2 U	3.8 U	3.8 U
AROCLOR-1260	1.8 U	2300 J	800 J	1800	1500
TOTAL AROCLOR	0 U	4600	1350	1800	1500
METALS (MG/KG)					
ANTIMONY	0.11 B	2.2 J	1.3 L	0.69 J	0.95 L
ARSENIC	2.5 L	4.6	4.2	8.5 L	8.6
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1	0.99 J	1	1.8 L	2.2
CADMIUM	0.14 L	69	64.7	15.7 J	17.8 L
CHROMIUM	13.8	718 K	541	277 L	336
COBALT	NA	NA	NA	NA	NA
COPPER	9.5 L	84.6	88.7	95.2 L	107 L
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	7.2	211	205 K	189	187
MERCURY	0.022 J	0.31	0.37	1	0.96
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	13.2 L	31.6	31.5	42.1 L	46.5 L
SELENIUM	0.53 L	0.95	0.88	1.8 L	2 L
SILVER	0.042 J	1.8 J	2.7	6.8 L	7.1
THALLIUM	0.13	0.12	0.16	0.27 K	0.35
VANADIUM	NA	NA	NA	NA	NA
ZINC	34.5 L	452	497	392 L	441
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	25500	NA	28800	32500	27300
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	0.23 U	NA	2.4	8.8	4.6
CADMIUM	0.00026 J	NA	0.48	0.12	0.12
CHROMIUM	0.016 J	NA	4.6	2.4	2.5
COPPER	0.044	NA	0.18	0.52	0.41
LEAD	0.015 J	NA	0.73	0.75	0.58
NICKEL	0.035 J	NA	0.16	0.2	0.18
SILVER	0.0002 U	NA	0.001 J	0.0083	0.0063
ZINC	0.11 J	NA	6.9	4.1	4

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-90	SD-91	SD-92	SD-93	SD-94
SAMPLE ID	SD-90-01	SD-91-01	SD-92-01	SD-93-01	SD-94-01
SAMPLE DATE	20100817	20100817	20100817	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-90	SD-91	SD-92	SD-93	SD-94
SAMPLE ID	SD-90-01	SD-91-01	SD-92-01	SD-93-01	SD-94-01
SAMPLE DATE	20100817	20100817	20100817	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-90	SD-91	SD-92	SD-93	SD-94
SAMPLE ID	SD-90-01	SD-91-01	SD-92-01	SD-93-01	SD-94-01
SAMPLE DATE	20100817	20100817	20100817	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	190	2.1 U	0.95 U	12 J	3.9 U
ACENAPHTHYLENE	280	2.5 U	1.1 U	18 J	4.7 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	530	2.2 U	0.97 U	35	4 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	3533	2.2 U	0.99 U	296	4.1 U
BAP EQUIVALENT-POSITIVE RESULTS	3533	2.2 U	0.99 U	296	4.1 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	2100	2.8 U	1.2 U	180	5.1 U
BENZO(A)PYRENE	2300	2.2 U	0.99 U	160	4.1 U
BENZO(B)FLUORANTHENE	3600	3.5 U	1.6 U	290	6.5 U
BENZO(G,H,I)PERYLENE	1900	2.2 U	0.99 U	150	4.1 U
BENZO(K)FLUORANTHENE	9 U	4.5 U	2 U	4 U	8.3 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	2500	2.6 U	1.2 U	160	4.9 U
DIBENZO(A,H)ANTHRACENE	510	2.5 U	1.1 U	75	4.6 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	5500	2.4 U	1.1 U	300	4.4 U
FLUORENE	200	2.9 U	1.3 U	13 J	5.4 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	1500	2.3 U	1 U	140	4.2 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	120	1.9 U	0.85 U	10 J	3.5 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	1800	3.5 U	2.4 J	150	6.5 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	3400	2.2 U	1 U	300	4.2 U
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	26430	0 U	2.4	1993	0 U

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-90	SD-91	SD-92	SD-93	SD-94
SAMPLE ID	SD-90-01	SD-91-01	SD-92-01	SD-93-01	SD-94-01
SAMPLE DATE	20100817	20100817	20100817	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
PCBS (UG/KG)					
AROCLOR-1016	3.3 U	1.6 U	1.9 U	1.8 U	3.1 U
AROCLOR-1221	4.2 U	2.1 U	2.4 U	2.4 U	3.9 U
AROCLOR-1232	3.8 U	1.9 U	2.1 U	2.1 U	3.5 U
AROCLOR-1242	3.6 U	1.8 U	2 U	2 U	3.4 U
AROCLOR-1248	2.1 U	1 U	1.2 U	1.2 U	1.9 U
AROCLOR-1254	3.1 U	1.6 U	1.8 U	1.8 U	2.9 U
AROCLOR-1260	1000 J	1.6 U	1.8 U	280	2.9 U
TOTAL AROCLOR	1000	0 U	0 U	280	0 U
METALS (MG/KG)					
ANTIMONY	1.4 J	0.18 J	0.13 J	0.29 L	0.076 J
ARSENIC	7.6	3.6	7.2	3.9	4.2
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1.6	2.5	1.8	1	1.7
CADMIUM	12.5	0.18	0.2	2.7	0.37
CHROMIUM	212	17.6	16.1	37.5	26
COBALT	NA	NA	NA	NA	NA
COPPER	130	23	16.6	23.3	18.4
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	257 J	5.5 J	3.6 K	36.6 K	9 J
MERCURY	2	0.0072 U	0.0082 U	0.11	0.028 J
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	41.8	20.4	16.9	13.9	18.7
SELENIUM	1.8	0.66	0.66	0.6	1
SILVER	8.9	0.025 J	0.022 J	0.55	0.065 J
THALLIUM	0.26 J	0.065 J	0.063 J	0.07 J	0.15 J
VANADIUM	NA	NA	NA	NA	NA
ZINC	386	44.7	46.6	125	56
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	35900	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	19	NA	NA	NA	NA
CADMIUM	0.085	NA	NA	NA	NA
CHROMIUM	1.6	NA	NA	NA	NA
COPPER	0.037	NA	NA	NA	NA
LEAD	0.66	NA	NA	NA	NA
NICKEL	0.18	NA	NA	NA	NA
SILVER	0.00095 J	NA	NA	NA	NA
ZINC	4.2	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-95	SD-95	SD-95	SD-96	SD-96
SAMPLE ID	SD-95-01	SD-95-01-AVG	SD-95-01-D	SD-96-01	SD-96-01-AVG
SAMPLE DATE	20100817	20100817	20100817	20100819	20100819
SAMPLE CODE	ORIG	AVG	DUP	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-95	SD-95	SD-95	SD-96	SD-96
SAMPLE ID	SD-95-01	SD-95-01-AVG	SD-95-01-D	SD-96-01	SD-96-01-AVG
SAMPLE DATE	20100817	20100817	20100817	20100819	20100819
SAMPLE CODE	ORIG	AVG	DUP	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-95	SD-95	SD-95	SD-96	SD-96
SAMPLE ID	SD-95-01	SD-95-01-AVG	SD-95-01-D	SD-96-01	SD-96-01-AVG
SAMPLE DATE	20100817	20100817	20100817	20100819	20100819
SAMPLE CODE	ORIG	AVG	DUP	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	24 J	27 J	30 J	59 J	57 J
ACENAPHTHYLENE	50	56	62	160	145
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	89	94.5	100	210	210
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	612	626	639	1169	1072
BAP EQUIVALENT-POSITIVE RESULTS	612	626	639	1169	1072
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	330	325	320	560	535
BENZO(A)PYRENE	350	355	360	640	575
BENZO(B)FLUORANTHENE	580	610	640	1100	1000
BENZO(G,H,I)PERYLENE	360	375	390	680	640
BENZO(K)FLUORANTHENE	8.4 U	8.4 U	8.4 U	22 U	21.5 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	360	365	370	610	555
DIBENZO(A,H)ANTHRACENE	140	145	150	300	285
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	470	475	480	1100	1030
FLUORENE	34 J	33.5 J	33 J	77 J	69 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	310	320	330	620	580
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	50	50	50	130	125
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	220	215	210	410	395
PHENOL	NA	NA	NA	NA	NA
PYRENE	630	620	610	1100	995
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	3997	4066	4135	7756	7196

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-95	SD-95	SD-95	SD-96	SD-96
SAMPLE ID	SD-95-01	SD-95-01-AVG	SD-95-01-D	SD-96-01	SD-96-01-AVG
SAMPLE DATE	20100817	20100817	20100817	20100819	20100819
SAMPLE CODE	ORIG	AVG	DUP	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
PCBS (UG/KG)					
AROCLOR-1016	3.9 U	3.9 U	3.9 U	3.9 U	3.85 U
AROCLOR-1221	5 U	5 U	5 U	5 U	4.95 U
AROCLOR-1232	4.5 U	4.5 U	4.5 U	4.5 U	4.45 U
AROCLOR-1242	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
AROCLOR-1248	2.5 U	2.5 U	2.5 U	2.5 U	2.45 U
AROCLOR-1254	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
AROCLOR-1260	610	495 J	380 J	1900	1850
TOTAL AROCLOR	610	495	380	1900	1850
METALS (MG/KG)					
ANTIMONY	0.67 L	0.685 L	0.7 L	0.61 J	0.805 L
ARSENIC	8.3	8.35	8.4	7.5 L	8.25 L
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	2.1	2.15	2.2	1.8 L	2.05 L
CADMIUM	12	12.15	12.3	14.9 J	16.3 L
CHROMIUM	241	245.5	250	276 L	304.5 L
COBALT	NA	NA	NA	NA	NA
COPPER	90.9	91.15	91.4	121 L	113.5 L
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	174 K	175.5 K	177 K	148	166
MERCURY	0.66	0.64	0.62	0.9	0.88
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	42.7	43.05	43.4	39.4 L	43.05 L
SELENIUM	1.9	2	2.1	1.8 L	1.95 L
SILVER	4.6	4.7	4.8	6.3 L	6.8 L
THALLIUM	0.28	0.29	0.3	0.28 K	0.31 K
VANADIUM	NA	NA	NA	NA	NA
ZINC	382	384	386	377 L	403.5 L
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-96	SD-97	SD-98	SD-99	SD-100
SAMPLE ID	SD-96-01-D	SD-97-01	SD-98-01	SD-99-01	SD-100-01
SAMPLE DATE	20100819	20100817	20100819	20100819	20100819
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-96	SD-97	SD-98	SD-99	SD-100
SAMPLE ID	SD-96-01-D	SD-97-01	SD-98-01	SD-99-01	SD-100-01
SAMPLE DATE	20100819	20100817	20100819	20100819	20100819
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-96	SD-97	SD-98	SD-99	SD-100
SAMPLE ID	SD-96-01-D	SD-97-01	SD-98-01	SD-99-01	SD-100-01
SAMPLE DATE	20100819	20100817	20100819	20100819	20100819
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	55 J	22 J	62 J	7.9 U	4 U
ACENAPHTHYLENE	130	47 J	150	9.4 U	4.8 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	210	75 J	240	8 U	4.1 U
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	976	409	1254	8.2 U	4.2 U
BAP EQUIVALENT-POSITIVE RESULTS	976	409	1254	8.2 U	4.2 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	510	190 J	620	10 U	5.2 U
BENZO(A)PYRENE	510	210 J	700	8.2 U	4.2 U
BENZO(B)FLUORANTHENE	900	370 J	1300	13 U	6.6 U
BENZO(G,H,I)PERYLENE	600	240 J	750	8.1 U	4.2 U
BENZO(K)FLUORANTHENE	21 U	12 UJ	20 U	17 U	8.4 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	500	220 J	750	9.7 U	5 U
DIBENZO(A,H)ANTHRACENE	270	120 J	300	9.1 U	4.6 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	960	500 J	1200	8.7 U	24 J
FLUORENE	61 J	37 J	92 J	11 U	5.5 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	540	230 J	610	8.4 U	4.3 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	120	86 J	160	7 U	3.6 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	380	190 J	490	13 U	15 J
PHENOL	NA	NA	NA	NA	NA
PYRENE	890	360 J	1100	8.3 U	17 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	6636	2897	8524	0 U	56

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-96	SD-97	SD-98	SD-99	SD-100
SAMPLE ID	SD-96-01-D	SD-97-01	SD-98-01	SD-99-01	SD-100-01
SAMPLE DATE	20100819	20100817	20100819	20100819	20100819
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
PCBS (UG/KG)					
AROCLOR-1016	3.8 U	4.5 UJ	3.7 U	3 U	3 U
AROCLOR-1221	4.9 U	5.7 UJ	4.7 U	3.8 U	3.9 U
AROCLOR-1232	4.4 U	5.1 UJ	4.2 U	3.4 U	3.5 U
AROCLOR-1242	4.2 U	4.9 UJ	4 U	3.3 U	3.3 U
AROCLOR-1248	2.4 U	2.8 UJ	2.3 U	1.9 U	1.9 U
AROCLOR-1254	3.7 U	4.3 UJ	3.5 U	2.8 U	2.9 U
AROCLOR-1260	1800	210 J	920	2.8 U	2.9 U
TOTAL AROCLOR	1800	210	920	0 U	0 U
METALS (MG/KG)					
ANTIMONY	1 L	1 J	0.68 J	0.076 B	0.14 B
ARSENIC	9	11 J	8.2 L	5.4	4.1 L
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	2.3	2.6 J	2 L	1.7	1.3 L
CADMIUM	17.7 L	22 J	19 J	0.4 L	0.28 J
CHROMIUM	333	423 J	336 L	27.7	25.1 L
COBALT	NA	NA	NA	NA	NA
COPPER	106 L	110 J	99.6 L	20.1 L	18.4 L
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	184	149 J	169	12.5	14.6
MERCURY	0.86	0.99 J	0.92	0.035 J	0.074
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	46.7 L	46.4 J	44.1 L	20.5 L	19.3 L
SELENIUM	2.1 L	2.2 J	2 L	1.2 L	0.96 L
SILVER	7.3	5 J	6.6 L	0.068 J	0.062 J
THALLIUM	0.34	0.3 J	0.34	0.17 K	0.19 K
VANADIUM	NA	NA	NA	NA	NA
ZINC	430	439 J	421 L	67.4	62.1 L
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	34900	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	0.38 U	NA
CADMIUM	NA	NA	NA	0.0014 J	NA
CHROMIUM	NA	NA	NA	0.033	NA
COPPER	NA	NA	NA	0.06	NA
LEAD	NA	NA	NA	0.024	NA
NICKEL	NA	NA	NA	0.047	NA
SILVER	NA	NA	NA	0.00033 U	NA
ZINC	NA	NA	NA	0.37	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-101	SD-102	SD-103	SD-104	SD-105
SAMPLE ID	SD-101-01	SD-102-01	SD-103-01	SD-104-01	SD-105-01
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-101	SD-102	SD-103	SD-104	SD-105
SAMPLE ID	SD-101-01	SD-102-01	SD-103-01	SD-104-01	SD-105-01
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-101	SD-102	SD-103	SD-104	SD-105
SAMPLE ID	SD-101-01	SD-102-01	SD-103-01	SD-104-01	SD-105-01
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	19 J	10 U	1.1 U	4.2 U	23 J
ACENAPHTHYLENE	31 J	36 J	1.3 U	5 U	13 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	57 J	44 J	1.1 U	4.3 U	61 J
AZOBENZENE	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	380	238	1.1 U	4.4 U	565
BAP EQUIVALENT-POSITIVE RESULTS	380	232	1.1 U	4.4 U	565
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	170	150	1.4 U	5.5 U	200
BENZO(A)PYRENE	180	150	1.1 U	4.4 U	240
BENZO(B)FLUORANTHENE	310	350	1.7 U	6.9 U	480
BENZO(G,H,I)PERYLENE	230	310	1.1 U	4.4 U	360
BENZO(K)FLUORANTHENE	20 U	22 U	2.2 U	8.9 U	22 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	190	180	1.3 U	5.2 U	240
DIBENZO(A,H)ANTHRACENE	130	12 U	1.2 U	4.9 U	220
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	260	310	1.8 J	4.8 J	290
FLUORENE	17 J	34 J	1.5 U	5.8 U	24 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	220	320	1.1 U	4.5 U	370
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	44 J	53 J	0.96 U	3.8 U	58 J
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	120	130	2.8 J	7 U	140
PHENOL	NA	NA	NA	NA	NA
PYRENE	310	330	1.1 U	4.7 J	440
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	2288	2397	4.6	9.5	3146

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-101	SD-102	SD-103	SD-104	SD-105
SAMPLE ID	SD-101-01	SD-102-01	SD-103-01	SD-104-01	SD-105-01
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	12	12	12	12	12
BOTTOM DEPTH	12	12	12	12	12
PCBS (UG/KG)					
AROCLOR-1016	3.6 U	4.1 U	2.1 U	3.3 U	4.1 U
AROCLOR-1221	4.6 U	5.2 U	2.6 U	4.2 U	5.3 U
AROCLOR-1232	4.2 U	4.7 U	2.4 U	3.8 U	4.8 U
AROCLOR-1242	4 U	4.4 U	2.3 U	3.6 U	4.5 U
AROCLOR-1248	2.3 U	2.6 U	1.3 U	2.1 U	2.6 U
AROCLOR-1254	3.5 U	3.9 U	2 U	3.1 U	3.9 U
AROCLOR-1260	240	250	2 U	3.1 U	230
TOTAL AROCLOR	240	250	0 U	0 U	230
METALS (MG/KG)					
ANTIMONY	0.59 L	0.68 J	0.057 B	0.094 B	0.65 J
ARSENIC	8.7	9.8	2.3	5.6	10.8
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1.8	2.1 J	0.73 J	1.6 J	1.9
CADMIUM	12.6	11.2	0.19	0.42	5.7
CHROMIUM	247	251 K	14.1 K	31.7 K	153 K
COBALT	NA	NA	NA	NA	NA
COPPER	98.8	111	7.8	22.1	142
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	158 K	168	5.9	17.1	144
MERCURY	0.6	0.73	0.019 J	0.048	0.56
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	39.8	45.1	10.5	23	44.3
SELENIUM	1.7	1.8	0.51	1.1	1.9
SILVER	3.1	4.3 J	0.02 J	0.074 J	2.2 J
THALLIUM	0.27	0.3	0.096	0.2	0.26
VANADIUM	NA	NA	NA	NA	NA
ZINC	371	406	33.4	72.3	389
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	26000	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	10.5	NA	NA	NA	NA
CADMIUM	0.084	NA	NA	NA	NA
CHROMIUM	1.5	NA	NA	NA	NA
COPPER	0.41	NA	NA	NA	NA
LEAD	0.51	NA	NA	NA	NA
NICKEL	0.17	NA	NA	NA	NA
SILVER	0.004	NA	NA	NA	NA
ZINC	3.4	NA	NA	NA	NA

LOCATION	**SD-106**
SAMPLE ID	**SD-106-01**
SAMPLE DATE	**20100818**
SAMPLE CODE	**NORMAL**
MATRIX	**SD**
SAMPLE TYPE	**NORMAL**
SUBMATRIX	**SB**
TOP DEPTH	**12**
BOTTOM DEPTH	**12**
VOLATILES (UG/KG)	
1,1,1,2-TETRACHLOROETHANE	NA
1,1,1-TRICHLOROETHANE	NA
1,1,2,2-TETRACHLOROETHANE	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA
1,1-DICHLOROETHANE	NA
1,1-DICHLOROETHENE	NA
1,1-DICHLOROPROPENE	NA
1,2,3-TRICHLOROBENZENE	NA
1,2,3-TRICHLOROPROPANE	NA
1,2,3-TRIMETHYLBENZENE	NA
1,2,4-TRICHLOROBENZENE	NA
1,2,4-TRIMETHYLBENZENE	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA
1,2-DIBROMOETHANE	NA
1,2-DICHLOROBENZENE	NA
1,2-DICHLOROETHANE	NA
1,2-DICHLOROPROPANE	NA
1,3-DICHLOROBENZENE	NA
1,3-DICHLOROPROPANE	NA
1,4-DICHLOROBENZENE	NA
2,2-DICHLOROPROPANE	NA
2-BUTANONE	NA
2-CHLOROETHYL VINYL ETHER	NA
2-CHLOROTOLUENE	NA
2-HEXANONE	NA
4-CHLOROTOLUENE	NA
4-ISOPROPYLTOLUENE	NA
4-METHYL-2-PENTANONE	NA
ACETONE	NA
BENZENE	NA
BROMOBENZENE	NA
BROMOCHLOROMETHANE	NA
BROMODICHLOROMETHANE	NA
BROMOFORM	NA
BROMOMETHANE	NA
CARBON DISULFIDE	NA
CARBON TETRACHLORIDE	NA
CHLOROBENZENE	NA
CHLORODIBROMOMETHANE	NA
CHLOROETHANE	NA
CHLOROFORM	NA
CHLOROMETHANE	NA
CIS-1,2-DICHLOROETHENE	NA
CIS-1,3-DICHLOROPROPENE	NA
DIBROMOMETHANE	NA
DICHLORODIFLUOROMETHANE	NA
DIISOPROPYL ETHER	NA
ETHYL TERT-BUTYL ETHER	NA
ETHYLBENZENE	NA
HEXACHLOROBUTADIENE	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-106**
SAMPLE ID	**SD-106-01**
SAMPLE DATE	**20100818**
SAMPLE CODE	**NORMAL**
MATRIX	**SD**
SAMPLE TYPE	**NORMAL**
SUBMATRIX	**SB**
TOP DEPTH	**12**
BOTTOM DEPTH	**12**
ISOPROPYLBENZENE	NA
M+P-XYLENES	NA
METHYL TERT-BUTYL ETHER	NA
METHYLENE CHLORIDE	NA
NAPHTHALENE	NA
N-BUTYLBENZENE	NA
N-PROPYLBENZENE	NA
O-XYLENE	NA
SEC-BUTYLBENZENE	NA
STYRENE	NA
TERT-AMYL METHYL ETHER	NA
TERT-BUTYLBENZENE	NA
TERTIARY-BUTYL ALCOHOL	NA
TETRACHLOROETHENE	NA
TOLUENE	NA
TOTAL 1,2-DICHLOROETHENE	NA
TOTAL XYLENES	NA
TRANS-1,2-DICHLOROETHENE	NA
TRANS-1,3-DICHLOROPROPENE	NA
TRICHLOROETHENE	NA
TRICHLOROFLUOROMETHANE	NA
VINYL ACETATE	NA
VINYL CHLORIDE	NA
SEMIVOLATILES (UG/KG)	
1,2,4-TRICHLOROBENZENE	NA
1,2-DICHLOROBENZENE	NA
1,3-DICHLOROBENZENE	NA
1,4-DICHLOROBENZENE	NA
1,4-DIOXANE	NA
1-METHYLNAPHTHALENE	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA
2,4,5-TRICHLOROPHENOL	NA
2,4,6-TRICHLOROPHENOL	NA
2,4-DICHLOROPHENOL	NA
2,4-DIMETHYLPHENOL	NA
2,4-DINITROPHENOL	NA
2,4-DINITROTOLUENE	NA
2,6-DINITROTOLUENE	NA
2-CHLORONAPHTHALENE	NA
2-CHLOROPHENOL	NA
2-METHYLNAPHTHALENE	NA
2-METHYLPHENOL	NA
2-NITROANILINE	NA
2-NITROPHENOL	NA
3&4-METHYLPHENOL	NA
3,3'-DICHLOROBENZIDINE	NA
3-NITROANILINE	NA
4,6-DINITRO-2-METHYLPHENOL	NA
4-BROMOPHENYL PHENYL ETHER	NA
4-CHLORO-3-METHYLPHENOL	NA
4-CHLOROANILINE	NA

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-106**
SAMPLE ID	**SD-106-01**
SAMPLE DATE	**20100818**
SAMPLE CODE	**NORMAL**
MATRIX	**SD**
SAMPLE TYPE	**NORMAL**
SUBMATRIX	**SB**
TOP DEPTH	**12**
BOTTOM DEPTH	**12**
4-CHLOROPHENYL PHENYL ETHER	NA
4-NITROANILINE	NA
4-NITROPHENOL	NA
ACENAPHTHENE	8.8 U
ACENAPHTHYLENE	10 U
ANILINE	NA
ANTHRACENE	8.9 U
AZOBENZENE	NA
BAP EQUIVALENT-1/2 NON-DETECTS	9.1 U
BAP EQUIVALENT-POSITIVE RESULTS	9.1 U
BENZIDINE	NA
BENZO(A)ANTHRACENE	11 U
BENZO(A)PYRENE	9.1 U
BENZO(B)FLUORANTHENE	14 U
BENZO(G,H,I)PERYLENE	9.1 U
BENZO(K)FLUORANTHENE	18 U
BENZOIC ACID	NA
BENZYL ALCOHOL	NA
BIS(2-CHLOROETHOXY)METHANE	NA
BIS(2-CHLOROETHYL)ETHER	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA
BUTYL BENZYL PHTHALATE	NA
CARBAZOLE	NA
CHRYSENE	11 U
DIBENZO(A,H)ANTHRACENE	10 U
DIBENZOFURAN	NA
DIETHYL PHTHALATE	NA
DIMETHYL PHTHALATE	NA
DI-N-BUTYL PHTHALATE	NA
DI-N-OCTYL PHTHALATE	NA
FLUORANTHENE	9.8 U
FLUORENE	12 U
HEXACHLOROBENZENE	NA
HEXACHLOROBUTADIENE	NA
HEXACHLOROCYCLOPENTADIENE	NA
HEXACHLOROETHANE	NA
INDENO(1,2,3-CD)PYRENE	9.4 U
ISOPHORONE	NA
NAPHTHALENE	7.9 U
NITROBENZENE	NA
N-NITROSODIMETHYLAMINE	NA
N-NITROSO-DI-N-PROPYLAMINE	NA
N-NITROSODIPHENYLAMINE	NA
PENTACHLOROPHENOL	NA
PHENANTHRENE	15 U
PHENOL	NA
PYRENE	9.2 U
PYRIDINE	NA
TOTAL PAHS	0 U

Table A-2
Summary of Analytical Results for Subsurface Sediment, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-106**
SAMPLE ID	**SD-106-01**
SAMPLE DATE	**20100818**
SAMPLE CODE	**NORMAL**
MATRIX	**SD**
SAMPLE TYPE	**NORMAL**
SUBMATRIX	**SB**
TOP DEPTH	**12**
BOTTOM DEPTH	**12**
PCBS (UG/KG)	
AROCLOR-1016	3.4 U
AROCLOR-1221	4.3 U
AROCLOR-1232	3.9 U
AROCLOR-1242	3.7 U
AROCLOR-1248	2.2 U
AROCLOR-1254	3.2 U
AROCLOR-1260	3.2 U
TOTAL AROCLOR	0 U
METALS (MG/KG)	
ANTIMONY	0.087 B
ARSENIC	5 L
BARIUM	NA
BERYLLIUM	1.4 L
CADMIUM	0.26 J
CHROMIUM	26.6 L
COBALT	NA
COPPER	16.5 L
HEXAVALENT CHROMIUM	NA
LEAD	12.7
MERCURY	0.052
MOLYBDENUM	NA
NICKEL	19.6 L
SELENIUM	0.98 L
SILVER	0.059 J
THALLIUM	0.18 K
VANADIUM	NA
ZINC	65.8 L
METALS (UG/KG)	
DIBUTYLTIN	NA
MONOBUTYLTIN	NA
TETRABUTYLTIN	NA
TRIBUTYLTIN	NA
MISCELLANEOUS PARAMETERS (%)	
PERCENT SOLIDS	NA
MISCELLANEOUS PARAMETERS (MG/KG)	
TOTAL ORGANIC CARBON	NA
AVS/SEM (UMOLES/G)	
ACID VOLATILE SULFIDE	NA
CADMIUM	NA
CHROMIUM	NA
COPPER	NA
LEAD	NA
NICKEL	NA
SILVER	NA
ZINC	NA

Definitions:
B = Blank contamination
J = Estimated
K = Biased high
L = Biased low
NA = Not Applicable or Not Available
R = Rejected
SB = Subsurface sediment
SD = Sediment
U = Non-detected

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-13	SD-14
SAMPLE ID	BOWLEYS_QUARTERS-02	MIDDLE_RIVER_DOWNSTREAM-02	MARSHY_POINT-02	SD-13-02	SD-14-02
SAMPLE DATE	20100821	20100820	20100821	20051020	20051020
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	12 U	10 UL
1,1,1-TRICHLOROETHANE	NA	NA	NA	12 U	10 UL
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	12 U	10 UL
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	12 U	10 UL
1,1-DICHLOROETHANE	NA	NA	NA	12 U	10 UL
1,1-DICHLOROETHENE	NA	NA	NA	12 U	10 UL
1,1-DICHLOROPROPENE	NA	NA	NA	12 U	10 UL
1,2,3-TRICHLOROBENZENE	NA	NA	NA	12 U	10 UL
1,2,3-TRICHLOROPROPANE	NA	NA	NA	12 U	10 UL
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	12 U	10 UL
1,2,4-TRICHLOROBENZENE	NA	NA	NA	12 U	10 UL
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	12 U	10 UL
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	12 U	10 UL
1,2-DIBROMOETHANE	NA	NA	NA	12 U	10 UL
1,2-DICHLOROBENZENE	NA	NA	NA	12 U	10 UL
1,2-DICHLOROETHANE	NA	NA	NA	12 U	10 UL
1,2-DICHLOROPROPANE	NA	NA	NA	12 U	10 UL
1,3-DICHLOROBENZENE	NA	NA	NA	12 U	10 UL
1,3-DICHLOROPROPANE	NA	NA	NA	12 U	10 UL
1,4-DICHLOROBENZENE	NA	NA	NA	12 U	10 UL
2,2-DICHLOROPROPANE	NA	NA	NA	12 U	10 UL
2-BUTANONE	NA	NA	NA	61 UR	52 UR
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	12 U	10 UL
2-CHLOROTOLUENE	NA	NA	NA	12 U	10 UL
2-HEXANONE	NA	NA	NA	61 U	52 UL
4-CHLOROTOLUENE	NA	NA	NA	12 U	10 UL
4-ISOPROPYLTOLUENE	NA	NA	NA	12 U	10 UL
4-METHYL-2-PENTANONE	NA	NA	NA	61 U	52 UL
ACETONE	NA	NA	NA	120 B	52 B
BENZENE	NA	NA	NA	12 U	10 UL
BROMOBENZENE	NA	NA	NA	12 U	10 UL
BROMOCHLOROMETHANE	NA	NA	NA	12 U	10 UL
BROMODICHLOROMETHANE	NA	NA	NA	12 U	10 UL
BROMOFORM	NA	NA	NA	12 U	10 UL
BROMOMETHANE	NA	NA	NA	24 U	21 UL
CARBON DISULFIDE	NA	NA	NA	12 U	10 UL
CARBON TETRACHLORIDE	NA	NA	NA	12 U	10 UL
CHLOROBENZENE	NA	NA	NA	12 U	10 UL
CHLORODIBROMOMETHANE	NA	NA	NA	12 U	10 UL
CHLOROETHANE	NA	NA	NA	24 U	21 UL
CHLOROFORM	NA	NA	NA	12 U	10 UL
CHLOROMETHANE	NA	NA	NA	24 U	21 UL
CIS-1,2-DICHLOROETHENE	NA	NA	NA	12 U	10 UL
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	12 U	10 UL
DIBROMOMETHANE	NA	NA	NA	12 U	10 UL
DICHLORODIFLUOROMETHANE	NA	NA	NA	24 U	21 UL
DIISOPROPYL ETHER	NA	NA	NA	12 U	10 UL
ETHYL TERT-BUTYL ETHER	NA	NA	NA	12 U	10 UL
ETHYLBENZENE	NA	NA	NA	12 U	10 UL
HEXACHLOROBUTADIENE	NA	NA	NA	12 U	10 UL

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-13	SD-14
SAMPLE ID	BOWLEYS_QUARTERS-02	MIDDLE_RIVER_DOWNSTREAM-02	MARSHY_POINT-02	SD-13-02	SD-14-02
SAMPLE DATE	20100821	20100820	20100821	20051020	20051020
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
ISOPROPYLBENZENE	NA	NA	NA	38 K	10 UL
M+P-XYLENES	NA	NA	NA	24 U	21 UL
METHYL TERT-BUTYL ETHER	NA	NA	NA	24 U	21 UL
METHYLENE CHLORIDE	NA	NA	NA	12 B	10 B
NAPHTHALENE	NA	NA	NA	12 U	10 UL
N-BUTYLBENZENE	NA	NA	NA	12 U	10 UL
N-PROPYLBENZENE	NA	NA	NA	12 U	10 UL
O-XYLENE	NA	NA	NA	12 U	10 UL
SEC-BUTYLBENZENE	NA	NA	NA	180 K	10 UL
STYRENE	NA	NA	NA	12 U	10 B
TERT-AMYL METHYL ETHER	NA	NA	NA	12 U	10 UL
TERT-BUTYLBENZENE	NA	NA	NA	12 U	10 UL
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	24 UR	21 UR
TETRACHLOROETHENE	NA	NA	NA	12 U	10 UL
TOLUENE	NA	NA	NA	12 U	10 UL
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	24 U	21 UL
TOTAL XYLENES	NA	NA	NA	36 U	31 UL
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	12 U	10 UL
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	12 U	10 UL
TRICHLOROETHENE	NA	NA	NA	12 U	10 UL
TRICHLOROFLUOROMETHANE	NA	NA	NA	24 U	21 UL
VINYL ACETATE	NA	NA	NA	12 U	10 UL
VINYL CHLORIDE	NA	NA	NA	24 U	21 UL
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	800 U	680 U
1,2-DICHLOROBENZENE	NA	NA	NA	800 U	680 U
1,3-DICHLOROBENZENE	NA	NA	NA	800 U	680 U
1,4-DICHLOROBENZENE	NA	NA	NA	800 U	680 U
1,4-DIOXANE	NA	NA	NA	800 U	680 U
1-METHYLNAPHTHALENE	NA	NA	NA	800 U	680 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	800 U	680 U
2,4,5-TRICHLOROPHENOL	NA	NA	NA	2000 U	1700 U
2,4,6-TRICHLOROPHENOL	NA	NA	NA	800 U	680 U
2,4-DICHLOROPHENOL	NA	NA	NA	800 U	680 U
2,4-DIMETHYLPHENOL	NA	NA	NA	800 U	680 U
2,4-DINITROPHENOL	NA	NA	NA	2000 U	1700 U
2,4-DINITROTOLUENE	NA	NA	NA	800 U	680 U
2,6-DINITROTOLUENE	NA	NA	NA	800 U	680 U
2-CHLORONAPHTHALENE	NA	NA	NA	800 U	680 U
2-CHLOROPHENOL	NA	NA	NA	800 U	680 U
2-METHYLNAPHTHALENE	NA	NA	NA	520 J	680 U
2-METHYLPHENOL	NA	NA	NA	800 U	680 U
2-NITROANILINE	NA	NA	NA	2000 U	1700 U
2-NITROPHENOL	NA	NA	NA	800 U	680 U
3&4-METHYLPHENOL	NA	NA	NA	800 U	680 U
3,3'-DICHLOROBENZIDINE	NA	NA	NA	800 UJ	680 U
3-NITROANILINE	NA	NA	NA	2000 U	1700 U
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	2000 UJ	1700 U
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	800 UJ	680 U
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	800 U	680 U
4-CHLOROANILINE	NA	NA	NA	800 U	680 U

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-13	SD-14
SAMPLE ID	BOWLEYS_QUARTERS-02	MIDDLE_RIVER_DOWNSTREAM-02	MARSHY_POINT-02	SD-13-02	SD-14-02
SAMPLE DATE	20100821	20100820	20100821	20051020	20051020
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	800 U	680 U
4-NITROANILINE	NA	NA	NA	2000 U	1700 U
4-NITROPHENOL	NA	NA	NA	2000 U	1700 U
ACENAPHTHENE	3.9 U	2.6 U	4.4 U	600 J	680 U
ACENAPHTHYLENE	4.7 U	3.1 U	5.3 U	110 J	680 U
ANILINE	NA	NA	NA	800 U	680 U
ANTHRACENE	4 U	4.8 J	4.5 U	1400 J	680 U
BAP EQUIVALENT	NA	NA	NA	8963	680 U
BAP EQUIVALENT-1/2 NON-DETECTS	4.1 U	2.7 U	4.6 U	8963	680 U
BAP EQUIVALENT-POSITIVE RESULTS	4.1 U	2.7 U	4.6 U	8963	680 U
BENZIDINE	NA	NA	NA	2000 UJ	1700 U
BENZO(A)ANTHRACENE	5.1 U	3.4 U	5.8 U	5800 J	680 U
BENZO(A)PYRENE	4.1 U	2.7 U	4.6 U	6000 J	680 U
BENZO(B)FLUORANTHENE	6.5 U	4.3 U	7.2 U	8400 J	680 U
BENZO(G,H,I)PERYLENE	4.1 U	2.7 U	4.6 U	3900 J	680 U
BENZO(K)FLUORANTHENE	8.3 U	5.5 U	9.3 U	3400 J	680 U
BENZOIC ACID	NA	NA	NA	2000 U	1700 U
BENZYL ALCOHOL	NA	NA	NA	800 UJ	680 UJ
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	800 U	680 U
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	800 U	680 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	350 J	680 U
BUTYL BENZYL PHTHALATE	NA	NA	NA	800 UJ	680 U
CARBAZOLE	NA	NA	NA	400 J	680 U
CHRYSENE	4.9 U	3.3 U	5.5 U	8900 J	680 U
DIBENZO(A,H)ANTHRACENE	4.6 U	3 U	5.1 U	1100 J	680 U
DIBENZOFURAN	NA	NA	NA	330 J	680 U
DIETHYL PHTHALATE	NA	NA	NA	800 U	680 U
DIMETHYL PHTHALATE	NA	NA	NA	800 U	680 U
DI-N-BUTYL PHTHALATE	NA	NA	NA	800 UJ	680 U
DI-N-OCTYL PHTHALATE	NA	NA	NA	800 UJ	680 U
FLUORANTHENE	4.4 U	12 J	4.9 U	9700 J	680 U
FLUORENE	5.4 U	3.6 U	6.1 U	920	680 U
HEXACHLOROBENZENE	NA	NA	NA	800 UJ	680 U
HEXACHLOROBUTADIENE	NA	NA	NA	800 U	680 U
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	800 U	680 U
HEXACHLOROETHANE	NA	NA	NA	800 U	680 U
INDENO(1,2,3-CD)PYRENE	4.2 U	2.8 U	4.7 U	4000 J	680 U
ISOPHORONE	NA	NA	NA	800 U	680 U
NAPHTHALENE	3.5 U	2.4 U	4 U	860	680 U
NITROBENZENE	NA	NA	NA	800 U	680 U
N-NITROSODIMETHYLAMINE	NA	NA	NA	800 U	680 U
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	800 U	680 U
N-NITROSODIPHENYLAMINE	NA	NA	NA	800 UJ	680 U
PENTACHLOROPHENOL	NA	NA	NA	2000 UJ	1700 U
PHENANTHRENE	6.5 U	11 J	7.3 U	6200 J	680 U
PHENOL	NA	NA	NA	800 U	680 U
PYRENE	4.2 U	8.9 J	4.7 U	24000 J	680 U
PYRIDINE	NA	NA	NA	800 U	680 U
TOTAL PAHS	0 U	36.7	0 U	85810	0 U

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-13	SD-14
SAMPLE ID	BOWLEYS_QUARTERS-02	MIDDLE_RIVER_DOWNSTREAM-02	MARSHY_POINT-02	SD-13-02	SD-14-02
SAMPLE DATE	20100821	20100820	20100821	20051020	20051020
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
PCBS (UG/KG)					
AROCLOR-1016	3.1 U	3.4 U	3.4 U	41 U	35 U
AROCLOR-1221	3.9 U	4.4 U	4.4 U	41 U	35 U
AROCLOR-1232	3.5 U	3.9 U	3.9 U	41 U	35 U
AROCLOR-1242	3.4 U	3.7 U	3.8 U	41 U	35 U
AROCLOR-1248	1.9 U	2.2 U	2.2 U	41 U	35 U
AROCLOR-1254	2.9 U	3.2 U	3.3 U	41 U	35 U
AROCLOR-1260	2.9 U	3.2 U	3.3 U	670	35 U
TOTAL AROCLOR	0 U	0 U	0 U	670	0 U
METALS (MG/KG)					
ANTIMONY	0.073 J	0.7 L	0.096 J	3.4	0.65 U
ARSENIC	5	7.7 L	6.9	5.6	3.8
BARIUM	NA	NA	NA	112	26.3
BERYLLIUM	1	1.6	1.5	2	1.7
CADMIUM	0.28	0.69 L	0.36	21.8	0.52
CHROMIUM	23.1	37	33.2	499	35.6
COBALT	NA	NA	NA	13.9	9.5
COPPER	15.6	26.2 L	16.2	67.4	16
HEXAVALENT CHROMIUM	NA	NA	NA	1.2 UL	1 UL
LEAD	14.2	27.6	18.7	169	11
MERCURY	0.05	0.083	0.053	1.9 L	0.04 L
MOLYBDENUM	NA	NA	NA	2.7	1.2
NICKEL	18.7	25.6 L	27.6	34.2	17.4
SELENIUM	1	1.3 L	1.3	0.57 L	0.57 UL
SILVER	0.064 J	0.11 J	0.078 J	28.6	2 L
THALLIUM	0.18	0.23	0.21	1.3	0.97 U
VANADIUM	NA	NA	NA	51.7	26.2
ZINC	61.1	93.5 L	95.9	452	64.5
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	41	48
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	24600	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-16	SD-19	SD-27	SD-28	SD-29
SAMPLE ID	SD-16-02	SD-19-02	SD-27-02	SD-28-02	SD-29-02
SAMPLE DATE	20051020	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	16 U	7 U	7 U	11 U	9 U
1,1,1-TRICHLOROETHANE	16 U	7 U	7 U	11 U	9 U
1,1,2,2-TETRACHLOROETHANE	16 U	7 U	7 U	11 U	9 U
1,1,2-TRICHLOROTRIFLUOROETHANE	16 U	7 U	7 U	11 U	9 U
1,1-DICHLOROETHANE	16 U	7 U	7 U	11 U	9 U
1,1-DICHLOROETHENE	16 U	7 U	7 U	11 U	9 U
1,1-DICHLOROPROPENE	16 U	7 U	7 U	11 U	9 U
1,2,3-TRICHLOROBENZENE	16 U	7 U	7 U	11 U	9 U
1,2,3-TRICHLOROPROPANE	16 U	7 U	7 U	11 U	9 U
1,2,3-TRIMETHYLBENZENE	16 U	7 U	7 U	11 U	9 U
1,2,4-TRICHLOROBENZENE	16 U	7 U	7 U	11 U	9 U
1,2,4-TRIMETHYLBENZENE	16 U	7 U	7 U	11 U	9 U
1,2-DIBROMO-3-CHLOROPROPANE	16 U	7 U	7 U	11 U	9 U
1,2-DIBROMOETHANE	16 U	7 U	7 U	11 U	9 U
1,2-DICHLOROBENZENE	16 U	7 U	7 U	11 U	9 U
1,2-DICHLOROETHANE	16 U	7 U	7 U	11 U	9 U
1,2-DICHLOROPROPANE	16 U	7 U	7 U	11 U	9 U
1,3-DICHLOROBENZENE	16 U	7 U	7 U	11 U	9 U
1,3-DICHLOROPROPANE	16 U	7 U	7 U	11 U	9 U
1,4-DICHLOROBENZENE	16 U	7 U	7 U	11 U	9 U
2,2-DICHLOROPROPANE	16 U	7 U	7 U	11 U	9 U
2-BUTANONE	40 J	21 J	34 UR	13 J	43 U
2-CHLOROETHYL VINYL ETHER	16 U	7 U	7 U	11 U	9 U
2-CHLOROTOLUENE	16 U	7 U	7 U	11 U	9 U
2-HEXANONE	78 U	36 U	34 U	56 U	43 U
4-CHLOROTOLUENE	16 U	7 U	7 U	11 U	9 U
4-ISOPROPYLTOLUENE	16 U	7 U	7 U	11 U	9 U
4-METHYL-2-PENTANONE	78 U	36 U	34 U	56 U	43 U
ACETONE	240	110	21 B	45 B	54 B
BENZENE	16 U	7 U	7 U	11 U	9 U
BROMOBENZENE	16 U	7 U	7 U	11 U	9 U
BROMOCHLOROMETHANE	16 U	7 U	7 U	11 U	9 U
BROMODICHLOROMETHANE	16 U	7 U	7 U	11 U	9 U
BROMOFORM	16 U	7 U	7 U	11 U	9 U
BROMOMETHANE	31 U	14 U	14 U	22 U	17 U
CARBON DISULFIDE	11 J	7 U	7 U	11 U	9 U
CARBON TETRACHLORIDE	16 U	7 U	7 U	11 U	9 U
CHLOROBENZENE	16 U	7 U	7 J	11 U	9 U
CHLORODIBROMOMETHANE	16 U	7 U	7 U	11 U	9 U
CHLOROETHANE	31 U	14 U	14 U	22 U	17 U
CHLOROFORM	16 U	7 U	7 U	11 U	9 U
CHLOROMETHANE	31 U	14 U	14 U	22 U	17 U
CIS-1,2-DICHLOROETHENE	16 U	2 J	7 U	11 U	9 U
CIS-1,3-DICHLOROPROPENE	16 U	7 U	7 U	11 U	9 U
DIBROMOMETHANE	16 U	7 U	7 U	11 U	9 U
DICHLORODIFLUOROMETHANE	31 U	14 U	14 U	22 U	17 U
DIISOPROPYL ETHER	16 U	7 U	7 U	11 U	9 U
ETHYL TERT-BUTYL ETHER	16 U	7 U	7 U	11 U	9 U
ETHYLBENZENE	16 U	7 U	7 U	11 U	9 U
HEXACHLOROBUTADIENE	16 U	7 U	7 U	11 U	9 U

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-16	SD-19	SD-27	SD-28	SD-29
SAMPLE ID	SD-16-02	SD-19-02	SD-27-02	SD-28-02	SD-29-02
SAMPLE DATE	20051020	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
ISOPROPYLBENZENE	16 U	3 J	7 U	11 U	9 U
M+P-XYLENES	31 U	14 U	14 U	22 U	17 U
METHYL TERT-BUTYL ETHER	2 J	14 U	14 U	22 U	17 U
METHYLENE CHLORIDE	16 B	9 B	6 B	6 B	5 B
NAPHTHALENE	16 U	7 U	7 U	11 U	9 U
N-BUTYLBENZENE	16 U	7 U	7 U	11 U	9 U
N-PROPYLBENZENE	16 U	7 U	7 U	11 U	9 U
O-XYLENE	16 U	7 U	7 U	11 U	9 U
SEC-BUTYLBENZENE	16 U	7 J	7 U	11 U	9 U
STYRENE	16 B	7 U	7 U	11 U	9 U
TERT-AMYL METHYL ETHER	16 U	7 U	7 U	11 U	9 U
TERT-BUTYLBENZENE	16 U	7 U	7 U	11 U	9 U
TERTIARY-BUTYL ALCOHOL	31 UR	14 UR	14 UR	22 UR	17 UR
TETRACHLOROETHENE	16 U	7 U	7 U	11 U	9 U
TOLUENE	16 U	10	1 J	3 J	9
TOTAL 1,2-DICHLOROETHENE	31 U	14 U	14 U	22 U	17 U
TOTAL XYLENES	47 U	22 U	21 U	34 U	26 U
TRANS-1,2-DICHLOROETHENE	16 U	7 U	7 U	11 U	9 U
TRANS-1,3-DICHLOROPROPENE	16 U	7 U	7 U	11 U	9 U
TRICHLOROETHENE	16 U	7 U	7 U	11 U	9 U
TRICHLOROFLUOROMETHANE	31 U	14 U	14 U	22 U	17 U
VINYL ACETATE	16 U	7 U	7 U	11 U	9 U
VINYL CHLORIDE	31 U	14 U	14 U	22 U	17 U
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	1000 U	490 U	460 U	740 U	570 U
1,2-DICHLOROBENZENE	1000 U	490 U	460 U	740 U	570 U
1,3-DICHLOROBENZENE	1000 U	490 U	460 U	740 U	570 U
1,4-DICHLOROBENZENE	1000 U	490 U	460 U	740 U	570 U
1,4-DIOXANE	1000 U	490 U	460 U	740 U	570 U
1-METHYLNAPHTHALENE	1000 U	490 U	460 U	740 U	570 U
2,2'-OXYBIS(1-CHLOROPROPANE)	1000 U	490 U	460 U	740 U	570 U
2,4,5-TRICHLOROPHENOL	2600 U	1200 U	1100 U	1800 U	1400 U
2,4,6-TRICHLOROPHENOL	1000 U	490 U	460 U	740 U	570 U
2,4-DICHLOROPHENOL	1000 U	490 U	460 U	740 U	570 U
2,4-DIMETHYLPHENOL	1000 U	490 U	460 U	740 U	570 U
2,4-DINITROPHENOL	2600 U	1200 U	1100 U	1800 U	1400 U
2,4-DINITROTOLUENE	1000 U	490 U	460 U	740 U	570 U
2,6-DINITROTOLUENE	1000 U	490 U	460 U	740 U	570 U
2-CHLORONAPHTHALENE	1000 U	490 U	460 U	740 U	570 U
2-CHLOROPHENOL	1000 U	490 U	460 U	740 U	570 U
2-METHYLNAPHTHALENE	340 J	490 U	460 U	740 U	570 U
2-METHYLPHENOL	1000 U	490 U	460 U	740 U	570 U
2-NITROANILINE	2600 U	1200 U	1100 U	1800 U	1400 U
2-NITROPHENOL	1000 U	490 U	460 U	740 U	570 U
3&4-METHYLPHENOL	1000 U	490 U	460 U	740 U	570 U
3,3'-DICHLOROBENZIDINE	1000 UJ	490 UJ	460 U	740 U	570 U
3-NITROANILINE	2600 U	1200 U	1100 U	1800 U	1400 U
4,6-DINITRO-2-METHYLPHENOL	2600 U	1200 U	1100 U	1800 U	1400 U
4-BROMOPHENYL PHENYL ETHER	1000 U	490 U	460 U	740 U	570 U
4-CHLORO-3-METHYLPHENOL	1000 U	490 U	460 U	740 U	570 U
4-CHLOROANILINE	1000 U	490 U	460 U	740 U	570 U

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-16	SD-19	SD-27	SD-28	SD-29
SAMPLE ID	SD-16-02	SD-19-02	SD-27-02	SD-28-02	SD-29-02
SAMPLE DATE	20051020	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
4-CHLOROPHENYL PHENYL ETHER	1000 U	490 U	460 U	740 U	570 U
4-NITROANILINE	2600 U	1200 U	1100 U	1800 U	1400 U
4-NITROPHENOL	2600 U	1200 U	1100 U	1800 U	1400 U
ACENAPHTHENE	530 J	490 U	460 U	740 U	570 U
ACENAPHTHYLENE	1000 U	490 U	460 U	740 U	570 U
ANILINE	1000 U	490 U	460 U	740 U	570 U
ANTHRACENE	1100	490 U	460 U	740 U	570 U
BAP EQUIVALENT	5716	194	460 U	740 U	570 U
BAP EQUIVALENT-1/2 NON-DETECTS	5716	466	460 U	740 U	570 U
BAP EQUIVALENT-POSITIVE RESULTS	5716	194	460 U	740 U	570 U
BENZIDINE	2600 UJ	1200 UJ	1100 U	1800 U	1400 U
BENZO(A)ANTHRACENE	3600 J	150 J	460 U	740 U	570 U
BENZO(A)PYRENE	3900 J	160 J	460 U	740 U	570 U
BENZO(B)FLUORANTHENE	5200 J	190 J	460 U	740 U	570 U
BENZO(G,H,I)PERYLENE	2300 J	490 UJ	460 U	740 U	570 U
BENZO(K)FLUORANTHENE	2100 J	490 UJ	460 U	740 U	570 U
BENZOIC ACID	2600 U	1200 U	1100 U	1800 U	1400 U
BENZYL ALCOHOL	1000 U	490 U	460 U	740 U	570 U
BIS(2-CHLOROETHOXY)METHANE	1000 U	490 U	460 U	740 U	570 U
BIS(2-CHLOROETHYL)ETHER	1000 U	490 U	460 U	740 U	570 U
BIS(2-ETHYLHEXYL)PHTHALATE	350 J	140 J	460 U	740 U	570 U
BUTYL BENZYL PHTHALATE	1000 UJ	490 UJ	460 U	740 U	570 U
CARBAZOLE	410 J	490 U	460 U	740 U	570 U
CHRYSENE	5000 J	200 J	460 U	740 U	570 U
DIBENZO(A,H)ANTHRACENE	640 J	490 UJ	460 U	740 U	570 U
DIBENZOFURAN	240 J	490 U	460 U	740 U	570 U
DIETHYL PHTHALATE	1000 U	490 U	460 U	740 U	570 U
DIMETHYL PHTHALATE	1000 U	490 U	460 U	740 U	570 U
DI-N-BUTYL PHTHALATE	1000 U	490 U	460 U	740 U	570 U
DI-N-OCTYL PHTHALATE	1000 UJ	490 UJ	460 U	740 U	570 U
FLUORANTHENE	7700	340 J	460 U	740 U	140 J
FLUORENE	490 J	490 U	460 U	740 U	570 U
HEXACHLOROBENZENE	1000 U	490 U	460 U	740 U	570 U
HEXACHLOROBUTADIENE	1000 U	490 U	460 U	740 U	570 U
HEXACHLOROCYCLOPENTADIENE	1000 U	490 U	460 U	740 U	570 U
HEXACHLOROETHANE	1000 U	490 U	460 U	740 U	570 U
INDENO(1,2,3-CD)PYRENE	2700 J	490 UJ	460 U	740 U	570 U
ISOPHORONE	1000 U	490 U	460 U	740 U	570 U
NAPHTHALENE	540 J	490 U	460 U	740 U	570 U
NITROBENZENE	1000 U	490 U	460 U	740 U	570 U
N-NITROSODIMETHYLAMINE	1000 U	490 U	460 U	740 U	570 U
N-NITROSO-DI-N-PROPYLAMINE	1000 U	490 U	460 U	740 U	570 U
N-NITROSODIPHENYLAMINE	1000 U	490 U	460 U	740 U	570 U
PENTACHLOROPHENOL	2600 U	1200 U	1100 U	1800 U	1400 U
PHENANTHRENE	3700	170 J	460 U	740 U	570 U
PHENOL	1000 U	490 U	460 U	740 U	570 U
PYRENE	10000 J	370 J	460 U	740 U	570 U
PYRIDINE	1000 U	490 U	460 U	740 U	570 U
TOTAL PAHS	49840	1580	0 U	0 U	140

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-16	SD-19	SD-27	SD-28	SD-29
SAMPLE ID	SD-16-02	SD-19-02	SD-27-02	SD-28-02	SD-29-02
SAMPLE DATE	20051020	20051021	20051021	20051021	20051021
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
PCBS (UG/KG)					
AROCLOR-1016	53 U	25 U	24 U	38 U	29 U
AROCLOR-1221	53 U	25 U	24 U	38 U	29 U
AROCLOR-1232	53 U	25 U	24 U	38 U	29 U
AROCLOR-1242	53 U	25 U	24 U	38 U	29 U
AROCLOR-1248	53 U	25 U	24 U	38 U	29 U
AROCLOR-1254	53 U	25 U	24 U	38 U	29 U
AROCLOR-1260	53 U	49 J	67 J	38 U	29 U
TOTAL AROCLOR	0 U	49	67	0 U	0 U
METALS (MG/KG)					
ANTIMONY	2.2	0.46 U	0.38 UL	0.54 UL	0.85 L
ARSENIC	2.8	3	2.1	5.4	5.9
BARIUM	104	28.2	8	32.7	26.8
BERYLLIUM	2.6	1.1	1.1	1.9	2
CADMIUM	56.4	2.7	0.64	1.1	0.57
CHROMIUM	1080	79	24.2 K	56.2 K	47.9 K
COBALT	18.2	6.4	3.9	14	9.8
COPPER	95.2	15.2	7.4 J	19.8 J	21.5 J
HEXAVALENT CHROMIUM	1.6 UL	0.75 UL	0.68 UL	1.1 UL	0.87 UL
LEAD	219	37	23.8	25.6	18.3
MERCURY	6.1 L	0.17 L	0.05 B	2.4 K	0.25 K
MOLYBDENUM	1.9	0.79	0.4	1.2	0.84
NICKEL	52.6	14.6	8.4	23.6	24.2
SELENIUM	1.04 UL	0.4 UL	0.33 U	0.47 U	0.83 U
SILVER	24.7	3.5	0.19 L	0.21 L	0.17 L
THALLIUM	1.78 U	0.86	0.57 U	0.8 U	0.71 U
VANADIUM	78.3	24.2	15.8	35.9	43.5
ZINC	612	76	32.4	91.9	62.1
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	2.8 U	NA
MONOBUTYLTIN	NA	NA	NA	3.7 U	NA
TETRABUTYLTIN	NA	NA	NA	3.7 U	NA
TRIBUTYLTIN	NA	NA	NA	3.3 U	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	32	67	72	44	58
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	6800	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-31	SD-40	SD-42	SD-43	SD-44
SAMPLE ID	SD-31-02	SD-40-02	SD-42-02	SD-43-02	SD-44-02
SAMPLE DATE	20051021	20051021	20051021	20081117	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	22	22
BOTTOM DEPTH	24	24	24	26	26
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	15 U	13 U	12 UJ	NA	NA
1,1,1-TRICHLOROETHANE	15 U	13 U	12 UJ	NA	NA
1,1,2,2-TETRACHLOROETHANE	15 U	13 UJ	12 UJ	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	15 U	13 U	12 UJ	NA	NA
1,1-DICHLOROETHANE	15 U	13 U	12 UJ	NA	NA
1,1-DICHLOROETHENE	15 U	13 U	12 UJ	NA	NA
1,1-DICHLOROPROPENE	15 U	13 U	12 UJ	NA	NA
1,2,3-TRICHLOROBENZENE	15 U	13 UJ	12 UJ	NA	NA
1,2,3-TRICHLOROPROPANE	15 U	13 UJ	12 UJ	NA	NA
1,2,3-TRIMETHYLBENZENE	15 U	13 UJ	12 UJ	NA	NA
1,2,4-TRICHLOROBENZENE	15 U	13 UJ	12 UJ	NA	NA
1,2,4-TRIMETHYLBENZENE	15 U	13 UJ	12 UJ	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	15 U	13 UJ	12 UJ	NA	NA
1,2-DIBROMOETHANE	15 U	13 U	12 UJ	NA	NA
1,2-DICHLOROBENZENE	15 U	13 UJ	12 UJ	NA	NA
1,2-DICHLOROETHANE	15 U	13 U	12 UJ	NA	NA
1,2-DICHLOROPROPANE	15 U	13 U	12 UJ	NA	NA
1,3-DICHLOROBENZENE	1 B	13 UJ	12 UJ	NA	NA
1,3-DICHLOROPROPANE	15 U	13 U	12 UJ	NA	NA
1,4-DICHLOROBENZENE	15 U	13 UJ	12 UJ	NA	NA
2,2-DICHLOROPROPANE	15 U	13 U	12 UJ	NA	NA
2-BUTANONE	74 U	66 UR	62 UR	NA	NA
2-CHLOROETHYL VINYL ETHER	15 U	13 U	12 UJ	NA	NA
2-CHLOROTOLUENE	15 U	13 UJ	12 UJ	NA	NA
2-HEXANONE	74 U	66 U	62 UJ	NA	NA
4-CHLOROTOLUENE	15 U	13 UJ	12 UJ	NA	NA
4-ISOPROPYLTOLUENE	15 U	13 UJ	12 UJ	NA	NA
4-METHYL-2-PENTANONE	74 U	66 U	62 UJ	NA	NA
ACETONE	140 B	240 J	120 J	NA	NA
BENZENE	15 U	13 U	12 UJ	NA	NA
BROMOBENZENE	15 U	13 UJ	12 UJ	NA	NA
BROMOCHLOROMETHANE	15 U	13 U	12 UJ	NA	NA
BROMODICHLOROMETHANE	15 U	13 U	12 UJ	NA	NA
BROMOFORM	15 U	13 U	12 UJ	NA	NA
BROMOMETHANE	30 U	27 U	25 UJ	NA	NA
CARBON DISULFIDE	7 J	5 J	8 J	NA	NA
CARBON TETRACHLORIDE	15 U	13 U	12 UJ	NA	NA
CHLOROBENZENE	15 U	13 U	12 UJ	NA	NA
CHLORODIBROMOMETHANE	15 U	13 U	12 UJ	NA	NA
CHLOROETHANE	30 U	27 U	25 UJ	NA	NA
CHLOROFORM	15 U	13 U	12 UJ	NA	NA
CHLOROMETHANE	30 U	27 U	25 UJ	NA	NA
CIS-1,2-DICHLOROETHENE	15 U	13 U	12 UJ	NA	NA
CIS-1,3-DICHLOROPROPENE	15 U	13 U	12 UJ	NA	NA
DIBROMOMETHANE	15 U	13 U	12 UJ	NA	NA
DICHLORODIFLUOROMETHANE	30 U	27 U	25 UJ	NA	NA
DIISOPROPYL ETHER	15 U	13 U	12 UJ	NA	NA
ETHYL TERT-BUTYL ETHER	15 U	13 U	12 UJ	NA	NA
ETHYLBENZENE	15 U	13 U	12 UJ	NA	NA
HEXACHLOROBUTADIENE	15 U	13 UJ	12 UJ	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-31	SD-40	SD-42	SD-43	SD-44
SAMPLE ID	SD-31-02	SD-40-02	SD-42-02	SD-43-02	SD-44-02
SAMPLE DATE	20051021	20051021	20051021	20081117	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	22	22
BOTTOM DEPTH	24	24	24	26	26
ISOPROPYLBENZENE	15 U	13 UJ	12 UJ	NA	NA
M+P-XYLENES	30 U	27 U	25 UJ	NA	NA
METHYL TERT-BUTYL ETHER	3 J	27 U	25 UJ	NA	NA
METHYLENE CHLORIDE	15 U	13 U	12 UJ	NA	NA
NAPHTHALENE	15 U	13 UJ	12 UJ	NA	NA
N-BUTYLBENZENE	15 U	13 UJ	12 UJ	NA	NA
N-PROPYLBENZENE	15 U	13 UJ	12 UJ	NA	NA
O-XYLENE	15 U	13 U	12 UJ	NA	NA
SEC-BUTYLBENZENE	15 U	13 UJ	12 UJ	NA	NA
STYRENE	15 U	13 U	12 UJ	NA	NA
TERT-AMYL METHYL ETHER	15 U	13 U	12 UJ	NA	NA
TERT-BUTYLBENZENE	15 U	13 U	12 UJ	NA	NA
TERTIARY-BUTYL ALCOHOL	30 UR	27 UR	25 UR	NA	NA
TETRACHLOROETHENE	15 U	13 U	12 UJ	NA	NA
TOLUENE	15 U	13 U	12 UJ	NA	NA
TOTAL 1,2-DICHLOROETHENE	30 U	27 U	25 UJ	NA	NA
TOTAL XYLENES	44 U	40 U	37 UJ	NA	NA
TRANS-1,2-DICHLOROETHENE	15 U	13 U	12 UJ	NA	NA
TRANS-1,3-DICHLOROPROPENE	15 U	13 U	12 UJ	NA	NA
TRICHLOROETHENE	15 U	13 U	12 UJ	NA	NA
TRICHLOROFLUOROMETHANE	30 U	27 U	25 UJ	NA	NA
VINYL ACETATE	15 U	13 U	12 UJ	NA	NA
VINYL CHLORIDE	30 U	27 U	25 UJ	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	1000 UJ	880 U	NA	NA	NA
1,2-DICHLOROBENZENE	1000 UJ	880 U	NA	NA	NA
1,3-DICHLOROBENZENE	1000 UJ	880 U	NA	NA	NA
1,4-DICHLOROBENZENE	1000 UJ	74 B	NA	NA	NA
1,4-DIOXANE	1000 UJ	880 U	NA	NA	NA
1-METHYLNAPHTHALENE	1000 UJ	880 U	NA	440 U	630 U
2,2'-OXYBIS(1-CHLOROPROPANE)	1000 UJ	880 U	NA	NA	NA
2,4,5-TRICHLOROPHENOL	2500 UJ	2200 U	NA	NA	NA
2,4,6-TRICHLOROPHENOL	1000 UJ	880 U	NA	NA	NA
2,4-DICHLOROPHENOL	1000 UJ	880 U	NA	NA	NA
2,4-DIMETHYLPHENOL	1000 UJ	880 U	NA	NA	NA
2,4-DINITROPHENOL	2500 UJ	2200 U	NA	NA	NA
2,4-DINITROTOLUENE	1000 UJ	880 U	NA	NA	NA
2,6-DINITROTOLUENE	1000 UJ	880 U	NA	NA	NA
2-CHLORONAPHTHALENE	1000 UJ	880 U	NA	NA	NA
2-CHLOROPHENOL	1000 UJ	880 U	NA	NA	NA
2-METHYLNAPHTHALENE	1000 UJ	880 U	NA	440 U	630 U
2-METHYLPHENOL	1000 UJ	880 U	NA	NA	NA
2-NITROANILINE	2500 UJ	2200 U	NA	NA	NA
2-NITROPHENOL	1000 UJ	880 U	NA	NA	NA
3&4-METHYLPHENOL	1000 UJ	880 U	NA	NA	NA
3,3'-DICHLOROBENZIDINE	1000 UJ	880 U	NA	NA	NA
3-NITROANILINE	2500 UJ	2200 U	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	2500 UJ	2200 U	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	1000 UJ	880 U	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	1000 UJ	880 U	NA	NA	NA
4-CHLOROANILINE	1000 UJ	880 U	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-31	SD-40	SD-42	SD-43	SD-44
SAMPLE ID	SD-31-02	SD-40-02	SD-42-02	SD-43-02	SD-44-02
SAMPLE DATE	20051021	20051021	20051021	20081117	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	22	22
BOTTOM DEPTH	24	24	24	26	26
4-CHLOROPHENYL PHENYL ETHER	1000 UJ	880 U	NA	NA	NA
4-NITROANILINE	2500 UJ	2200 U	NA	NA	NA
4-NITROPHENOL	2500 UJ	2200 U	NA	NA	NA
ACENAPHTHENE	1000 UJ	190 B	NA	440 U	630 U
ACENAPHTHYLENE	1000 UJ	880 U	NA	440 U	630 U
ANILINE	1000 UJ	880 U	NA	NA	NA
ANTHRACENE	1000 UJ	190 J	NA	440 U	630 U
BAP EQUIVALENT	1000 U	964	NA	440 U	630 U
BAP EQUIVALENT-1/2 NON-DETECTS	1000 U	1408	NA	440 U	630 U
BAP EQUIVALENT-POSITIVE RESULTS	1000 U	964	NA	440 U	630 U
BENZIDINE	2500 UJ	2200 U	NA	NA	NA
BENZO(A)ANTHRACENE	1000 UJ	660 J	NA	440 U	630 U
BENZO(A)PYRENE	1000 UJ	740 J	NA	440 U	630 U
BENZO(B)FLUORANTHENE	1000 UJ	1000	NA	440 U	630 U
BENZO(G,H,I)PERYLENE	1000 UJ	690 J	NA	440 U	630 U
BENZO(K)FLUORANTHENE	1000 UJ	880 U	NA	440 U	630 U
BENZOIC ACID	2500 UJ	2200 U	NA	NA	NA
BENZYL ALCOHOL	1000 UJ	880 UJ	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	1000 UJ	880 U	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	1000 UJ	880 U	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	980 J	1700	NA	NA	NA
BUTYL BENZYL PHTHALATE	1000 UJ	880 U	NA	NA	NA
CARBAZOLE	1000 UJ	880 U	NA	NA	NA
CHRYSENE	1000 UJ	1000	NA	440 U	630 U
DIBENZO(A,H)ANTHRACENE	1000 UJ	880 U	NA	440 U	630 U
DIBENZOFURAN	1000 UJ	880 U	NA	NA	NA
DIETHYL PHTHALATE	1000 UJ	880 U	NA	NA	NA
DIMETHYL PHTHALATE	1000 UJ	880 U	NA	NA	NA
DI-N-BUTYL PHTHALATE	1000 UJ	880 U	NA	NA	NA
DI-N-OCTYL PHTHALATE	1000 UJ	880 U	NA	NA	NA
FLUORANTHENE	1000 UJ	890	NA	440 U	630 U
FLUORENE	1000 UJ	880 U	NA	440 U	630 U
HEXACHLOROBENZENE	1000 UJ	880 U	NA	NA	NA
HEXACHLOROBUTADIENE	1000 UJ	880 U	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	1000 UR	880 U	NA	NA	NA
HEXACHLOROETHANE	1000 UR	880 U	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	1000 UJ	570 J	NA	440 U	630 U
ISOPHORONE	1000 UJ	880 U	NA	NA	NA
NAPHTHALENE	1000 UJ	880 U	NA	440 U	630 U
NITROBENZENE	1000 UJ	880 U	NA	NA	NA
N-NITROSODIMETHYLAMINE	1000 UJ	880 U	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	1000 UJ	880 U	NA	NA	NA
N-NITROSODIPHENYLAMINE	1000 UJ	880 U	NA	NA	NA
PENTACHLOROPHENOL	2500 UJ	2200 U	NA	NA	NA
PHENANTHRENE	1000 UJ	400 J	NA	440 U	630 U
PHENOL	1000 UJ	880 U	NA	NA	NA
PYRENE	1000 UJ	2100	NA	440 U	630 U
PYRIDINE	1000 UJ	880 U	NA	NA	NA
TOTAL PAHS	0 U	8240	NA	0 U	0 U

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-31	SD-40	SD-42	SD-43	SD-44
SAMPLE ID	SD-31-02	SD-40-02	SD-42-02	SD-43-02	SD-44-02
SAMPLE DATE	20051021	20051021	20051021	20081117	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	22	22
BOTTOM DEPTH	24	24	24	26	26
PCBS (UG/KG)					
AROCLOR-1016	52 U	45 U	NA	28 U	31 U
AROCLOR-1221	52 U	45 U	NA	28 U	31 U
AROCLOR-1232	52 U	45 U	NA	28 U	31 U
AROCLOR-1242	52 U	45 U	NA	28 U	31 U
AROCLOR-1248	52 U	45 U	NA	28 U	31 U
AROCLOR-1254	52 U	45 U	NA	28 U	31 U
AROCLOR-1260	75	960	NA	28 U	31 U
TOTAL AROCLOR	75	960	NA	0 U	0 U
METALS (MG/KG)					
ANTIMONY	1 L	0.94 U	0.7 U	0.17 U	0.18 U
ARSENIC	8.1	4	5.6	3.3	2.3
BARIUM	45.7	73.5	37.3	84.8 J	28.4
BERYLLIUM	1.9	2.2	2.4	1.6 J	1.9
CADMIUM	2.9	56.6	1.6	0.77	0.11
CHROMIUM	102 K	945	46.8	25 J	19.2
COBALT	17.7	20	22.3	17.6	14.2
COPPER	46 J	113	34.5	19.9 J	12.5
HEXAVALENT CHROMIUM	1.5 UL	1.3 U	1.2 U	NA	NA
LEAD	58.5	316	68	17 J	7.3
MERCURY	0.4 K	0.61	0.21	0.054 B	0.037
MOLYBDENUM	0.54	1.9	1.7	0.5	1.2
NICKEL	31	51.2	31.5	21.5	16
SELENIUM	0.76 U	0.82 U	0.61 U	0.96	0.79
SILVER	0.85 L	3.4	0.46 B	0.1 U	0.11 U
THALLIUM	1.31 U	1.41 U	1.05 U	0.29 U	0.31 U
VANADIUM	40.4	66.3	34.9	36.5 J	30.1
ZINC	186	559	136	56	41.4
METALS (UG/KG)					
DIBUTYLTIN	5.5	8.5	NA	NA	NA
MONOBUTYLTIN	5.5 U	4.1 UR	NA	NA	NA
TETRABUTYLTIN	5.5 U	4.1 U	NA	NA	NA
TRIBUTYLTIN	4.8 U	3.7 U	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	32	38	40	60	53
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	54000 K	50000	NA	16000	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-45	SD-46	SD-47	SD-48	SD-49
SAMPLE ID	SD-45-02	SD-46-02	SD-47-02	SD-48-02	SD-49-02
SAMPLE DATE	20081117	20081115	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-45	SD-46	SD-47	SD-48	SD-49
SAMPLE ID	SD-45-02	SD-46-02	SD-47-02	SD-48-02	SD-49-02
SAMPLE DATE	20081117	20081115	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	600 U	780 U	570 U	410 U	530 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	600 U	780 U	570 U	410 U	530 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-45	SD-46	SD-47	SD-48	SD-49
SAMPLE ID	SD-45-02	SD-46-02	SD-47-02	SD-48-02	SD-49-02
SAMPLE DATE	20081117	20081115	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	600 U	780 U	570 U	410 U	530 U
ACENAPHTHYLENE	600 U	780 U	570 U	410 U	530 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	600 U	780 U	570 U	410 U	530 U
BAP EQUIVALENT	600 U	780 U	570 U	410 U	530 U
BAP EQUIVALENT-1/2 NON-DETECTS	600 U	780 U	570 U	410 U	530 U
BAP EQUIVALENT-POSITIVE RESULTS	600 U	780 U	570 U	410 U	530 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	600 U	780 U	570 U	410 U	530 U
BENZO(A)PYRENE	600 U	780 U	570 U	410 U	530 U
BENZO(B)FLUORANTHENE	600 U	780 U	570 U	410 U	530 U
BENZO(G,H,I)PERYLENE	600 U	780 U	570 U	410 U	530 U
BENZO(K)FLUORANTHENE	600 U	780 U	570 U	410 U	530 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	600 U	780 U	570 U	410 U	530 U
DIBENZO(A,H)ANTHRACENE	600 U	780 U	570 U	410 U	530 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	600 U	780 U	570 U	410 U	530 U
FLUORENE	600 U	780 U	570 U	410 U	530 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	600 U	780 U	570 U	410 U	530 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	600 U	780 U	570 U	410 U	530 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	600 U	780 U	570 U	410 U	530 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	600 U	780 U	570 U	410 U	530 U
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	0 U	0 U	0 U	0 U

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-45	SD-46	SD-47	SD-48	SD-49
SAMPLE ID	SD-45-02	SD-46-02	SD-47-02	SD-48-02	SD-49-02
SAMPLE DATE	20081117	20081115	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
PCBS (UG/KG)					
AROCLOR-1016	30 U	39 U	28 U	20 U	33 U
AROCLOR-1221	30 U	39 U	28 U	20 U	33 U
AROCLOR-1232	30 U	39 U	28 U	20 U	33 U
AROCLOR-1242	30 U	39 U	28 U	20 U	33 U
AROCLOR-1248	30 U	39 U	28 U	20 U	33 U
AROCLOR-1254	30 U	39 U	28 U	20 U	33 U
AROCLOR-1260	30 U	39 U	28 U	20 U	33 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.18 U	0.25 L	0.17 UL	0.12 UL	0.19 U
ARSENIC	3.2	7	4.5	0.77 B	7
BARIUM	34.3	41.9	16.5	10.7	22.6 J
BERYLLIUM	1.3	2.6	2	0.69	1.3 J
CADMIUM	0.2	17.5	0.1	0.016	0.011 U
CHROMIUM	20.1	336	16.3	11.8	20.6 J
COBALT	10.5	21.7	12.6	1.1	13.8
COPPER	13.5	42.4	9.5	7.8	12.1 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	8.5	85.2	5.1	4.1	7.3 J
MERCURY	0.016	0.19	0.023 B	0.0095 B	0.034 B
MOLYBDENUM	1.1	1.4	1.6	0.2 B	1.4
NICKEL	14.3	30.8	50.5	4.1	15.7
SELENIUM	0.58 U	1.9	0.86	0.39 U	1.8
SILVER	0.15	1.1	0.11 U	0.075 U	0.14 B
THALLIUM	0.3 U	0.39 U	0.3 U	0.21 U	0.32 U
VANADIUM	34.2	42.6	22.2	20.4	26.8 J
ZINC	46.6	232	37	7.6	51.9
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	56	43	59	82	50
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	9600	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-50	SD-51	SD-51	SD-51	SD-53
SAMPLE ID	SD-50-02	SD-51-02	SD-51-02-AVG	SD-51-02-D	SD-53-02
SAMPLE DATE	20081114	20081115	20081115	20081115	20081114
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	20	20	20	22
BOTTOM DEPTH	26	28	28	28	26
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-50	SD-51	SD-51	SD-51	SD-53
SAMPLE ID	SD-50-02	SD-51-02	SD-51-02-AVG	SD-51-02-D	SD-53-02
SAMPLE DATE	20081114	20081115	20081115	20081115	20081114
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	20	20	20	22
BOTTOM DEPTH	26	28	28	28	26
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	1100 U	1100 U	1100 U	1100 U	770 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	1100 U	1100 U	1100 U	1100 U	770 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-50	SD-51	SD-51	SD-51	SD-53
SAMPLE ID	SD-50-02	SD-51-02	SD-51-02-AVG	SD-51-02-D	SD-53-02
SAMPLE DATE	20081114	20081115	20081115	20081115	20081114
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	20	20	20	22
BOTTOM DEPTH	26	28	28	28	26
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	1100 U	1100 U	1100 U	1100 U	770 U
ACENAPHTHYLENE	1100 U	1100 U	1100 U	1100 U	770 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	1100 U	1100 U	1100 U	1100 U	770 U
BAP EQUIVALENT	69.5	40.5	40.5	1100 U	770 U
BAP EQUIVALENT-1/2 NON-DETECTS	1225	1196	1196	1100 U	770 U
BAP EQUIVALENT-POSITIVE RESULTS	69.5	40.5	40.5	1100 U	770 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1100 U	1100 U	1100 U	1100 U	770 U
BENZO(A)PYRENE	1100 U	1100 U	1100 U	1100 U	770 U
BENZO(B)FLUORANTHENE	460 J	270 J	270 J	1100 U	770 U
BENZO(G,H,I)PERYLENE	1100 U	1100 U	1100 U	1100 U	770 U
BENZO(K)FLUORANTHENE	500 J	220 J	220 J	1100 U	770 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	500 J	310 J	310 J	1100 U	770 U
DIBENZO(A,H)ANTHRACENE	1100 U	1100 U	1100 U	1100 U	770 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	690 J	420 J	420 J	1100 U	770 U
FLUORENE	1100 U	1100 U	1100 U	1100 U	770 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	180 J	110 J	110 J	1100 U	770 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	1100 U	1100 U	1100 U	1100 U	770 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	330 J	1100 U	1100 U	1100 U	770 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	1000 J	590 J	590 J	1100 U	770 U
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	3660	1920	1920	0 U	0 U

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-50	SD-51	SD-51	SD-51	SD-53
SAMPLE ID	SD-50-02	SD-51-02	SD-51-02-AVG	SD-51-02-D	SD-53-02
SAMPLE DATE	20081114	20081115	20081115	20081115	20081114
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	20	20	20	22
BOTTOM DEPTH	26	28	28	28	26
PCBS (UG/KG)					
AROCLOR-1016	270 U	53 U	53 U	53 U	38 U
AROCLOR-1221	2700 UJ	53 U	53 U	53 U	38 U
AROCLOR-1232	2700 UJ	53 U	53 U	53 U	38 U
AROCLOR-1242	2700 UJ	53 U	53 U	53 U	38 U
AROCLOR-1248	2700 UJ	53 U	53 U	53 U	38 U
AROCLOR-1254	2700 UJ	53 U	53 U	53 U	38 U
AROCLOR-1260	610	270 J	148.25 J	53 UJ	38 U
TOTAL AROCLOR	610	270	148.25	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.34 UJ	1 L	0.5825 L	0.33 UL	0.23 UL
ARSENIC	12.3	11.5	11.4	11.3	8.1
BARIUM	69.4	61.7	62.15	62.6	28.8
BERYLLIUM	2.4	2.2	2.2	2.2	1.8
CADMIUM	38.3	28.6	30.7	32.8	0.1
CHROMIUM	527	515	527.5	540	31.5
COBALT	30.9	20.9	21.05	21.2	11.8
COPPER	115	116	115.5	115	18
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	196	214	216	218	11
MERCURY	1.1	0.94	0.92	0.9	0.048
MOLYBDENUM	1.5 J	1.7	1.85	2	1.9
NICKEL	66.2	48.1	48.4	48.7	19.9
SELENIUM	2.2	2.5	2.6	2.7	1
SILVER	18	6.1	6.95	7.8	0.14 U
THALLIUM	0.59 U	0.54 U	0.55 U	0.56 U	0.39 U
VANADIUM	96	76.9	78.85	80.8	45.1
ZINC	534	435	442.5	450	61.4
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	32	31.5	31	44
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-54	SD-55	SD-56	SD-57	SD-58
SAMPLE ID	SD-54-02	SD-55-02	SD-56-02	SD-57-02	SD-58-02
SAMPLE DATE	20081114	20081113	20081113	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-54	SD-55	SD-56	SD-57	SD-58
SAMPLE ID	SD-54-02	SD-55-02	SD-56-02	SD-57-02	SD-58-02
SAMPLE DATE	20081114	20081113	20081113	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	140 J	400 U	750 U	850 U	950
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	310 J	400 U	750 U	850 U	1100 J
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-54**	**SD-55**	**SD-56**	**SD-57**	**SD-58**
SAMPLE ID	**SD-54-02**	**SD-55-02**	**SD-56-02**	**SD-57-02**	**SD-58-02**
SAMPLE DATE	**20081114**	**20081113**	**20081113**	**20081114**	**20081114**
SAMPLE CODE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
MATRIX	**SD**	**SD**	**SD**	**SD**	**SD**
SAMPLE TYPE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
SUBMATRIX	**SB**	**SB**	**SB**	**SB**	**SB**
TOP DEPTH	**22**	**22**	**22**	**22**	**22**
BOTTOM DEPTH	**26**	**26**	**26**	**26**	**26**
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	1100 U	400 U	750 U	850 U	11000 J
ACENAPHTHYLENE	1100 U	400 U	750 U	850 U	610 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	290 J	400 U	89 J	850 U	19000
BAP EQUIVALENT	157	400 U	83.6	850 U	38387
BAP EQUIVALENT-1/2 NON-DETECTS	1312	400 U	871	850 U	38692
BAP EQUIVALENT-POSITIVE RESULTS	157	400 U	83.6	850 U	38387
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1100 U	400 U	750 U	850 U	38000
BENZO(A)PYRENE	1100 U	400 U	750 U	850 U	30000
BENZO(B)FLUORANTHENE	1000 J	400 U	540 J	850 U	31000
BENZO(G,H,I)PERYLENE	560 J	400 U	280 J	850 U	11000 J
BENZO(K)FLUORANTHENE	810 J	400 U	410 J	850 U	25000
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	1000 J	400 U	480 J	850 U	37000
DIBENZO(A,H)ANTHRACENE	1100 U	400 U	750 U	850 U	610 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	1700	400 U	750 J	850 U	78000
FLUORENE	180 J	400 U	750 U	850 U	10000 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	480 J	400 U	250 J	850 U	12000 J
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	320 J	400 U	750 U	850 U	2200 J
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	1100 J	400 U	330 J	850 U	76000
PHENOL	NA	NA	NA	NA	NA
PYRENE	2600	400 U	990	850 U	76000
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	10350	0 U	4119	0 U	457300

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-54	SD-55	SD-56	SD-57	SD-58
SAMPLE ID	SD-54-02	SD-55-02	SD-56-02	SD-57-02	SD-58-02
SAMPLE DATE	20081114	20081113	20081113	20081114	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
PCBS (UG/KG)					
AROCLOR-1016	55 U	20 U	38 U	42 U	610 U
AROCLOR-1221	55 U	20 U	38 U	42 U	6100 UJ
AROCLOR-1232	55 U	20 U	38 U	42 U	6100 UJ
AROCLOR-1242	55 U	20 U	38 U	42 U	6100 UJ
AROCLOR-1248	55 U	20 U	38 U	42 U	6100 UJ
AROCLOR-1254	55 U	20 U	38 U	42 U	6100 UJ
AROCLOR-1260	55 U	20 U	350	42 U	790
TOTAL AROCLOR	0 U	0 U	350	0 U	790
METALS (MG/KG)					
ANTIMONY	0.36 L	0.13 UL	0.48 L	0.25 UJ	132 L
ARSENIC	10.9	1.5	7.2	7	5.1
BARIUM	87.7	11.6	32.9	29	238
BERYLLIUM	2.4	1.9	1.5	2.1	1.1
CADMIUM	53.5	0.0074 U	19	0.015 U	16.9
CHROMIUM	1050	19.1	264	32.2	1090
COBALT	19.9	4.6	13.9	13.2	12.2
COPPER	89.9	9.3	66.6	17.3	63.2
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	162	5.6	108	10.8	299
MERCURY	1.5	0.0079	0.65	0.016	0.5
MOLYBDENUM	1.2	0.26	1.1	0.098 UL	0.07 UL
NICKEL	50.8	19.4	33.8	22.5	27.6
SELENIUM	2.8	0.49	1.5	0.81 U	0.98
SILVER	8.4	0.079 U	11.7	0.15 U	3.5
THALLIUM	0.59 U	0.22 U	0.38 U	0.42 U	2.3
VANADIUM	62.6	31	62.7	35.9	29.3
ZINC	543	20.4	267	64.7	2980
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	30	83	44	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-59	SD-59	SD-59	SD-60	SD-61
SAMPLE ID	SD-59-02	SD-59-02-AVG	SD-59-02-D	SD-60-02	SD-61-02
SAMPLE DATE	20081115	20081115	20081115	20081112	20081113
SAMPLE CODE	ORIG	AVG	DUP	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	20	20	20	22	22
BOTTOM DEPTH	28	28	28	26	26
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-59	SD-59	SD-59	SD-60	SD-61
SAMPLE ID	SD-59-02	SD-59-02-AVG	SD-59-02-D	SD-60-02	SD-61-02
SAMPLE DATE	20081115	20081115	20081115	20081112	20081113
SAMPLE CODE	ORIG	AVG	DUP	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	20	20	20	22	22
BOTTOM DEPTH	28	28	28	26	26
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	600 U	600 U	600 U	520 U	88 J
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	600 U	600 U	600 U	520 U	940 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-59	SD-59	SD-59	SD-60	SD-61
SAMPLE ID	SD-59-02	SD-59-02-AVG	SD-59-02-D	SD-60-02	SD-61-02
SAMPLE DATE	20081115	20081115	20081115	20081112	20081113
SAMPLE CODE	ORIG	AVG	DUP	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	20	20	20	22	22
BOTTOM DEPTH	28	28	28	26	26
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	600 U	600 U	600 U	520 U	410 J
ACENAPHTHYLENE	600 U	600 U	600 U	520 U	940 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	64 J	64 J	600 U	75 J	350 J
BAP EQUIVALENT	29.5	24.9	20.3	24.8	2600
BAP EQUIVALENT-1/2 NON-DETECTS	689	685	680	571	2600
BAP EQUIVALENT-POSITIVE RESULTS	29.5	24.9	20.3	24.8	2600
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	600 U	600 U	600 U	520 U	1600
BENZO(A)PYRENE	600 U	600 U	600 U	520 U	1700
BENZO(B)FLUORANTHENE	260 J	225 J	190 J	160 J	1700
BENZO(G,H,I)PERYLENE	600 U	600 U	600 U	520 U	1200
BENZO(K)FLUORANTHENE	310 J	210 J	110 J	160 J	1800
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	350 J	265 J	180 J	200 J	1800
DIBENZO(A,H)ANTHRACENE	600 U	600 U	600 U	520 U	440 J
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	450 J	345 J	240 J	340 J	2900
FLUORENE	600 U	600 U	600 U	520 U	180 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	600 U	600 U	600 U	70 J	1100
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	600 U	600 U	600 U	520 U	200 J
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	260 J	195 J	130 J	350 J	1300
PHENOL	NA	NA	NA	NA	NA
PYRENE	710 J	545 J	380 J	540 J	4100
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	2404	1849	1230	1895	20780

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-59	SD-59	SD-59	SD-60	SD-61
SAMPLE ID	SD-59-02	SD-59-02-AVG	SD-59-02-D	SD-60-02	SD-61-02
SAMPLE DATE	20081115	20081115	20081115	20081112	20081113
SAMPLE CODE	ORIG	AVG	DUP	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	20	20	20	22	22
BOTTOM DEPTH	28	28	28	26	26
PCBS (UG/KG)					
AROCLOR-1016	37 U	37 U	37 U	32 U	47 U
AROCLOR-1221	37 U	37 U	37 U	32 U	47 U
AROCLOR-1232	37 U	37 U	37 U	32 U	47 U
AROCLOR-1242	37 U	37 U	37 U	32 U	47 U
AROCLOR-1248	37 U	37 U	37 U	32 U	47 U
AROCLOR-1254	37 U	37 U	37 U	32 U	47 U
AROCLOR-1260	37 U	37 U	37 U	32 U	71
TOTAL AROCLOR	0 U	0 U	0 U	0 U	71
METALS (MG/KG)					
ANTIMONY	0.22 U	0.215 U	0.21 U	2.7 J	0.93 L
ARSENIC	7	7.55	8.1	6.7	10.2
BARIUM	56.9 J	59.3 J	61.7 J	43 J	60.8
BERYLLIUM	1.7 J	1.85 J	2 J	1.5 J	2.2
CADMIUM	24.2	26.5	28.8	9.7	37.3
CHROMIUM	592 J	641 J	690 J	236 J	739
COBALT	12.7	13.45	14.2	9.7 J	18
COPPER	49.5 J	53.15 J	56.8 J	31.8 J	93.3
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	111 J	126 J	141 J	89.3	179
MERCURY	0.91	0.94	0.97	0.62	2.6
MOLYBDENUM	1.1	1.15	1.2	1.2	1.6
NICKEL	27.6	29.15	30.7	22 J	47.5
SELENIUM	1.7	1.8	1.9	1.2	2.3
SILVER	10.7	11.25	11.8	6.9	21.8
THALLIUM	0.37 U	0.37 U	0.37 U	0.33 U	0.48 U
VANADIUM	43.1 J	45.55 J	48 J	39.2 J	81.3
ZINC	447	476.5	506	197 J	488
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	45	44.5	44	51	35
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	17000	17000	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-62	SD-63	SD-64	SD-65	SD-66
SAMPLE ID	SD-62-02	SD-63-02	SD-64-02	SD-65-02	SD-66-02
SAMPLE DATE	20081112	20081112	20081112	20081111	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-62	SD-63	SD-64	SD-65	SD-66
SAMPLE ID	SD-62-02	SD-63-02	SD-64-02	SD-65-02	SD-66-02
SAMPLE DATE	20081112	20081112	20081112	20081111	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	650 U	470 U	730 U	780 UJ	900 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	650 U	470 U	730 U	780 UJ	900 UJ
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-62**	**SD-63**	**SD-64**	**SD-65**	**SD-66**
SAMPLE ID	**SD-62-02**	**SD-63-02**	**SD-64-02**	**SD-65-02**	**SD-66-02**
SAMPLE DATE	**20081112**	**20081112**	**20081112**	**20081111**	**20081112**
SAMPLE CODE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
MATRIX	**SD**	**SD**	**SD**	**SD**	**SD**
SAMPLE TYPE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
SUBMATRIX	**SB**	**SB**	**SB**	**SB**	**SB**
TOP DEPTH	**22**	**22**	**22**	**22**	**22**
BOTTOM DEPTH	**26**	**26**	**26**	**26**	**26**
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	650 U	470 U	730 U	780 UJ	900 UJ
ACENAPHTHYLENE	650 U	470 U	730 U	780 UJ	900 UJ
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	140 J	48 J	730 U	780 UJ	900 UJ
BAP EQUIVALENT	641	470 U	730 U	780 U	28.8
BAP EQUIVALENT-1/2 NON-DETECTS	998	470 U	730 U	780 U	1019
BAP EQUIVALENT-POSITIVE RESULTS	641	470 U	730 U	780 U	28.8
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	650 U	470 U	730 U	780 UJ	900 UJ
BENZO(A)PYRENE	550 J	470 U	730 U	780 UJ	900 UJ
BENZO(B)FLUORANTHENE	570 J	470 U	730 U	780 UJ	260 J
BENZO(G,H,I)PERYLENE	320 J	470 U	730 U	780 UJ	900 UJ
BENZO(K)FLUORANTHENE	520 J	470 U	730 U	780 UJ	240 J
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	680	470 U	730 U	780 UJ	370 J
DIBENZO(A,H)ANTHRACENE	650 U	470 U	730 U	780 UJ	900 UJ
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	990	59 J	730 U	780 UJ	490 J
FLUORENE	90 J	470 U	730 U	780 UJ	900 UJ
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	280 J	470 U	730 U	780 UJ	900 UJ
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	650 U	470 U	730 U	780 UJ	900 UJ
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	460 J	470 U	730 U	780 UJ	310 J
PHENOL	NA	NA	NA	NA	NA
PYRENE	1700 J	120 J	730 U	780 UJ	890 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	6300	227	0 U	0 U	2560

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-62	SD-63	SD-64	SD-65	SD-66
SAMPLE ID	SD-62-02	SD-63-02	SD-64-02	SD-65-02	SD-66-02
SAMPLE DATE	20081112	20081112	20081112	20081111	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
PCBS (UG/KG)					
AROCLOR-1016	41 U	29 UJ	46 U	39 U	56 UJ
AROCLOR-1221	41 U	29 UJ	46 U	39 U	56 UJ
AROCLOR-1232	41 U	29 UJ	46 U	39 U	56 UJ
AROCLOR-1242	41 U	29 UJ	46 U	39 U	56 UJ
AROCLOR-1248	41 U	29 UJ	46 U	39 U	56 UJ
AROCLOR-1254	41 U	29 UJ	46 U	39 U	56 UJ
AROCLOR-1260	63 J	29 UJ	46 U	39 U	56 UJ
TOTAL AROCLOR	63	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	2.1 J	0.52 J	0.28 UL	0.24 UJ	3.4 J
ARSENIC	7.8	5.3	7.2	7	10.4 J
BARIUM	52.1 J	33.1 J	42.1 J	43.8	120 J
BERYLLIUM	2 J	1.3 J	2.2 J	2	1.8 J
CADMIUM	15.4 J	2.6 J	1.4 J	5.2	33.8 J
CHROMIUM	331 J	80.6 J	73.2 J	139	684 J
COBALT	13.8 J	8.1 J	16.3 J	14.4	13.6 J
COPPER	43.1 J	20.9 J	29.5 J	30.5 J	65.2 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	67.9 J	29.3 J	27.8 J	39.2	126 J
MERCURY	0.48	0.12	0.1	0.35	1.9 J
MOLYBDENUM	1.6 J	1.1 J	1.8 J	1.5	1.1 J
NICKEL	37.4 J	19 J	28.4 J	25.7 J	35 J
SELENIUM	2.1 J	0.78 J	1.8 J	1.1 J	2.2 J
SILVER	11.2 J	2.6 J	1.1 J	6.5	12.6 J
THALLIUM	0.4 U	0.3 U	0.47 U	0.4 U	0.6 UJ
VANADIUM	50.9 J	41 J	42.6 J	38.9	53.3 J
ZINC	245 J	78.1 J	108 J	138 J	502 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	41	57	36	NA	30
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	9200	21000 J
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-67	SD-68	SD-69	SD-70	SD-71
SAMPLE ID	SD-67-02	SD-68-02	SD-69-02	SD-70-02	SD-71-02
SAMPLE DATE	20081111	20081112	20081111	20081111	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-67	SD-68	SD-69	SD-70	SD-71
SAMPLE ID	SD-67-02	SD-68-02	SD-69-02	SD-70-02	SD-71-02
SAMPLE DATE	20081111	20081112	20081111	20081111	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	1000 UJ	660 U	410 U	650 UJ	740 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	1000 UJ	660 U	410 U	650 UJ	740 UJ
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-67	SD-68	SD-69	SD-70	SD-71
SAMPLE ID	SD-67-02	SD-68-02	SD-69-02	SD-70-02	SD-71-02
SAMPLE DATE	20081111	20081112	20081111	20081111	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	1000 UJ	660 U	410 U	650 UJ	740 UJ
ACENAPHTHYLENE	1000 UJ	660 U	410 U	650 UJ	740 UJ
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	150 J	660 U	410 U	650 UJ	740 UJ
BAP EQUIVALENT	1591	17.2	410 U	650 U	740 U
BAP EQUIVALENT-1/2 NON-DETECTS	2091	743	410 U	650 U	740 U
BAP EQUIVALENT-POSITIVE RESULTS	1591	17.2	410 U	650 U	740 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1100 J	660 U	410 U	650 UJ	740 UJ
BENZO(A)PYRENE	1200 J	660 U	410 U	650 UJ	740 UJ
BENZO(B)FLUORANTHENE	2000 J	160 J	410 U	650 UJ	740 UJ
BENZO(G,H,I)PERYLENE	1000 UJ	660 U	410 U	650 UJ	740 UJ
BENZO(K)FLUORANTHENE	2500 J	100 J	410 U	650 UJ	740 UJ
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	1300 J	190 J	410 U	650 UJ	740 UJ
DIBENZO(A,H)ANTHRACENE	1000 UJ	660 U	410 U	650 UJ	740 UJ
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	1700 J	240 J	410 U	650 UJ	720 J
FLUORENE	1000 UJ	660 U	410 U	650 UJ	740 UJ
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	550 J	660 U	410 U	650 UJ	740 UJ
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	1000 UJ	660 U	410 U	650 UJ	740 UJ
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	830 J	130 J	410 U	650 UJ	250 J
PHENOL	NA	NA	NA	NA	NA
PYRENE	2700 J	490 J	410 U	650 UJ	1300 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	14030	1310	0 U	0 U	2270

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-67	SD-68	SD-69	SD-70	SD-71
SAMPLE ID	SD-67-02	SD-68-02	SD-69-02	SD-70-02	SD-71-02
SAMPLE DATE	20081111	20081112	20081111	20081111	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	22	22
BOTTOM DEPTH	26	26	26	26	26
PCBS (UG/KG)					
AROCLOR-1016	52 U	41 U	21 U	32 U	37 U
AROCLOR-1221	52 U	41 U	21 U	32 U	37 U
AROCLOR-1232	52 U	41 U	21 U	32 U	37 U
AROCLOR-1242	52 U	41 U	21 U	32 U	37 U
AROCLOR-1248	52 U	41 U	21 U	32 U	37 U
AROCLOR-1254	52 U	41 U	21 U	32 U	37 U
AROCLOR-1260	230	41 U	21 U	32 U	28 J
TOTAL AROCLOR	230	0 U	0 U	0 U	28
METALS (MG/KG)					
ANTIMONY	0.97 B	5.4 J	0.12 UL	0.19 UJ	0.73 B
ARSENIC	10.5	8.7	6.5	5.3	8
BARIUM	85.4	112 J	24	20.6	99.1
BERYLLIUM	2.1	2 J	2.9	1.8	2
CADMIUM	36	23.9	0.02	2.1	9.7
CHROMIUM	714	497 J	15.4	70.2	235
COBALT	17.3	14 J	37.9	12.1	12.4
COPPER	94.8 J	55.9 J	15.1	23.3 J	37.4 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	208	104	17.2	21.7	59.9
MERCURY	4.7	1.1	0.015 B	0.055	0.44
MOLYBDENUM	1.9	2	0.059	1.3	2
NICKEL	54.4 J	34 J	45.2	20.1 J	25.7 J
SELENIUM	1.7 J	1.7	0.39 UL	0.91 J	1.1 J
SILVER	40.9	21	0.074 U	3	16.4
THALLIUM	0.55 U	0.42 U	0.2 U	0.32 U	0.36 U
VANADIUM	90.9	54.5 J	23.4 K	32.6	49.4
ZINC	490 J	390 J	90.2	80.9 J	216 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	41	80	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	13000	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-72	SD-73	SD-74	SD-75	SD-75
SAMPLE ID	SD-72-02	SD-73-02	SD-74-02	SD-75-02	SD-75-02-AVG
SAMPLE DATE	20081112	20081111	20081111	20081112	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	20	20
BOTTOM DEPTH	26	26	26	28	28
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-72	SD-73	SD-74	SD-75	SD-75
SAMPLE ID	SD-72-02	SD-73-02	SD-74-02	SD-75-02	SD-75-02-AVG
SAMPLE DATE	20081112	20081111	20081111	20081112	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	20	20
BOTTOM DEPTH	26	26	26	28	28
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	340 U	650 U	420 U	430 U	435 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	340 U	650 U	420 U	430 U	435 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-72	SD-73	SD-74	SD-75	SD-75
SAMPLE ID	SD-72-02	SD-73-02	SD-74-02	SD-75-02	SD-75-02-AVG
SAMPLE DATE	20081112	20081111	20081111	20081112	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	20	20
BOTTOM DEPTH	26	26	26	28	28
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	340 U	650 U	420 U	250 J	270 J
ACENAPHTHYLENE	340 U	650 U	420 U	430 U	435 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	340 U	650 U	420 U	650	640
BAP EQUIVALENT	340 U	650 U	420 U	2155	1633
BAP EQUIVALENT-1/2 NON-DETECTS	340 U	650 U	420 U	2370	1851
BAP EQUIVALENT-POSITIVE RESULTS	340 U	650 U	420 U	2155	1633
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	340 U	650 U	420 U	2000 J	1550 J
BENZO(A)PYRENE	340 U	650 U	420 U	1700 J	1290 J
BENZO(B)FLUORANTHENE	340 U	650 U	420 U	1600 J	1190 J
BENZO(G,H,I)PERYLENE	340 U	650 U	420 U	750	525 J
BENZO(K)FLUORANTHENE	340 U	650 U	420 U	1700 J	1290 J
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	340 U	650 U	420 U	2200 J	1700 J
DIBENZO(A,H)ANTHRACENE	340 U	650 U	420 U	430 U	435 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	340 U	650 U	420 U	3400	2750
FLUORENE	340 U	650 U	420 U	430 U	340 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	340 U	650 U	420 U	760	545 J
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	340 U	650 U	420 U	430 U	99 J
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	340 U	650 U	420 U	2800	2500
PHENOL	NA	NA	NA	NA	NA
PYRENE	340 UJ	650 U	420 U	4800 J	3750 J
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	0 U	0 U	22610	18439

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-72	SD-73	SD-74	SD-75	SD-75
SAMPLE ID	SD-72-02	SD-73-02	SD-74-02	SD-75-02	SD-75-02-AVG
SAMPLE DATE	20081112	20081111	20081111	20081112	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	22	22	20	20
BOTTOM DEPTH	26	26	26	28	28
PCBS (UG/KG)					
AROCLOR-1016	21 U	33 U	21 U	27 U	27 U
AROCLOR-1221	21 U	33 U	21 U	27 U	27 U
AROCLOR-1232	21 U	33 U	21 U	27 U	27 U
AROCLOR-1242	21 U	33 U	21 U	27 U	27 U
AROCLOR-1248	21 U	33 U	21 U	27 U	27 U
AROCLOR-1254	21 U	33 U	21 U	27 U	27 U
AROCLOR-1260	21 U	33 U	21 U	27 U	27 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.24 J	0.2 UL	0.13 UL	2.7 J	2.95 J
ARSENIC	6.2	4.5	4.6	5.2	5.95
BARIUM	26 J	17.2	22.4	87.2 J	94.6 J
BERYLLIUM	1.8 J	1.7	1.9	0.89 J	0.945 J
CADMIUM	0.0075 UL	0.03	0.65	11	11.45
CHROMIUM	28.5 J	22.3	33	277 J	329.5 J
COBALT	5.2 J	9.1	14.6	6.9 J	7.4 J
COPPER	31.7 J	14.4	25.8	36.2 J	35.6 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	8.6 J	6.6	27.9	75.5	88.25
MERCURY	0.022 B	0.022 B	0.23	1.4	1.35
MOLYBDENUM	0.81 J	1.1	1.2	4	4.35
NICKEL	17.7 J	15.7	23.4	17.4 J	18.75 J
SELENIUM	0.5 J	0.65 UL	0.43 UL	0.82	1.01
SILVER	0.079 UL	0.12 U	2.5	35.6	36.8
THALLIUM	0.22 U	0.34 U	0.22 U	0.27 U	0.275 U
VANADIUM	49.5 J	29.4 K	35.9 K	29.4 J	30.25 J
ZINC	26.1 J	40.7	67.6	267 J	364.5 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	79	51	79	63	62
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	35000	3100	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-75	SD-76	SD-77	SD-80	SD-81
SAMPLE ID	SD-75-02-D	SD-76-02	SD-77-02	SD-80-02	SD-81-02
SAMPLE DATE	20081112	20081111	20081110	20081114	20081114
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	20	20	22	22	22
BOTTOM DEPTH	28	28	26	26	24
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-75	SD-76	SD-77	SD-80	SD-81
SAMPLE ID	SD-75-02-D	SD-76-02	SD-77-02	SD-80-02	SD-81-02
SAMPLE DATE	20081112	20081111	20081110	20081114	20081114
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	20	20	22	22	22
BOTTOM DEPTH	28	28	26	26	24
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	440 U	800 U	480 U	980 U	850 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	440 U	800 U	480 U	980 U	850 U
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-75	SD-76	SD-77	SD-80	SD-81
SAMPLE ID	SD-75-02-D	SD-76-02	SD-77-02	SD-80-02	SD-81-02
SAMPLE DATE	20081112	20081111	20081110	20081114	20081114
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	20	20	22	22	22
BOTTOM DEPTH	28	28	26	26	24
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	290 J	380 J	480 U	980 U	850 U
ACENAPHTHYLENE	440 U	82 J	480 U	980 U	850 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	630	570 J	480 U	980 U	850 U
BAP EQUIVALENT	1111	5159	480 U	980 U	850 U
BAP EQUIVALENT-1/2 NON-DETECTS	1331	5159	480 U	980 U	850 U
BAP EQUIVALENT-POSITIVE RESULTS	1111	5159	480 U	980 U	850 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	1100 J	3000	480 U	980 U	850 U
BENZO(A)PYRENE	880 J	3100	480 U	980 U	850 U
BENZO(B)FLUORANTHENE	780 J	6300	480 U	980 U	850 U
BENZO(G,H,I)PERYLENE	300 J	2300	480 U	980 U	850 U
BENZO(K)FLUORANTHENE	880 J	1500	480 U	980 U	850 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	1200 J	4400	480 U	980 U	850 U
DIBENZO(A,H)ANTHRACENE	440 U	900	480 U	980 U	850 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	2100	6200	480 U	980 U	850 U
FLUORENE	340 J	250 J	480 U	980 U	850 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	330 J	2100	480 U	980 U	850 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	99 J	800 U	480 U	980 U	850 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	2200	2400	480 U	980 U	850 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	2700 J	6900	480 U	980 U	850 U
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	13829	40382	0 U	0 U	0 U

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-75	SD-76	SD-77	SD-80	SD-81
SAMPLE ID	SD-75-02-D	SD-76-02	SD-77-02	SD-80-02	SD-81-02
SAMPLE DATE	20081112	20081111	20081110	20081114	20081114
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	20	20	22	22	22
BOTTOM DEPTH	28	28	26	26	24
PCBS (UG/KG)					
AROCLOR-1016	27 U	40 U	24 U	49 U	42 U
AROCLOR-1221	27 U	40 U	24 U	49 U	42 U
AROCLOR-1232	27 U	40 U	24 U	49 U	42 U
AROCLOR-1242	27 U	40 U	24 U	49 U	42 U
AROCLOR-1248	27 U	40 U	24 U	49 U	42 U
AROCLOR-1254	27 U	40 U	24 U	49 U	42 U
AROCLOR-1260	27 U	180	24 U	49 U	42 U
TOTAL AROCLOR	0 U	180	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	3.2 J	1.3 L	0.15 UL	0.3 UL	0.27 UJ
ARSENIC	6.7	9.4	5.4	9.6	6.4
BARIUM	102 J	77.9	19.6	43.6	49.1
BERYLLIUM	1 J	1.5	1.5	2	1.7
CADMIUM	11.9	30.9	1.1	0.018 U	0.72
CHROMIUM	382 J	433	44.6	38.3	34.9
COBALT	7.9 J	13.8	9.2	18.6	15.9
COPPER	35 J	109	21.3	17.2	39
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	101	276	14.8	15.6	134
MERCURY	1.3	2.7	0.17	0.025	0.31
MOLYBDENUM	4.7	2.3	1.4	0.45 B	1.4 J
NICKEL	20.1 J	58.5	17.1	29.3	30
SELENIUM	1.2	1.4 L	0.67 K	0.98 U	1.9
SILVER	38	55.8	2.3	0.19 U	0.17 U
THALLIUM	0.28 U	0.41 U	0.25 U	0.51 U	0.46 U
VANADIUM	31.1 J	110 K	42.9 K	49.2	35.2
ZINC	462 J	537	54.4	88.4	133
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	61	41	70	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	23000
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-82	SD-83	SD-84	SD-85	SD-86
SAMPLE ID	SD-82-02	SD-83-02	SD-84-02	SD-85-02	SD-86-02
SAMPLE DATE	20081114	20100820	20100820	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	24	24	24	24
BOTTOM DEPTH	26	24	24	24	24
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-82	SD-83	SD-84	SD-85	SD-86
SAMPLE ID	SD-82-02	SD-83-02	SD-84-02	SD-85-02	SD-86-02
SAMPLE DATE	20081114	20100820	20100820	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	24	24	24	24
BOTTOM DEPTH	26	24	24	24	24
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	740 U	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	740 U	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-82	SD-83	SD-84	SD-85	SD-86
SAMPLE ID	SD-82-02	SD-83-02	SD-84-02	SD-85-02	SD-86-02
SAMPLE DATE	20081114	20100820	20100820	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	24	24	24	24
BOTTOM DEPTH	26	24	24	24	24
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	740 U	0.44 U	1.2 U	1.2 U	2100
ACENAPHTHYLENE	740 U	0.52 U	8.1 J	1.4 U	190
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	740 U	0.77 J	4.5 J	1.2 U	2800
BAP EQUIVALENT	740 U	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	740 U	0.45 U	103	1.2 U	9537
BAP EQUIVALENT-POSITIVE RESULTS	740 U	0.45 U	103	1.2 U	9537
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	740 U	0.57 U	18	1.5 U	7100
BENZO(A)PYRENE	740 U	0.45 U	14	1.2 U	6100
BENZO(B)FLUORANTHENE	740 U	0.71 U	46	1.9 U	9600
BENZO(G,H,I)PERYLENE	740 U	0.45 U	37	1.2 U	3900
BENZO(K)FLUORANTHENE	740 U	0.92 U	2.5 U	2.5 U	35 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	740 U	0.54 U	20	1.5 U	7200
DIBENZO(A,H)ANTHRACENE	740 U	0.51 U	75	1.4 U	1400
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	740 U	3.6 J	32	1.3 U	15000
FLUORENE	740 U	1 J	4.6 J	1.6 U	1400
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	740 U	0.47 U	77	1.3 U	3600
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	740 U	0.39 U	1.1 U	1.1 U	300
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	740 U	3.1 J	19	3.8 J	9600
PHENOL	NA	NA	NA	NA	NA
PYRENE	740 U	2.2 J	22	1.2 U	12000
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	10.67	377.2	3.8	82290

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-82	SD-83	SD-84	SD-85	SD-86
SAMPLE ID	SD-82-02	SD-83-02	SD-84-02	SD-85-02	SD-86-02
SAMPLE DATE	20081114	20100820	20100820	20100819	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	22	24	24	24	24
BOTTOM DEPTH	26	24	24	24	24
PCBS (UG/KG)					
AROCLOR-1016	37 U	1.7 U	2.3 U	2.3 U	2.6 U
AROCLOR-1221	37 U	2.1 U	3 U	2.9 U	3.3 U
AROCLOR-1232	37 U	1.9 U	2.7 U	2.6 U	3 U
AROCLOR-1242	37 U	1.8 U	2.5 U	2.5 U	2.8 U
AROCLOR-1248	37 U	1.1 U	1.5 U	1.5 U	430 J
AROCLOR-1254	37 U	1.6 U	2.2 U	2.2 U	2.5 U
AROCLOR-1260	37 U	1.6 U	2.2 U	2.2 U	250
TOTAL AROCLOR	0 U	0 U	0 U	0 U	680
METALS (MG/KG)					
ANTIMONY	0.21 UJ	0.097 B	0.5 L	0.05 B	5.3 J
ARSENIC	3.4	2 L	4.3 L	2 L	6.6 J
BARIUM	25.4	NA	NA	NA	NA
BERYLLIUM	0.93	0.62	2.7	1.3	1.9 J
CADMIUM	0.13 B	0.076 L	1.9 L	0.19 L	296
CHROMIUM	24.7	9.4	39.6	12.8	2060 J
COBALT	9.6	NA	NA	NA	NA
COPPER	14.7	8.7 L	28.4 L	9.7 L	147 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	10.1	7	38.1	4.9	250
MERCURY	0.028	0.036	0.14	0.02 J	0.37
MOLYBDENUM	1.4 J	NA	NA	NA	NA
NICKEL	15.3	8 L	34.3 L	11.2 L	59.7 J
SELENIUM	0.71 U	0.33 J	0.9 L	0.55 L	1.4 J
SILVER	0.13 U	0.027 J	0.081 J	0.038 J	3.2 J
THALLIUM	0.37 U	0.07	0.19	0.093	0.19
VANADIUM	28	NA	NA	NA	NA
ZINC	42.9	20.5 L	112 L	35.4 L	1570 J
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	8850	33400	25500	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	0.29 U	NA
CADMIUM	NA	NA	NA	0.0007 J	NA
CHROMIUM	NA	NA	NA	0.0089 J	NA
COPPER	NA	NA	NA	0.03	NA
LEAD	NA	NA	NA	0.011 J	NA
NICKEL	NA	NA	NA	0.044 J	NA
SILVER	NA	NA	NA	0.00025 U	NA
ZINC	NA	NA	NA	0.35 J	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-87	SD-88	SD-89	SD-90	SD-93
SAMPLE ID	SD-87-02	SD-88-02	SD-89-02	SD-90-02	SD-93-02
SAMPLE DATE	20100818	20100819	20100819	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-87	SD-88	SD-89	SD-90	SD-93
SAMPLE ID	SD-87-02	SD-88-02	SD-89-02	SD-90-02	SD-93-02
SAMPLE DATE	20100818	20100819	20100819	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-87	SD-88	SD-89	SD-90	SD-93
SAMPLE ID	SD-87-02	SD-88-02	SD-89-02	SD-90-02	SD-93-02
SAMPLE DATE	20100818	20100819	20100819	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	230	210	99 J	410	22 J
ACENAPHTHYLENE	320	260	240	460	26
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	740	670	330	1300	66
BAP EQUIVALENT	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	4683	3332	1486	7625	420
BAP EQUIVALENT-POSITIVE RESULTS	4683	3332	1486	7625	420
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	2500	2200	810	5000 J	250
BENZO(A)PYRENE	2900	2100	940	5100 J	240
BENZO(B)FLUORANTHENE	4600	3700	1300	7300 J	420
BENZO(G,H,I)PERYLENE	2300	1500	910	3100 J	220
BENZO(K)FLUORANTHENE	35 U	19 U	20 U	8 J	5.2 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	3100	2200	930	5400 J	260
DIBENZO(A,H)ANTHRACENE	860	510	250	1000 J	92
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	4600	5100	1800	13000	420
FLUORENE	180	260	130	560	23 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	2100	1300	840	2900 J	210
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	130 J	230	210	230	23 J
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	1500	1800	700	4600	190
PHENOL	NA	NA	NA	NA	NA
PYRENE	4900	3700	1500	7300 J	430
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	30960	25740	10989	57668	2892

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-87	SD-88	SD-89	SD-90	SD-93
SAMPLE ID	SD-87-02	SD-88-02	SD-89-02	SD-90-02	SD-93-02
SAMPLE DATE	20100818	20100819	20100819	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
PCBS (UG/KG)					
AROCLOR-1016	2.6 U	3.5 U	3.7 U	3 U	2.3 U
AROCLOR-1221	3.3 U	4.5 U	4.7 U	3.8 U	3 U
AROCLOR-1232	3 U	4 U	4.3 U	3.4 U	2.7 U
AROCLOR-1242	2.8 U	3.8 U	4.1 U	3.3 U	2.5 U
AROCLOR-1248	1.6 U	2.2 U	2.4 U	1.9 U	1.5 U
AROCLOR-1254	2.5 U	3.3 U	3.5 U	2.8 U	2.2 U
AROCLOR-1260	770 J	220	1300	400	150
TOTAL AROCLOR	770	220	1300	400	150
METALS (MG/KG)					
ANTIMONY	2.4 L	2.2 J	1.3 L	3 J	0.46 L
ARSENIC	5.3	8.3 L	10.2	6.5	5.5
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1.5	2.1 L	2.3	1.8	1.6
CADMIUM	207	35.5 J	30.2 L	38.7	17.9
CHROMIUM	1530	727 L	569	690	218
COBALT	NA	NA	NA	NA	NA
COPPER	112	72.2 L	121 L	82.7	42.9
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	288 K	158	226	195 J	73 K
MERCURY	0.76	2	2.5	4.7	1.1
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	43.8	38.8 L	54.6 L	46.1	27.4
SELENIUM	1.3	2 L	2.4 L	1.9	1.2
SILVER	8.5	13.6 L	23	29.3	8.1
THALLIUM	0.23	0.29	0.36	0.32 J	0.17
VANADIUM	NA	NA	NA	NA	NA
ZINC	762	572 L	492	524	213
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	28700	35900	37100	35900	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	4.4	5	0.74 J	18.7	NA
CADMIUM	1.4	0.25	0.19	0.22	NA
CHROMIUM	15.4	5.6	3.9	5.9	NA
COPPER	0.32	0.3	0.48	0.0021 U	NA
LEAD	1	0.5	0.68	0.47	NA
NICKEL	0.29	0.15	0.2	0.19	NA
SILVER	0.0048	0.0072	0.014	0.00066 J	NA
ZINC	9.3	6	4.1	5.3	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-94	SD-95	SD-96	SD-97	SD-98
SAMPLE ID	SD-94-02	SD-95-02	SD-96-02	SD-97-02	SD-98-02
SAMPLE DATE	20100817	20100817	20100819	20100817	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-94	SD-95	SD-96	SD-97	SD-98
SAMPLE ID	SD-94-02	SD-95-02	SD-96-02	SD-97-02	SD-98-02
SAMPLE DATE	20100817	20100817	20100819	20100817	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-94**	**SD-95**	**SD-96**	**SD-97**	**SD-98**
SAMPLE ID	**SD-94-02**	**SD-95-02**	**SD-96-02**	**SD-97-02**	**SD-98-02**
SAMPLE DATE	**20100817**	**20100817**	**20100819**	**20100817**	**20100819**
SAMPLE CODE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
MATRIX	**SD**	**SD**	**SD**	**SD**	**SD**
SAMPLE TYPE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
SUBMATRIX	**SB**	**SB**	**SB**	**SB**	**SB**
TOP DEPTH	**24**	**24**	**24**	**24**	**24**
BOTTOM DEPTH	**24**	**24**	**24**	**24**	**24**
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	3.5 U	34 J	110	4.1 U	63 J
ACENAPHTHYLENE	4.2 U	51	200	11 J	160
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	3.6 U	110	300	17 J	230
BAP EQUIVALENT	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	3.6 U	751	1332	58.5	1023
BAP EQUIVALENT-POSITIVE RESULTS	3.6 U	751	1332	58.5	1023
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	4.5 U	400	750	48	560
BENZO(A)PYRENE	3.6 U	450	740	34 J	570
BENZO(B)FLUORANTHENE	5.7 U	750	1400	67 J	1100
BENZO(G,H,I)PERYLENE	3.6 U	390	760	80 J	600
BENZO(K)FLUORANTHENE	7.3 U	8 U	19 U	8.6 UJ	19 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	4.3 U	450	770	90	580
DIBENZO(A,H)ANTHRACENE	4 U	150	310	4.7 J	230
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	3.9 U	670	1500	150	990
FLUORENE	4.8 U	48	120	5.6 U	75 J
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	3.7 U	360	660	82 J	560
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	3.1 U	68	180	3.7 U	160
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	5.8 U	320	660	40 J	440
PHENOL	NA	NA	NA	NA	NA
PYRENE	3.7 U	800	1400	100	1000
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	5051	9860	723.7	7318

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-94	SD-95	SD-96	SD-97	SD-98
SAMPLE ID	SD-94-02	SD-95-02	SD-96-02	SD-97-02	SD-98-02
SAMPLE DATE	20100817	20100817	20100819	20100817	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
PCBS (UG/KG)					
AROCLOR-1016	2.7 U	3.7 U	3.4 U	3.2 U	3.5 U
AROCLOR-1221	3.5 U	4.7 U	4.4 U	4.1 U	4.5 U
AROCLOR-1232	3.1 U	4.3 U	3.9 U	3.7 U	4 U
AROCLOR-1242	3 U	4.1 U	3.8 U	3.5 U	3.8 U
AROCLOR-1248	1.7 U	2.4 U	2.2 U	2 U	2.2 U
AROCLOR-1254	2.6 U	3.5 U	3.3 U	3 U	3.4 U
AROCLOR-1260	2.6 U	290	770	3 U	880
TOTAL AROCLOR	0 U	290	770	0 U	880
METALS (MG/KG)					
ANTIMONY	0.048 J	0.92 L	0.83 J	0.17 J	0.7 J
ARSENIC	4.4	8.8	8.2 L	6.2	7.8 L
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1.7	2	1.8 L	1.8	1.8 L
CADMIUM	0.37	31.1	25.9 J	2.5	19.2 J
CHROMIUM	24.7	534	441 L	80.6	304 L
COBALT	NA	NA	NA	NA	NA
COPPER	15.9	100	88.1 L	21.7	88.8 L
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	7.4 J	191 K	163	24.4 J	165
MERCURY	0.024 J	2.7	1.8	0.1	0.97
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	17	49.7	41.1 L	23	40.8 L
SELENIUM	1	2.1	1.9 L	1.3	1.8 L
SILVER	0.055 J	26.8	14.4 L	0.73	8.3 L
THALLIUM	0.12 J	0.31	0.27 K	0.17 J	0.29
VANADIUM	NA	NA	NA	NA	NA
ZINC	52.8	456	387 L	102	379 L
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-99	SD-100	SD-100	SD-100	SD-101
SAMPLE ID	SD-99-02	SD-100-02	SD-100-02-AVG	SD-100-02-D	SD-101-02
SAMPLE DATE	20100819	20100819	20100819	20100819	20100818
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-99	SD-100	SD-100	SD-100	SD-101
SAMPLE ID	SD-99-02	SD-100-02	SD-100-02-AVG	SD-100-02-D	SD-101-02
SAMPLE DATE	20100819	20100819	20100819	20100819	20100818
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-99	SD-100	SD-100	SD-100	SD-101
SAMPLE ID	SD-99-02	SD-100-02	SD-100-02-AVG	SD-100-02-D	SD-101-02
SAMPLE DATE	20100819	20100819	20100819	20100819	20100818
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	8.4 U	6.8 U	6.5 U	6.2 U	29 J
ACENAPHTHYLENE	10 U	8.1 U	7.75 U	7.4 U	50
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	8.5 U	6.9 U	6.65 U	6.4 U	110
BAP EQUIVALENT	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	8.7 U	7 U	6.75 U	6.5 U	580
BAP EQUIVALENT-POSITIVE RESULTS	8.7 U	7 U	6.75 U	6.5 U	580
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	11 U	8.8 U	8.45 U	8.1 U	320
BENZO(A)PYRENE	8.7 U	7 U	6.75 U	6.5 U	340
BENZO(B)FLUORANTHENE	14 U	11 U	10.5 U	10 U	580
BENZO(G,H,I)PERYLENE	8.7 U	7 U	6.75 U	6.5 U	310
BENZO(K)FLUORANTHENE	18 U	14 U	13.5 U	13 U	9.7 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	10 U	8.4 U	8.05 U	7.7 U	350
DIBENZO(A,H)ANTHRACENE	9.7 U	7.8 U	7.5 U	7.2 U	120
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	9.3 U	7.5 U	7.25 U	7 U	520
FLUORENE	11 U	9.3 U	8.95 U	8.6 U	58
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	9 U	7.3 U	7 U	6.7 U	300
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	7.5 U	6.1 U	5.85 U	5.6 U	120
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	14 U	11 U	10.5 U	10 U	300
PHENOL	NA	NA	NA	NA	NA
PYRENE	8.8 U	7.1 U	6.85 U	6.6 U	610
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	0 U	0 U	0 U	0 U	4117

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-99	SD-100	SD-100	SD-100	SD-101
SAMPLE ID	SD-99-02	SD-100-02	SD-100-02-AVG	SD-100-02-D	SD-101-02
SAMPLE DATE	20100819	20100819	20100819	20100819	20100818
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
PCBS (UG/KG)					
AROCLOR-1016	3.3 U	2.6 U	2.5 U	2.4 U	3.5 U
AROCLOR-1221	4.2 U	3.4 U	3.25 U	3.1 U	4.5 U
AROCLOR-1232	3.8 U	3 U	2.9 U	2.8 U	4 U
AROCLOR-1242	3.6 U	2.9 U	2.75 U	2.6 U	3.8 U
AROCLOR-1248	2.1 U	1.7 U	1.6 U	1.5 U	2.2 U
AROCLOR-1254	3.1 U	2.5 U	2.4 U	2.3 U	3.4 U
AROCLOR-1260	3.1 U	2.5 U	2.4 U	2.3 U	62
TOTAL AROCLOR	0 U	0 U	0 U	0 U	62
METALS (MG/KG)					
ANTIMONY	0.082 B	0.066 B	0.058 B	0.05 B	0.86 L
ARSENIC	6.1	3.8 L	3.85 L	3.9 L	8.7
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1.8	1 L	1.05 L	1.1 L	2.1
CADMIUM	0.4 L	0.2 J	0.225 J	0.25 J	44.7
CHROMIUM	29.6	19.4 L	19.45 L	19.5 L	719
COBALT	NA	NA	NA	NA	NA
COPPER	19.7 L	12.3 J	18 J	23.7 J	83.3
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	12.8	9	9.1	9.2	169 K
MERCURY	0.037 J	0.031 J	0.027 J	0.023 J	1.6
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	22.3 L	14.1 L	14.2 L	14.3 L	46.6
SELENIUM	1.2 L	0.71 L	0.72 L	0.73 L	2.2
SILVER	0.066 J	0.043 J	0.045 J	0.047 J	12.8
THALLIUM	0.18 K	0.12 K	0.12 K	0.12 K	0.31
VANADIUM	NA	NA	NA	NA	NA
ZINC	74.8	47.4 L	48.2 L	49 L	479
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	34900	NA	NA	NA	28400
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	0.41 U	NA	NA	NA	4.4
CADMIUM	0.0013 J	NA	NA	NA	0.27
CHROMIUM	0.032	NA	NA	NA	4.9
COPPER	0.023 J	NA	NA	NA	0.43
LEAD	0.017	NA	NA	NA	0.47
NICKEL	0.039 J	NA	NA	NA	0.21
SILVER	0.00036 U	NA	NA	NA	0.0067
ZINC	0.43	NA	NA	NA	4.2

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-102	SD-103	SD-104	SD-105	SD-106
SAMPLE ID	SD-102-02	SD-103-02	SD-104-02	SD-105-02	SD-106-02
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
VOLATILES (UG/KG)					
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA
BENZENE	NA	NA	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA
BROMOFORM	NA	NA	NA	NA	NA
BROMOMETHANE	NA	NA	NA	NA	NA
CARBON DISULFIDE	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	NA	NA
CHLOROETHANE	NA	NA	NA	NA	NA
CHLOROFORM	NA	NA	NA	NA	NA
CHLOROMETHANE	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-102	SD-103	SD-104	SD-105	SD-106
SAMPLE ID	SD-102-02	SD-103-02	SD-104-02	SD-105-02	SD-106-02
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
ISOPROPYLBENZENE	NA	NA	NA	NA	NA
M+P-XYLENES	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	NA	NA
TOLUENE	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DIOXANE	NA	NA	NA	NA	NA
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	NA	NA	NA	NA	NA
2,4-DINITROPHENOL	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA
2-CHLORONAPHTHALENE	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLPHENOL	NA	NA	NA	NA	NA
2-NITROANILINE	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA
3&4-METHYLPHENOL	NA	NA	NA	NA	NA
3,3'-DICHLOROBENZIDINE	NA	NA	NA	NA	NA
3-NITROANILINE	NA	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	NA	NA
4-BROMOPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA
4-CHLOROANILINE	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-102	SD-103	SD-104	SD-105	SD-106
SAMPLE ID	SD-102-02	SD-103-02	SD-104-02	SD-105-02	SD-106-02
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
4-CHLOROPHENYL PHENYL ETHER	NA	NA	NA	NA	NA
4-NITROANILINE	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA
ACENAPHTHENE	25 J	0.39 U	1.8 U	20 J	9.2 U
ACENAPHTHYLENE	56 J	0.46 U	2.1 U	32 J	11 U
ANILINE	NA	NA	NA	NA	NA
ANTHRACENE	97 J	0.4 U	1.8 U	69 J	9.3 U
BAP EQUIVALENT	NA	NA	NA	NA	NA
BAP EQUIVALENT-1/2 NON-DETECTS	452	0.4 U	1.8 U	535	9.6 U
BAP EQUIVALENT-POSITIVE RESULTS	446	0.4 U	1.8 U	535	9.6 U
BENZIDINE	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	280	0.51 U	2.3 U	170	12 U
BENZO(A)PYRENE	320	0.4 U	1.8 U	240	9.6 U
BENZO(B)FLUORANTHENE	580	0.64 U	2.9 U	420	15 U
BENZO(G,H,I)PERYLENE	410	0.4 U	1.8 U	380	9.5 U
BENZO(K)FLUORANTHENE	21 U	0.82 U	3.7 U	20 U	19 U
BENZOIC ACID	NA	NA	NA	NA	NA
BENZYL ALCOHOL	NA	NA	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA
BUTYL BENZYL PHTHALATE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	370	0.48 U	2.2 U	250	11 U
DIBENZO(A,H)ANTHRACENE	12 U	0.45 U	2 U	200	11 U
DIBENZOFURAN	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	NA	NA	NA	NA	NA
DIMETHYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	NA	NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	NA	NA	NA	NA	NA
FLUORANTHENE	600	0.43 U	2 U	330	10 U
FLUORENE	69 J	0.53 U	2.4 U	29 J	13 U
HEXACHLOROBENZENE	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	NA	NA
HEXACHLOROETHANE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	400	0.42 U	1.9 U	360	9.8 U
ISOPHORONE	NA	NA	NA	NA	NA
NAPHTHALENE	130	0.35 U	1.6 U	78 J	8.2 U
NITROBENZENE	NA	NA	NA	NA	NA
N-NITROSODIMETHYLAMINE	NA	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	NA	NA
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA
PHENANTHRENE	280	1.2 J	4.3 J	190	15 U
PHENOL	NA	NA	NA	NA	NA
PYRENE	640	0.41 U	1.9 U	470	9.7 U
PYRIDINE	NA	NA	NA	NA	NA
TOTAL PAHS	4257	1.2	4.3	3238	0 U

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-102	SD-103	SD-104	SD-105	SD-106
SAMPLE ID	SD-102-02	SD-103-02	SD-104-02	SD-105-02	SD-106-02
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	24	24	24	24	24
BOTTOM DEPTH	24	24	24	24	24
PCBS (UG/KG)					
AROCLOR-1016	3.8 U	1.5 U	3.3 U	3.8 U	3.5 U
AROCLOR-1221	4.9 U	1.9 U	4.3 U	4.9 U	4.6 U
AROCLOR-1232	4.4 U	1.7 U	3.8 U	4.4 U	4.1 U
AROCLOR-1242	4.2 U	1.6 U	3.6 U	4.1 U	3.9 U
AROCLOR-1248	2.4 U	0.96 U	2.1 U	2.4 U	2.3 U
AROCLOR-1254	3.6 U	1.4 U	3.2 U	3.6 U	3.4 U
AROCLOR-1260	160	1.4 U	3.2 U	140	3.4 U
TOTAL AROCLOR	160	0 U	0 U	140	0 U
METALS (MG/KG)					
ANTIMONY	1 J	0.057 B	0.095 B	0.75 J	0.07 B
ARSENIC	9.3	1.4	6	9.2	4.9 L
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	2.2 J	0.22 J	1.7 J	2.1 J	1.4 L
CADMIUM	34.9	0.13	0.39	10.9	0.29 J
CHROMIUM	647 K	15.7 K	35.9 K	260 K	27.9 L
COBALT	NA	NA	NA	NA	NA
COPPER	99.5	22.1	18.9	113	16 L
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	207	6.9 J	13.5	182	12.5
MERCURY	1.6	0.0066 U	0.043 J	0.75	0.041 J
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	54.5	0.67	22.7	47.4	20.5 L
SELENIUM	2.3	0.81	1.1	2.1	1 L
SILVER	18.4 J	0.0088 J	0.064 J	4 J	0.055 J
THALLIUM	0.36	0.059 J	0.2	0.28	0.18 K
VANADIUM	NA	NA	NA	NA	NA
ZINC	497	2	72.3	418	70.2 L
METALS (UG/KG)					
DIBUTYLTIN	NA	NA	NA	NA	NA
MONOBUTYLTIN	NA	NA	NA	NA	NA
TETRABUTYLTIN	NA	NA	NA	NA	NA
TRIBUTYLTIN	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-3
Summary of Analytical Results for Subsurface Sediment, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

Definitions:
B = Blank contamination
J = Estimated
K = Biased high
L = Biased low
NA = Not applicable or not available
R = Rejected
SB = Subsurface sediment
SD = Sediment
U = Non-detected

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-43	SD-44
SAMPLE ID	BOWLEYS_QUARTERS-04	MIDDLE_RIVER_DOWNSTREAM-04	MARSHY_POINT-04	SD-43-04	SD-44-04
SAMPLE DATE	20100821	20100820	20100821	20081117	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	48	48	48	36	30
BOTTOM DEPTH	48	48	48	40	34
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	NA	NA	NA	450 U	670 U
2-METHYLNAPHTHALENE	NA	NA	NA	450 U	670 U
ACENAPHTHENE	2.3 U	1.9 U	4.3 U	450 U	670 U
ACENAPHTHYLENE	2.8 U	2.3 U	5.1 U	450 U	670 U
ANTHRACENE	2.4 U	2 U	4.4 U	450 U	670 U
BAP EQUIVALENT-1/2 NON-DETECTS	2.4 U	2 U	4.5 U	450 U	670 U
BAP EQUIVALENT-POSITIVE RESULTS	2.4 U	2 U	4.5 U	450 U	670 U
BENZO(A)ANTHRACENE	3.1 U	2.5 U	5.6 U	450 U	670 U
BENZO(A)PYRENE	2.4 U	2 U	4.5 U	450 U	670 U
BENZO(B)FLUORANTHENE	3.8 U	3.2 U	7 U	450 U	670 U
BENZO(G,H,I)PERYLENE	2.4 U	2 U	4.4 U	450 U	670 U
BENZO(K)FLUORANTHENE	4.9 U	4.1 U	9 U	450 U	670 U
CHRYSENE	2.9 U	2.4 U	5.3 U	450 U	670 U
DIBENZO(A,H)ANTHRACENE	2.7 U	2.2 U	5 U	450 U	670 U
FLUORANTHENE	2.6 U	2.1 U	4.8 U	450 U	670 U
FLUORENE	3.2 U	2.6 U	5.9 U	450 U	670 U
INDENO(1,2,3-CD)PYRENE	2.5 U	2.1 U	4.6 U	450 U	670 U
NAPHTHALENE	2.1 U	1.7 U	3.8 U	450 U	670 U
PHENANTHRENE	3.9 U	3.2 U	7.1 U	450 U	670 U
PYRENE	2.5 U	2 U	4.5 U	450 U	670 U
TOTAL PAHS	0 U	0 U	0 U	0 U	0 U
PCBS (UG/KG)					
AROCLOR-1016	1.8 U	3.7 U	3.3 U	28 U	33 U
AROCLOR-1221	2.3 U	4.8 U	4.2 U	28 U	33 U
AROCLOR-1232	2.1 U	4.3 U	3.7 U	28 U	33 U
AROCLOR-1242	2 U	4.1 U	3.6 U	28 U	33 U
AROCLOR-1248	1.2 U	2.4 U	2.1 U	28 U	33 U
AROCLOR-1254	1.7 U	3.6 U	3.1 U	28 U	33 U
AROCLOR-1260	1.7 U	3.6 U	3.1 U	28 U	33 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.032 J	0.48 B	0.079 J	0.16 U	0.19 U
ARSENIC	1.6	5.7 L	6.8	3	2.3
BARIUM	NA	NA	NA	46.1 J	27.7
BERYLLIUM	0.33	1.6	1.4	1.1 J	2.4
CADMIUM	0.096	0.64 L	0.34	0.12 B	0.15
CHROMIUM	8.9	33.7	32.9	24.1 J	18.5
COBALT	NA	NA	NA	9.4	16.6
COPPER	4.9	18.8 L	14	13.3 J	12.6
LEAD	4.3	16.6	18.6	8.1 J	6.3
MERCURY	0.008 U	0.045 J	0.051	0.039 B	0.015
MOLYBDENUM	NA	NA	NA	0.56	1.5
NICKEL	6.6	24.8 L	27.3	13.8	18.5
SELENIUM	0.42	1 L	1.1	0.94	1
SILVER	0.026 J	0.062 J	0.07 J	0.11 B	0.17
THALLIUM	0.061 J	0.19	0.19	0.27 U	0.33 U
VANADIUM	NA	NA	NA	42.5 J	27.7
ZINC	23.1	101 L	94.7	32	48.9

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	BOWLEY	DOWNSTREAM	MARSHY_POINT	SD-43	SD-44
SAMPLE ID	BOWLEYS_QUARTERS-04	MIDDLE_RIVER_DOWNSTREAM-04	MARSHY_POINT-04	SD-43-04	SD-44-04
SAMPLE DATE	20100821	20100820	20100821	20081117	20081117
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	BACKGROUND	OFFSITE	BACKGROUND	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	48	48	48	36	30
BOTTOM DEPTH	48	48	48	40	34
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	60	50
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	32000	NA	NA	30000
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-45	SD-46	SD-47	SD-47	SD-47
SAMPLE ID	SD-45-04	SD-46-04	SD-47-04	SD-47-04-AVG	SD-47-04-D
SAMPLE DATE	20081117	20081115	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	45	46	43	43	43
BOTTOM DEPTH	49	50	51	51	51
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	680 U	740 U	400 U	400 U	400 U
2-METHYLNAPHTHALENE	680 U	740 U	400 U	400 U	400 U
ACENAPHTHENE	680 U	740 U	400 U	400 U	400 U
ACENAPHTHYLENE	680 U	740 U	400 U	400 U	400 U
ANTHRACENE	680 U	740 U	400 U	400 U	400 U
BAP EQUIVALENT-1/2 NON-DETECTS	680 U	740 U	400 U	400 U	400 U
BAP EQUIVALENT-POSITIVE RESULTS	680 U	740 U	400 U	400 U	400 U
BENZO(A)ANTHRACENE	680 U	740 U	400 U	400 U	400 U
BENZO(A)PYRENE	680 U	740 U	400 U	400 U	400 U
BENZO(B)FLUORANTHENE	680 U	740 U	400 U	400 U	400 U
BENZO(G,H,I)PERYLENE	680 U	740 U	400 U	400 U	400 U
BENZO(K)FLUORANTHENE	680 U	740 U	400 U	400 U	400 U
CHRYSENE	680 U	740 U	400 U	400 U	400 U
DIBENZO(A,H)ANTHRACENE	680 U	740 U	400 U	400 U	400 U
FLUORANTHENE	680 U	740 U	400 U	400 U	400 U
FLUORENE	680 U	740 U	400 U	400 U	400 U
INDENO(1,2,3-CD)PYRENE	680 U	740 U	400 U	400 U	400 U
NAPHTHALENE	680 U	740 U	400 U	400 U	400 U
PHENANTHRENE	680 U	740 U	400 U	400 U	400 U
PYRENE	680 U	740 U	400 U	400 U	400 U
TOTAL PAHS	0 U	0 U	0 U	0 U	0 U
PCBS (UG/KG)					
AROCLOR-1016	34 U	37 U	20 U	20 U	20 U
AROCLOR-1221	34 U	37 U	20 U	20 U	20 U
AROCLOR-1232	34 U	37 U	20 U	20 U	20 U
AROCLOR-1242	34 U	37 U	20 U	20 U	20 U
AROCLOR-1248	34 U	37 U	20 U	20 U	20 U
AROCLOR-1254	34 U	37 U	20 U	20 U	20 U
AROCLOR-1260	34 U	37 U	20 U	20 U	20 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.2 U	0.22 UL	0.12 UL	0.12 UL	0.12 UL
ARSENIC	3.8	4.5	2.2	2.35	2.5
BARIUM	22.8	27.5	11.9	11.35	10.8
BERYLLIUM	1.5	1.9	1.6	1.65	1.7
CADMIUM	0.19	0.23	0.13	0.14	0.15
CHROMIUM	21.4	25.9	16.6	16.85	17.1
COBALT	10	13.6	2.9	2.75	2.6
COPPER	12.4	16.5	7.7	7.8	7.9
LEAD	7.2	9.6	4.1	3.95	3.8
MERCURY	0.022	0.057 B	0.014 B	0.014 B	0.014 B
MOLYBDENUM	1.3	1.1	0.45	0.455	0.46
NICKEL	12.8	18.3	11.6	11.6	11.6
SELENIUM	0.97	0.74	0.91	0.905	0.9
SILVER	0.16	0.14	0.18	0.225	0.27
THALLIUM	0.34 U	0.37 U	0.21 U	0.21 U	0.21 U
VANADIUM	25.7	34.9	27.7	27.85	28
ZINC	44.7	53.1	28.3	28.3	28.3

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-45	SD-46	SD-47	SD-47	SD-47
SAMPLE ID	SD-45-04	SD-46-04	SD-47-04	SD-47-04-AVG	SD-47-04-D
SAMPLE DATE	20081117	20081115	20081115	20081115	20081115
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	45	46	43	43	43
BOTTOM DEPTH	49	50	51	51	51
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	49	45	82	82.5	83
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	20000	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-48	SD-49	SD-50	SD-51	SD-53
SAMPLE ID	SD-48-04	SD-49-04	SD-50-04	SD-51-04	SD-53-04
SAMPLE DATE	20081115	20081115	20081114	20081115	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	46	46	44	46	42
BOTTOM DEPTH	50	50	48	50	46
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	400 U	470 U	720 U	870 U	600 U
2-METHYLNAPHTHALENE	400 U	470 U	720 U	870 U	600 U
ACENAPHTHENE	400 U	470 U	720 U	870 U	600 U
ACENAPHTHYLENE	400 U	470 U	720 U	870 U	600 U
ANTHRACENE	400 U	470 U	720 U	870 U	600 U
BAP EQUIVALENT-1/2 NON-DETECTS	400 U	470 U	810	870 U	600 U
BAP EQUIVALENT-POSITIVE RESULTS	400 U	470 U	18.2	870 U	600 U
BENZO(A)ANTHRACENE	400 U	470 U	720 U	870 U	600 U
BENZO(A)PYRENE	400 U	470 U	720 U	870 U	600 U
BENZO(B)FLUORANTHENE	400 U	470 U	160 J	870 U	600 U
BENZO(G,H,I)PERYLENE	400 U	470 U	720 U	870 U	600 U
BENZO(K)FLUORANTHENE	400 U	470 U	200 J	870 U	600 U
CHRYSENE	400 U	470 U	220 J	870 U	600 U
DIBENZO(A,H)ANTHRACENE	400 U	470 U	720 U	870 U	600 U
FLUORANTHENE	400 U	470 U	360 J	870 U	600 U
FLUORENE	400 U	470 U	720 U	870 U	600 U
INDENO(1,2,3-CD)PYRENE	400 U	470 U	720 U	870 U	600 U
NAPHTHALENE	400 U	470 U	720 U	870 U	600 U
PHENANTHRENE	400 U	470 U	180 J	870 U	600 U
PYRENE	400 U	470 U	480 J	870 U	600 U
TOTAL PAHS	0 U	0 U	1600	0 U	0 U
PCBS (UG/KG)					
AROCLOR-1016	20 U	30 U	36 U	44 U	30 U
AROCLOR-1221	20 U	30 U	720 UJ	44 U	30 U
AROCLOR-1232	20 U	30 U	720 UJ	44 U	30 U
AROCLOR-1242	20 U	30 U	720 UJ	44 U	30 U
AROCLOR-1248	20 U	30 U	720 UJ	44 U	30 U
AROCLOR-1254	20 U	30 U	720 UJ	44 U	30 U
AROCLOR-1260	20 U	30 U	36 U	44 U	30 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.11 UL	0.17 U	0.21 UJ	0.27 UL	0.18 UL
ARSENIC	0.75 B	3.5	7.4	8.8	4.6
BARIUM	11.6	18.3 J	37.4	48.2	18.2
BERYLLIUM	0.46	1.1 J	1.8	2.2	1.2
CADMIUM	0.022	0.14 B	12	3.6	0.054
CHROMIUM	13.8	18.4 J	242	153	19.4
COBALT	1.3	8.7	16	20	6.5
COPPER	5	10.8 J	34.2	42.3	12.6
LEAD	4.5	8.3 J	46.9	76.6	6.5
MERCURY	0.037 B	0.027 B	0.43	0.24	0.023
MOLYBDENUM	0.16 B	0.96	1.1 J	1.3	0.78
NICKEL	3.9	12.2	27.5	30.4	12.1
SELENIUM	0.37 U	0.67	1	1.8	0.99
SILVER	0.072 U	0.11 U	2.7	1.8	0.11 U
THALLIUM	0.2 U	0.3 U	0.37 U	0.46 U	0.3 U
VANADIUM	23.7	18.8 J	34.5	45	21.3
ZINC	7	45.3	190	146	36.3

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-48	SD-49	SD-50	SD-51	SD-53
SAMPLE ID	SD-48-04	SD-49-04	SD-50-04	SD-51-04	SD-53-04
SAMPLE DATE	20081115	20081115	20081114	20081115	20081114
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	46	46	44	46	42
BOTTOM DEPTH	50	50	48	50	46
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	84	56	NA	38	55
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	14000	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-54	SD-56	SD-56	SD-56	SD-57
SAMPLE ID	SD-54-04	SD-56-04	SD-56-04-AVG	SD-56-04-D	SD-57-04
SAMPLE DATE	20081114	20081113	20081113	20081113	20081114
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	40	44	44	44	44
BOTTOM DEPTH	44	52	52	52	48
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	530 U	640 U	645 U	650 U	770 U
2-METHYLNAPHTHALENE	530 U	640 U	645 U	650 U	770 U
ACENAPHTHENE	530 U	640 U	645 U	650 U	770 U
ACENAPHTHYLENE	530 U	640 U	645 U	650 U	770 U
ANTHRACENE	530 U	640 U	645 U	650 U	770 U
BAP EQUIVALENT-1/2 NON-DETECTS	530 U	640 U	645 U	650 U	770 U
BAP EQUIVALENT-POSITIVE RESULTS	530 U	640 U	645 U	650 U	770 U
BENZO(A)ANTHRACENE	530 U	640 U	645 U	650 U	770 U
BENZO(A)PYRENE	530 U	640 U	645 U	650 U	770 U
BENZO(B)FLUORANTHENE	530 U	640 U	645 U	650 U	770 U
BENZO(G,H,I)PERYLENE	530 U	640 U	645 U	650 U	770 U
BENZO(K)FLUORANTHENE	530 U	640 U	645 U	650 U	770 U
CHRYSENE	530 U	640 U	645 U	650 U	770 U
DIBENZO(A,H)ANTHRACENE	530 U	640 U	645 U	650 U	770 U
FLUORANTHENE	530 U	79 J	79 J	650 U	770 U
FLUORENE	530 U	640 U	645 U	650 U	770 U
INDENO(1,2,3-CD)PYRENE	530 U	640 U	645 U	650 U	770 U
NAPHTHALENE	530 U	640 U	645 U	650 U	770 U
PHENANTHRENE	530 U	640 U	645 U	650 U	770 U
PYRENE	530 U	640 U	645 U	650 U	770 U
TOTAL PAHS	0 U	79	79	0 U	0 U
PCBS (UG/KG)					
AROCLOR-1016	27 U	32 U	32 U	32 U	39 U
AROCLOR-1221	27 U	32 U	32 U	32 U	39 U
AROCLOR-1232	27 U	32 U	32 U	32 U	39 U
AROCLOR-1242	27 U	32 U	32 U	32 U	39 U
AROCLOR-1248	27 U	32 U	32 U	32 U	39 U
AROCLOR-1254	27 U	32 U	32 U	32 U	39 U
AROCLOR-1260	27 U	32 U	32 U	32 U	39 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.16 UL	0.19 UL	0.195 UL	0.2 UL	0.24 UJ
ARSENIC	2.6	5.8	5.95	6.1	8.5
BARIUM	16	27.2	27.4	27.6	27.6
BERYLLIUM	2.3	1.9	1.95	2	1.9
CADMIUM	0.0092 U	3.6	3.5	3.4	0.014 U
CHROMIUM	19.6	79.2	78.95	78.7	31.6
COBALT	8	11.3	11.45	11.6	12
COPPER	10.9	29.2	29.75	30.3	18.3
LEAD	6.5	24.5	24.7	24.9	10.6
MERCURY	0.023	0.087	0.0905	0.094	0.022
MOLYBDENUM	0.91	1.1	1.15	1.2	1 B
NICKEL	17.4	23.6	24.15	24.7	21.7
SELENIUM	0.94	1.1	1.15	1.2	0.84
SILVER	0.13	1.5	1.5	1.5	0.15 U
THALLIUM	0.27 U	0.32 U	0.33 U	0.34 U	0.41 U
VANADIUM	31	41.5	43.2	44.9	36.9
ZINC	34.7	81.3	82.15	83	63.2

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-54	SD-56	SD-56	SD-56	SD-57
SAMPLE ID	SD-54-04	SD-56-04	SD-56-04-AVG	SD-56-04-D	SD-57-04
SAMPLE DATE	20081114	20081113	20081113	20081113	20081114
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	40	44	44	44	44
BOTTOM DEPTH	44	52	52	52	48
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	63	52	52	52	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-58	SD-59	SD-60	SD-61	SD-62
SAMPLE ID	SD-58-04	SD-59-04	SD-60-04	SD-61-04	SD-62-04
SAMPLE DATE	20081114	20081115	20081112	20081113	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	45	46	38	46	46
BOTTOM DEPTH	49	50	42	50	50
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	620 U	340 U	340 U	400 U	350 U
2-METHYLNAPHTHALENE	620 U	340 U	340 U	400 U	350 U
ACENAPHTHENE	620 U	340 U	340 U	400 U	350 U
ACENAPHTHYLENE	620 U	340 U	340 U	400 U	350 U
ANTHRACENE	620 U	340 U	340 U	400 U	350 U
BAP EQUIVALENT-1/2 NON-DETECTS	716	340 U	340 U	400 U	350 U
BAP EQUIVALENT-POSITIVE RESULTS	0.090	340 U	340 U	400 U	350 U
BENZO(A)ANTHRACENE	620 U	340 U	340 U	400 U	350 U
BENZO(A)PYRENE	620 U	340 U	340 U	400 U	350 U
BENZO(B)FLUORANTHENE	620 U	340 U	340 U	400 U	350 U
BENZO(G,H,I)PERYLENE	620 U	340 U	340 U	400 U	350 U
BENZO(K)FLUORANTHENE	620 U	340 U	340 U	400 U	350 U
CHRYSENE	90 J	340 U	340 U	400 U	350 U
DIBENZO(A,H)ANTHRACENE	620 U	340 U	340 U	400 U	350 U
FLUORANTHENE	180 J	340 U	340 U	400 U	350 U
FLUORENE	620 U	340 U	340 U	400 U	350 U
INDENO(1,2,3-CD)PYRENE	620 U	340 U	340 U	400 U	350 U
NAPHTHALENE	620 U	340 U	340 U	400 U	350 U
PHENANTHRENE	160 J	340 U	340 U	400 U	350 U
PYRENE	180 J	340 U	340 U	400 U	350 UJ
TOTAL PAHS	610	0 U	0 U	0 U	0 U
PCBS (UG/KG)					
AROCLOR-1016	31 U	22 U	21 U	20 U	22 U
AROCLOR-1221	31 U	22 U	21 U	20 U	22 U
AROCLOR-1232	31 U	22 U	21 U	20 U	22 U
AROCLOR-1242	31 U	22 U	21 U	20 U	22 U
AROCLOR-1248	31 U	22 U	21 U	20 U	22 U
AROCLOR-1254	31 U	22 U	21 U	20 U	22 U
AROCLOR-1260	31 U	22 U	21 U	20 U	22 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.19 UJ	0.12 U	0.22 J	0.12 UL	0.13 UL
ARSENIC	8.1	2.1	3.3	1.1	9.9
BARIUM	33.2	9.2 J	15.7 J	4.4	12.2 J
BERYLLIUM	2.8	2.4 J	0.76 J	0.17	1.6 J
CADMIUM	0.012 U	0.0072 U	0.0077 U	0.0073 U	0.017 J
CHROMIUM	39.7	19.8 J	20.7 J	8	15.8 J
COBALT	16.2	4.5	2.6 J	0.76	2.9 J
COPPER	19.4	7.5 J	7.3 J	1.6	11.7 J
LEAD	11.5	5.8 J	5.4	1.5	5.2 J
MERCURY	0.015	0.015 B	0.0087	0.0072 U	0.011 B
MOLYBDENUM	1.7	0.5	0.32	0.052	0.22 J
NICKEL	39.6	15	10.8 J	2.7	10.5 J
SELENIUM	0.72	0.67	0.53	0.41 U	0.43 UL
SILVER	0.12 U	0.077 U	0.082 U	0.078 U	0.083 UL
THALLIUM	0.33 U	0.21 U	0.22 U	0.21 U	0.23 U
VANADIUM	48.1	30.3 J	31.2 J	13.7	22.8 J
ZINC	78.4	24.5	21.4 J	3.8	19 J

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-58	SD-59	SD-60	SD-61	SD-62
SAMPLE ID	SD-58-04	SD-59-04	SD-60-04	SD-61-04	SD-62-04
SAMPLE DATE	20081114	20081115	20081112	20081113	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	45	46	38	46	46
BOTTOM DEPTH	49	50	42	50	50
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	77	78	83	77
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	2000
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-63	SD-64	SD-65	SD-66	SD-67
SAMPLE ID	SD-63-04	SD-64-04	SD-65-04	SD-66-04	SD-67-04
SAMPLE DATE	20081112	20081112	20081111	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	46	46	37	39	46
BOTTOM DEPTH	50	50	41	43	50
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	340 U	660 U	410 UJ	360 U	470 UJ
2-METHYLNAPHTHALENE	340 U	660 U	410 UJ	360 U	470 UJ
ACENAPHTHENE	340 U	660 U	410 UJ	360 U	470 UJ
ACENAPHTHYLENE	340 U	660 U	410 UJ	360 U	470 UJ
ANTHRACENE	340 U	660 U	410 UJ	360 U	470 UJ
BAP EQUIVALENT-1/2 NON-DETECTS	340 U	660 U	410 U	360 U	470 U
BAP EQUIVALENT-POSITIVE RESULTS	340 U	660 U	410 U	360 U	470 U
BENZO(A)ANTHRACENE	340 U	660 U	410 UJ	360 U	470 UJ
BENZO(A)PYRENE	340 U	660 U	410 UJ	360 U	470 UJ
BENZO(B)FLUORANTHENE	340 U	660 U	410 UJ	360 U	470 UJ
BENZO(G,H,I)PERYLENE	340 U	660 U	410 UJ	360 U	470 UJ
BENZO(K)FLUORANTHENE	340 U	660 U	410 UJ	360 U	470 UJ
CHRYSENE	340 U	660 U	410 UJ	360 U	470 UJ
DIBENZO(A,H)ANTHRACENE	340 U	660 U	410 UJ	360 U	470 UJ
FLUORANTHENE	340 U	660 U	410 UJ	360 U	470 UJ
FLUORENE	340 U	660 U	410 UJ	360 U	470 UJ
INDENO(1,2,3-CD)PYRENE	340 U	660 U	410 UJ	360 U	470 UJ
NAPHTHALENE	340 U	660 U	410 UJ	360 U	470 UJ
PHENANTHRENE	340 U	660 U	410 UJ	360 U	470 UJ
PYRENE	340 UJ	660 U	410 UJ	360 U	470 UJ
TOTAL PAHS	0 U	0 U	0 U	0 U	0 U
PCBS (UG/KG)					
AROCLOR-1016	21 U	41 U	21 U	22 U	24 U
AROCLOR-1221	21 U	41 U	21 U	22 U	24 U
AROCLOR-1232	21 U	41 U	21 U	22 U	24 U
AROCLOR-1242	21 U	41 U	21 U	22 U	24 U
AROCLOR-1248	21 U	41 U	21 U	22 U	24 U
AROCLOR-1254	21 U	41 U	21 U	22 U	24 U
AROCLOR-1260	21 U	41 U	21 U	22 U	24 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.13 UL	0.24 UL	0.12 UJ	0.14 UL	0.14 UJ
ARSENIC	1.8	6.8	6.8	1.5	4.6
BARIUM	10.6 J	31.9 J	19.2	9.3 J	25.6
BERYLLIUM	0.73 J	2.1 J	1.7	0.59 J	5.6
CADMIUM	0.0077 UL	0.17 J	0.0069 U	0.052 B	1.1
CHROMIUM	16.2 J	29.4 J	20.9	11.9 J	25.4
COBALT	3.3 J	11.7 J	15.5	3.8 J	39.7
COPPER	9 J	21.8 J	14.7 J	5.8 J	28.4 J
LEAD	6.6 J	8.8 J	8.1	3.8	13.7
MERCURY	0.034	0.039 B	0.011	0.0074 U	0.033
MOLYBDENUM	0.31 J	2.4 J	0.34 B	0.43	0.2 B
NICKEL	11.4 J	22.1 J	38 J	8.8 J	55.2 J
SELENIUM	0.63 J	1.3 J	0.38 UL	0.45 U	0.45 UL
SILVER	0.081 UL	0.15 UL	0.073 U	0.086 U	0.13
THALLIUM	0.22 U	0.41 U	0.2 U	0.23 U	0.23 U
VANADIUM	27.4 J	31.2 J	36	16.7 J	32.3
ZINC	19.8 J	72.2 J	76.2 J	25.1 J	204 J

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-63	SD-64	SD-65	SD-66	SD-67
SAMPLE ID	SD-63-04	SD-64-04	SD-65-04	SD-66-04	SD-67-04
SAMPLE DATE	20081112	20081112	20081111	20081112	20081111
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	46	46	37	39	46
BOTTOM DEPTH	50	50	41	43	50
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	79	41	NA	74	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	1400	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-68	SD-70	SD-71	SD-73	SD-75
SAMPLE ID	SD-68-04	SD-70-04	SD-71-04	SD-73-04	SD-75-04
SAMPLE DATE	20081112	20081111	20081111	20081111	20081112
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	43	34	42	42	42
BOTTOM DEPTH	47	38	46	46	46
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	330 U	420 UJ	430 UJ	660 U	320 U
2-METHYLNAPHTHALENE	330 U	420 UJ	430 UJ	660 U	320 U
ACENAPHTHENE	330 U	420 UJ	430 UJ	660 U	320 U
ACENAPHTHYLENE	330 U	420 UJ	430 UJ	660 U	320 U
ANTHRACENE	330 U	420 UJ	430 UJ	660 U	320 U
BAP EQUIVALENT-1/2 NON-DETECTS	330 U	420 U	430 U	660 U	320 U
BAP EQUIVALENT-POSITIVE RESULTS	330 U	420 U	430 U	660 U	320 U
BENZO(A)ANTHRACENE	330 U	420 UJ	430 UJ	660 U	320 U
BENZO(A)PYRENE	330 U	420 UJ	430 UJ	660 U	320 U
BENZO(B)FLUORANTHENE	330 U	420 UJ	430 UJ	660 U	320 U
BENZO(G,H,I)PERYLENE	330 U	420 UJ	430 UJ	660 U	320 U
BENZO(K)FLUORANTHENE	330 U	420 UJ	430 UJ	660 U	320 U
CHRYSENE	330 U	420 UJ	430 UJ	660 U	320 U
DIBENZO(A,H)ANTHRACENE	330 U	420 UJ	430 UJ	660 U	320 U
FLUORANTHENE	330 U	420 UJ	430 UJ	660 U	320 U
FLUORENE	330 U	420 UJ	430 UJ	660 U	320 U
INDENO(1,2,3-CD)PYRENE	330 U	420 UJ	430 UJ	660 U	320 U
NAPHTHALENE	330 U	420 UJ	430 UJ	660 U	320 U
PHENANTHRENE	330 U	420 UJ	430 UJ	660 U	320 U
PYRENE	330 U	420 UJ	430 UJ	660 U	320 U
TOTAL PAHS	0 U	0 U	0 U	0 U	0 U
PCBS (UG/KG)					
AROCLOR-1016	21 U	21 U	22 U	33 U	20 U
AROCLOR-1221	21 U	21 U	22 U	33 U	20 U
AROCLOR-1232	21 U	21 U	22 U	33 U	20 U
AROCLOR-1242	21 U	21 U	22 U	33 U	20 U
AROCLOR-1248	21 U	21 U	22 U	33 U	20 U
AROCLOR-1254	21 U	21 U	22 U	33 U	20 U
AROCLOR-1260	21 UJ	21 U	22 U	33 U	20 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.13 UL	0.13 UJ	0.13 UJ	0.2 UL	0.12 UL
ARSENIC	2.7	1.6	3.5	5.2	0.55
BARIUM	15.6 J	8.1	16.7	20.6	13.5 J
BERYLLIUM	2.4 J	0.55	1.2	1.8	0.27 J
CADMIUM	0.013 B	0.039	0.0076 U	0.048	0.0072 U
CHROMIUM	15 J	11.8	15.6	27.5	6 J
COBALT	70.8 J	6.2	22.7	10.1	1.4 J
COPPER	12.4 J	8.5 J	12.6 J	14.8	6.9 J
LEAD	6.5	3.2	5.1	7.1	1.7
MERCURY	0.012	0.0079	0.014	0.028 B	0.0068 U
MOLYBDENUM	0.051 U	0.31 B	0.31 B	1.1	0.14 B
NICKEL	25.3 J	11.7 J	38.5 J	19	2.9 J
SELENIUM	0.78	0.42 UL	0.47 J	0.67 UL	0.52
SILVER	0.079 U	0.081 U	0.081 U	0.13 U	0.1 B
THALLIUM	0.22 U	0.22 U	0.22 U	0.35 U	0.21 U
VANADIUM	23.3 J	18.2	33.9	29.8 K	6.4 J
ZINC	71.7 J	47.5 J	59.3 J	47.1	15.1 J

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-68**	**SD-70**	**SD-71**	**SD-73**	**SD-75**
SAMPLE ID	**SD-68-04**	**SD-70-04**	**SD-71-04**	**SD-73-04**	**SD-75-04**
SAMPLE DATE	**20081112**	**20081111**	**20081111**	**20081111**	**20081112**
SAMPLE CODE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
MATRIX	**SD**	**SD**	**SD**	**SD**	**SD**
SAMPLE TYPE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
SUBMATRIX	**SB**	**SB**	**SB**	**SB**	**SB**
TOP DEPTH	**43**	**34**	**42**	**42**	**42**
BOTTOM DEPTH	**47**	**38**	**46**	**46**	**46**
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	81	NA	NA	50	84
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	4400	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-76	SD-77	SD-77	SD-77	SD-79
SAMPLE ID	SD-76-04	SD-77-04	SD-77-04-AVG	SD-77-04-D	SD-79-02
SAMPLE DATE	20081111	20081110	20081110	20081110	20081114
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	46	44	44	44	31
BOTTOM DEPTH	50	52	52	52	35
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	470 U	500 U	510 U	520 U	850 U
2-METHYLNAPHTHALENE	470 U	500 U	510 U	520 U	850 U
ACENAPHTHENE	130 J	500 U	510 U	520 U	850 U
ACENAPHTHYLENE	470 U	500 U	510 U	520 U	850 U
ANTHRACENE	110 K	500 U	510 U	520 U	850 U
BAP EQUIVALENT-1/2 NON-DETECTS	543	500 U	510 U	520 U	850 U
BAP EQUIVALENT-POSITIVE RESULTS	0.14	500 U	510 U	520 U	850 U
BENZO(A)ANTHRACENE	470 U	500 U	510 U	520 U	850 U
BENZO(A)PYRENE	470 U	500 U	510 U	520 U	850 U
BENZO(B)FLUORANTHENE	470 U	500 U	510 U	520 U	850 U
BENZO(G,H,I)PERYLENE	470 U	500 U	510 U	520 U	850 U
BENZO(K)FLUORANTHENE	470 U	500 U	510 U	520 U	850 U
CHRYSENE	140 J	500 U	510 U	520 U	850 U
DIBENZO(A,H)ANTHRACENE	470 U	500 U	510 U	520 U	850 U
FLUORANTHENE	320 J	500 U	510 U	520 U	850 U
FLUORENE	180 J	500 U	510 U	520 U	850 U
INDENO(1,2,3-CD)PYRENE	470 U	500 U	510 U	520 U	850 U
NAPHTHALENE	470 U	500 U	510 U	520 U	850 U
PHENANTHRENE	700	500 U	510 U	520 U	850 U
PYRENE	440 J	500 U	510 U	520 U	850 U
TOTAL PAHS	2020	0 U	0 U	0 U	0 U
PCBS (UG/KG)					
AROCLOR-1016	24 U	25 U	25.5 U	26 U	42 U
AROCLOR-1221	24 U	25 U	25.5 U	26 U	42 U
AROCLOR-1232	24 U	25 U	25.5 U	26 U	42 U
AROCLOR-1242	24 U	25 U	25.5 U	26 U	42 U
AROCLOR-1248	24 U	25 U	25.5 U	26 U	42 U
AROCLOR-1254	24 U	25 U	25.5 U	26 U	42 U
AROCLOR-1260	81	25 U	25.5 U	26 U	42 U
TOTAL AROCLOR	81	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	23.9 L	0.15 UL	0.15 UL	0.15 UL	0.26 UL
ARSENIC	6.3	3.9	3.95	4	7.6
BARIUM	54.1	13.8	13.6	13.4	34.6
BERYLLIUM	1.3	1.2	1.2	1.2	1.6
CADMIUM	3.3	0.0086 U	0.0088 U	0.009 U	0.016 U
CHROMIUM	60.9	20.7	21.95	23.2	31.8
COBALT	7.5	6.9	6.8	6.7	14.8
COPPER	23.9	16.1	16.4	16.7	16.2
LEAD	61.9	6.7	6.8	6.9	13
MERCURY	0.15	0.011 B	0.0135 B	0.016 B	0.031
MOLYBDENUM	1.6	1.4	1.35	1.3	0.83 B
NICKEL	16.5	12.5	12.65	12.8	23.7
SELENIUM	0.47 UL	0.48 UL	0.49 UL	0.5 UL	0.86 U
SILVER	9.1	0.092 U	0.094 U	0.096 U	0.17 U
THALLIUM	0.24 U	0.25 U	0.255 U	0.26 U	0.45 U
VANADIUM	36.6 K	37.2 K	37.8 K	38.4 K	40
ZINC	107	27.5	27.35	27.2	69.7

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-76**	**SD-77**	**SD-77**	**SD-77**	**SD-79**
SAMPLE ID	**SD-76-04**	**SD-77-04**	**SD-77-04-AVG**	**SD-77-04-D**	**SD-79-02**
SAMPLE DATE	**20081111**	**20081110**	**20081110**	**20081110**	**20081114**
SAMPLE CODE	**NORMAL**	**ORIG**	**AVG**	**DUP**	**NORMAL**
MATRIX	**SD**	**SD**	**SD**	**SD**	**SD**
SAMPLE TYPE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
SUBMATRIX	**SB**	**SB**	**SB**	**SB**	**SB**
TOP DEPTH	**46**	**44**	**44**	**44**	**31**
BOTTOM DEPTH	**50**	**52**	**52**	**52**	**35**
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	70	66	65	64	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	10000	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-83	SD-85	SD-86	SD-87	SD-88
SAMPLE ID	SD-83-04	SD-85-04	SD-86-04	SD-87-04	SD-88-04
SAMPLE DATE	20100820	20100819	20100818	20100818	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	48	48	48	48	48
BOTTOM DEPTH	48	48	48	48	48
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
ACENAPHTHENE	0.47 U	1.6 U	8.2 J	16 J	6.3 U
ACENAPHTHYLENE	0.56 U	1.9 U	3.9 U	15 J	21 J
ANTHRACENE	0.9 J	1.6 U	4.8 J	37	13 J
BAP EQUIVALENT-1/2 NON-DETECTS	0.49 U	1.7 U	41.9	267	57.6
BAP EQUIVALENT-POSITIVE RESULTS	0.49 U	1.7 U	39.9	267	53.8
BENZO(A)ANTHRACENE	0.61 U	2.1 U	24 J	160	47 J
BENZO(A)PYRENE	0.49 U	1.7 U	25 J	160	30 J
BENZO(B)FLUORANTHENE	0.76 U	2.6 U	41	250	41 J
BENZO(G,H,I)PERYLENE	0.48 U	1.6 U	71	130	6.5 U
BENZO(K)FLUORANTHENE	0.98 U	3.3 U	6.9 U	3.3 U	13 U
CHRYSENE	0.58 U	2 U	26 J	160	37 J
DIBENZO(A,H)ANTHRACENE	0.54 U	1.8 U	3.8 U	54	7.3 U
FLUORANTHENE	3.1 J	1.8 U	33 J	240	79
FLUORENE	1.2 J	2.2 U	5.6 J	13 J	8.6 U
INDENO(1,2,3-CD)PYRENE	0.5 U	1.7 U	84	120	150
NAPHTHALENE	0.42 U	1.4 U	2.9 U	13 J	12 J
PHENANTHRENE	5	5.8 J	21 J	120	56 J
PYRENE	3.5 J	1.7 U	48	250	53 J
TOTAL PAHS	13.7	5.8	391.6	1738	539
PCBS (UG/KG)					
AROCLOR-1016	1.8 U	2 U	2.5 U	3.1 U	2.5 U
AROCLOR-1221	2.3 U	2.6 U	3.2 U	3.9 U	3.1 U
AROCLOR-1232	2.1 U	2.4 U	2.9 U	3.5 U	2.8 U
AROCLOR-1242	2 U	2.2 U	2.8 U	3.4 U	2.7 U
AROCLOR-1248	1.1 U	1.3 U	1.6 U	2 U	1.6 U
AROCLOR-1254	1.7 U	2 U	2.4 U	2.9 U	2.3 U
AROCLOR-1260	1.7 U	2 U	2.4 U	2.9 U	2.3 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.14 B	0.042 B	0.16 J	0.27 L	0.45 L
ARSENIC	2 L	2 L	3.8	5.1	35.9
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	0.72	0.94	1.6 J	2.1	2.5
CADMIUM	0.11 L	0.21 L	2.9	11.4	4.9 L
CHROMIUM	14.8	9.8	52.4 K	114	49.5
COBALT	NA	NA	NA	NA	NA
COPPER	12.2 L	7.1 L	18.6	33.1	31.7 L
LEAD	9.9	3.8	14	35.6 K	31
MERCURY	0.045	0.009 U	0.05	0.25	0.057
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	10.8 L	9.3 L	27.1	29.1	103 L
SELENIUM	0.45 L	0.45 L	0.75	1.1	2 L
SILVER	0.036 J	0.029 J	0.068 J	0.85	0.56
THALLIUM	0.11	0.064 J	0.16	0.26	20.3
VANADIUM	NA	NA	NA	NA	NA
ZINC	29.3 L	29.2 L	71.4	139	4370

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-83	SD-85	SD-86	SD-87	SD-88
SAMPLE ID	SD-83-04	SD-85-04	SD-86-04	SD-87-04	SD-88-04
SAMPLE DATE	20100820	20100819	20100818	20100818	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	48	48	48	48	48
BOTTOM DEPTH	48	48	48	48	48
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	9340	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	0.26 U	NA	0.38 U	0.31 U
CADMIUM	NA	0.00062 J	NA	0.035	0.012
CHROMIUM	NA	0.0057 J	NA	0.52	0.19
COPPER	NA	0.013 J	NA	0.26	0.11
LEAD	NA	0.0071 J	NA	0.2	0.065
NICKEL	NA	0.03 J	NA	0.13	0.052
SILVER	NA	0.00022 U	NA	0.0022 J	0.0019 J
ZINC	NA	0.24 J	NA	1.2	0.48

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-89	SD-90	SD-93	SD-94	SD-95
SAMPLE ID	SD-89-04	SD-90-04	SD-93-04	SD-94-04	SD-95-04
SAMPLE DATE	20100819	20100817	20100817	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	48	48	48	48	48
BOTTOM DEPTH	48	48	48	48	48
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
ACENAPHTHENE	3.3 U	10 J	8.2 J	2.7 U	16 J
ACENAPHTHYLENE	18 J	27 J	16 J	3.2 U	26 J
ANTHRACENE	29 J	26 J	25	2.7 U	36
BAP EQUIVALENT-1/2 NON-DETECTS	87.1	139	160	2.8 U	205
BAP EQUIVALENT-POSITIVE RESULTS	85.2	138	160	2.8 U	205
BENZO(A)ANTHRACENE	72	73	73	3.5 U	92
BENZO(A)PYRENE	60	63 J	77	2.8 U	95
BENZO(B)FLUORANTHENE	75	93 J	140	4.4 U	170
BENZO(G,H,I)PERYLENE	99	69 J	99	2.8 U	120
BENZO(K)FLUORANTHENE	49	5.9 UJ	4.5 U	5.7 U	7.1 U
CHRYSENE	58	82	100	3.3 U	120
DIBENZO(A,H)ANTHRACENE	3.8 U	51 J	52	3.1 U	71
FLUORANTHENE	110	160	140	3 U	170
FLUORENE	32 J	24 J	7.6 J	3.7 U	40
INDENO(1,2,3-CD)PYRENE	100	78 J	91	2.9 U	130
NAPHTHALENE	23 J	8.5 J	14 J	2.4 U	30 J
PHENANTHRENE	84	56	75	4.4 U	120
PYRENE	130	120	170	2.8 U	190
TOTAL PAHS	939	940.5	1087.8	0 U	1426
PCBS (UG/KG)					
AROCLOR-1016	2.6 U	2.2 U	2.1 U	2.1 U	2.6 U
AROCLOR-1221	3.3 U	2.8 U	2.6 U	2.7 U	3.4 U
AROCLOR-1232	2.9 U	2.5 U	2.4 U	2.4 U	3 U
AROCLOR-1242	2.8 U	2.4 U	2.2 U	2.3 U	2.9 U
AROCLOR-1248	1.6 U	1.4 U	1.3 U	1.3 U	1.7 U
AROCLOR-1254	2.4 U	2.1 U	2 U	2 U	2.5 U
AROCLOR-1260	15 J	2.1 U	2 U	2 U	12 J
TOTAL AROCLOR	15	0 U	0 U	0 U	12
METALS (MG/KG)					
ANTIMONY	0.3 L	0.25 J	0.33 L	0.2 J	0.52 L
ARSENIC	5.3	3.3	3.3	5.7	5.5
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	1.9	1.5	1.9	3.4	2.1
CADMIUM	4.2 L	1.1	4.5	0.32	9.3
CHROMIUM	102	44.7	113	27.7	194
COBALT	NA	NA	NA	NA	NA
COPPER	30.5 L	15.9	22.5	18.9	32.9
LEAD	33.9	13.7 J	29.8 K	5.7 J	43.6 K
MERCURY	0.12	0.099	0.16	0.0091 U	0.35
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	24.6 L	15.4	20.1	21.8	26.4
SELENIUM	1.2 L	0.89	0.92	0.97	1.3
SILVER	1.9	1.7	2.4	0.039 J	4.7
THALLIUM	0.16 K	0.12 J	0.11	0.077 J	0.18
VANADIUM	NA	NA	NA	NA	NA
ZINC	102	51.2	114	56.3	162

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-89	SD-90	SD-93	SD-94	SD-95
SAMPLE ID	SD-89-04	SD-90-04	SD-93-04	SD-94-04	SD-95-04
SAMPLE DATE	20100819	20100817	20100817	20100817	20100817
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	48	48	48	48	48
BOTTOM DEPTH	48	48	48	48	48
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	0.32 U	0.27 U	NA	NA	NA
CADMIUM	0.025	0.0068	NA	NA	NA
CHROMIUM	0.48	0.18	NA	NA	NA
COPPER	0.11	0.064	NA	NA	NA
LEAD	0.087	0.033	NA	NA	NA
NICKEL	0.042	0.024 J	NA	NA	NA
SILVER	0.0038	0.0055	NA	NA	NA
ZINC	0.7	0.42	NA	NA	NA

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-96	SD-97	SD-98	SD-99	SD-100
SAMPLE ID	SD-96-04	SD-97-04	SD-98-04	SD-99-04	SD-100-04
SAMPLE DATE	20100819	20100817	20100819	20100819	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	48	48	48	48	48
BOTTOM DEPTH	48	48	48	48	48
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
ACENAPHTHENE	27	3.9 U	43	3.8 U	5.1 U
ACENAPHTHYLENE	29	4.7 U	58	4.5 U	6 U
ANTHRACENE	41	4 U	80	3.9 U	5.2 U
BAP EQUIVALENT-1/2 NON-DETECTS	144	4.1 U	319	4 U	5.3 U
BAP EQUIVALENT-POSITIVE RESULTS	143	4.1 U	319	4 U	5.3 U
BENZO(A)ANTHRACENE	81	5.1 U	190	5 U	6.6 U
BENZO(A)PYRENE	81	4.1 U	170	4 U	5.3 U
BENZO(B)FLUORANTHENE	150	6.4 U	310	6.2 U	8.3 U
BENZO(G,H,I)PERYLENE	81	4.1 U	170	3.9 U	5.2 U
BENZO(K)FLUORANTHENE	2.1 U	8.2 U	5.5 U	8 U	11 U
CHRYSENE	92	4.9 U	190	4.7 U	6.3 U
DIBENZO(A,H)ANTHRACENE	32	4.5 U	83	4.4 U	5.9 U
FLUORANTHENE	210	4.4 U	430	4.2 J	5.6 U
FLUORENE	24	5.4 U	42	5.2 U	6.9 U
INDENO(1,2,3-CD)PYRENE	73	4.2 U	160	4.1 U	5.4 U
NAPHTHALENE	35	3.5 U	68	3.4 U	4.5 U
PHENANTHRENE	94	6.5 U	180	6.7 J	8.4 U
PYRENE	210	4.1 U	370	4 U	5.3 U
TOTAL PAHS	1260	0 U	2544	10.9	0 U
PCBS (UG/KG)					
AROCLOR-1016	1.9 U	3 U	2.1 U	2.9 U	1.9 U
AROCLOR-1221	2.5 U	3.9 U	2.6 U	3.8 U	2.5 U
AROCLOR-1232	2.2 U	3.5 U	2.4 U	3.4 U	2.2 U
AROCLOR-1242	2.1 U	3.3 U	2.3 U	3.2 U	2.1 U
AROCLOR-1248	1.2 U	1.9 U	1.3 U	1.9 U	1.2 U
AROCLOR-1254	1.9 U	2.9 U	2 U	2.8 U	1.8 U
AROCLOR-1260	11 J	2.9 U	27	2.8 U	1.8 U
TOTAL AROCLOR	11	0 U	27	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.53 J	0.16 J	0.45 J	0.069 B	0.027 B
ARSENIC	8.2 L	6.5	4.2 L	5.2	2.2 L
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	2 L	1.9	1.3 L	1.7	0.51 L
CADMIUM	4.1 J	0.35	9 J	0.34 L	0.11 J
CHROMIUM	98.9 L	34.1	173 L	25.8	10.2 L
COBALT	NA	NA	NA	NA	NA
COPPER	52.3 L	17.5	25.3 L	17.6 L	5.8 L
LEAD	24	13.7 J	36.6	11.5	4.4
MERCURY	0.098	0.036 J	0.39	0.031 J	0.0087 U
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	24 L	22.6	20.1 L	20.3 L	7.4 L
SELENIUM	0.94 L	1.1	0.92 L	1 L	0.42 L
SILVER	2.3 L	0.076 J	2.9 L	0.061 J	0.021 J
THALLIUM	0.11 K	0.16 J	0.12 K	0.16 K	0.065 K
VANADIUM	NA	NA	NA	NA	NA
ZINC	89.1 L	76.7	124 L	70.9	26.4 L

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-96	SD-97	SD-98	SD-99	SD-100
SAMPLE ID	SD-96-04	SD-97-04	SD-98-04	SD-99-04	SD-100-04
SAMPLE DATE	20100819	20100817	20100819	20100819	20100819
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	48	48	48	48	48
BOTTOM DEPTH	48	48	48	48	48
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	NA	NA	NA	5.7	NA
CADMIUM	NA	NA	NA	0.0014 J	NA
CHROMIUM	NA	NA	NA	0.038	NA
COPPER	NA	NA	NA	0.042	NA
LEAD	NA	NA	NA	0.019	NA
NICKEL	NA	NA	NA	0.049	NA
SILVER	NA	NA	NA	0.00032 U	NA
ZINC	NA	NA	NA	0.49	NA

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-101	SD-102	SD-102	SD-102	SD-104
SAMPLE ID	SD-101-04	SD-102-04	SD-102-04-AVG	SD-102-04-D	SD-104-04
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	48	48	48	48	48
BOTTOM DEPTH	48	48	48	48	48
SEMIVOLATILES (UG/KG)					
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA
ACENAPHTHENE	2.2 J	4.3 U	4.3 U	4.3 U	1.5 U
ACENAPHTHYLENE	2.4 J	7.9 J	5.225 J	5.1 U	1.7 U
ANTHRACENE	3.9 J	9 J	9.5 J	10 J	1.5 U
BAP EQUIVALENT-1/2 NON-DETECTS	9.8	40.0	30.5	21.0	1.5 U
BAP EQUIVALENT-POSITIVE RESULTS	9.2	37.4	28.0	18.3	1.5 U
BENZO(A)ANTHRACENE	7.2 J	18 J	21 J	24 J	1.9 U
BENZO(A)PYRENE	5 J	21 J	17.5 J	14 J	1.5 U
BENZO(B)FLUORANTHENE	8.5 J	46	31.5 J	17 J	2.4 U
BENZO(G,H,I)PERYLENE	22	84	43.125	4.5 U	1.5 U
BENZO(K)FLUORANTHENE	2.3 U	9 U	10.25 J	16 J	3.1 U
CHRYSENE	7.3 J	32 J	21.5 J	11 J	1.8 U
DIBENZO(A,H)ANTHRACENE	1.3 U	5 U	5 U	5 U	1.7 U
FLUORANTHENE	12	40 J	33.5 J	27 J	1.6 U
FLUORENE	3.2 J	8.4 J	5.675 J	5.9 U	2 U
INDENO(1,2,3-CD)PYRENE	26	100 J	51.15 J	4.6 UJ	1.6 U
NAPHTHALENE	4.7 J	21 J	16.5 J	12 J	1.3 U
PHENANTHRENE	10 J	38 J	30 J	22 J	2.4 J
PYRENE	14	41 J	34 J	27 J	1.5 U
TOTAL PAHS	128.4	466.3	330.425	180	2.4
PCBS (UG/KG)					
AROCLOR-1016	2.2 U	3.3 U	3.35 U	3.4 U	2.8 U
AROCLOR-1221	2.8 U	4.3 U	4.3 U	4.3 U	3.6 U
AROCLOR-1232	2.5 U	3.8 U	3.85 U	3.9 U	3.3 U
AROCLOR-1242	2.4 U	3.6 U	3.65 U	3.7 U	3.1 U
AROCLOR-1248	1.4 U	2.1 U	2.1 U	2.1 U	1.8 U
AROCLOR-1254	2.1 U	3.2 U	3.2 U	3.2 U	2.7 U
AROCLOR-1260	2.1 U	3.2 U	3.2 U	3.2 U	2.7 U
TOTAL AROCLOR	0 U	0 U	0 U	0 U	0 U
METALS (MG/KG)					
ANTIMONY	0.16 J	0.45 J	0.37 L	0.29 L	0.074 B
ARSENIC	3.7	7.8	7.7	7.6	5.4
BARIUM	NA	NA	NA	NA	NA
BERYLLIUM	0.95	2 J	2 J	2	1.4 J
CADMIUM	1.9	10	8.35	6.7	0.32
CHROMIUM	56.7	209 K	183.5 K	158	27.7 K
COBALT	NA	NA	NA	NA	NA
COPPER	13.3	32.8	30.85	28.9	13.7
LEAD	19.8 K	56.8	50.1 K	43.4 K	11.6
MERCURY	0.055	0.18	0.195	0.21	0.032 J
MOLYBDENUM	NA	NA	NA	NA	NA
NICKEL	12.1	30.4	29.5	28.6	20
SELENIUM	0.64	1.4	1.35	1.3	0.89
SILVER	0.41	2.3 J	2 J	1.7	0.044 J
THALLIUM	0.094	0.24	0.225	0.21	0.15
VANADIUM	NA	NA	NA	NA	NA
ZINC	57.7	176	163.5	151	67.7

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	SD-101	SD-102	SD-102	SD-102	SD-104
SAMPLE ID	SD-101-04	SD-102-04	SD-102-04-AVG	SD-102-04-D	SD-104-04
SAMPLE DATE	20100818	20100818	20100818	20100818	20100818
SAMPLE CODE	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SD	SD	SD	SD	SD
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SB	SB	SB	SB	SB
TOP DEPTH	48	48	48	48	48
BOTTOM DEPTH	48	48	48	48	48
MISCELLANEOUS PARAMETERS (%)					
PERCENT SOLIDS	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA
AVS/SEM (UMOLES/G)					
ACID VOLATILE SULFIDE	0.33 J	NA	NA	NA	NA
CADMIUM	0.012	NA	NA	NA	NA
CHROMIUM	0.29	NA	NA	NA	NA
COPPER	0.053	NA	NA	NA	NA
LEAD	0.057	NA	NA	NA	NA
NICKEL	0.035	NA	NA	NA	NA
SILVER	0.001 J	NA	NA	NA	NA
ZINC	0.46	NA	NA	NA	NA

LOCATION	SD-105	SD-106
SAMPLE ID	SD-105-04	SD-106-04
SAMPLE DATE	20100818	20100818
SAMPLE CODE	NORMAL	NORMAL
MATRIX	SD	SD
SAMPLE TYPE	NORMAL	NORMAL
SUBMATRIX	SB	SB
TOP DEPTH	48	48
BOTTOM DEPTH	48	48
SEMIVOLATILES (UG/KG)		
1-METHYLNAPHTHALENE	NA	NA
2-METHYLNAPHTHALENE	NA	NA
ACENAPHTHENE	16 J	9 U
ACENAPHTHYLENE	26	11 U
ANTHRACENE	58	9.1 U
BAP EQUIVALENT-1/2 NON-DETECTS	290	9.3 U
BAP EQUIVALENT-POSITIVE RESULTS	290	9.3 U
BENZO(A)ANTHRACENE	160	12 U
BENZO(A)PYRENE	160	9.3 U
BENZO(B)FLUORANTHENE	290	15 U
BENZO(G,H,I)PERYLENE	170	9.3 U
BENZO(K)FLUORANTHENE	3.9 U	19 U
CHRYSENE	180	11 U
DIBENZO(A,H)ANTHRACENE	70	10 U
FLUORANTHENE	270	10 U
FLUORENE	30	12 U
INDENO(1,2,3-CD)PYRENE	150	9.6 U
NAPHTHALENE	83	8 U
PHENANTHRENE	190	15 U
PYRENE	370	9.4 U
TOTAL PAHS	2223	0 U
PCBS (UG/KG)		
AROCLOR-1016	3.6 U	3.4 U
AROCLOR-1221	4.6 U	4.4 U
AROCLOR-1232	4.1 U	3.9 U
AROCLOR-1242	3.9 U	3.7 U
AROCLOR-1248	2.3 U	2.2 U
AROCLOR-1254	3.4 U	3.3 U
AROCLOR-1260	120	3.3 U
TOTAL AROCLOR	120	0 U
METALS (MG/KG)		
ANTIMONY	0.96 J	0.075 B
ARSENIC	8.3	6.1 L
BARIUM	NA	NA
BERYLLIUM	1.9 J	1.6 L
CADMIUM	33.6	0.33 J
CHROMIUM	597 K	31.7 L
COBALT	NA	NA
COPPER	84.1	15.8 L
LEAD	163	15
MERCURY	1.5	0.034 J
MOLYBDENUM	NA	NA
NICKEL	47.5	24.8 L
SELENIUM	2.1	1.1 L
SILVER	8.9 J	0.062 J
THALLIUM	0.3	0.2 K
VANADIUM	NA	NA
ZINC	436	88 L

Table A-4
Summary of Analytical Results for Subsurface Sediment, >30-52"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	**SD-105**	**SD-106**
SAMPLE ID	**SD-105-04**	**SD-106-04**
SAMPLE DATE	**20100818**	**20100818**
SAMPLE CODE	**NORMAL**	**NORMAL**
MATRIX	**SD**	**SD**
SAMPLE TYPE	**NORMAL**	**NORMAL**
SUBMATRIX	**SB**	**SB**
TOP DEPTH	**48**	**48**
BOTTOM DEPTH	**48**	**48**
MISCELLANEOUS PARAMETERS (%)		
PERCENT SOLIDS	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)		
TOTAL ORGANIC CARBON	NA	NA
AVS/SEM (UMOLES/G)		
ACID VOLATILE SULFIDE	NA	NA
CADMIUM	NA	NA
CHROMIUM	NA	NA
COPPER	NA	NA
LEAD	NA	NA
NICKEL	NA	NA
SILVER	NA	NA
ZINC	NA	NA

Definitions:
B = Blank contamination
J = Estimated
K = Biased high
L = Biased low
NA = Not Applicable or Not Available
R = Rejected
SB = Subsurface sediment
SD = Sediment
U = Non-detected

Table A-5
Summary of Analytical Results for Ex-Situ Pore Water, 0-6"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	PW-01	PW-02	PW-03	PW-04	PW-05	PW-06	PW-07
CORRESPONDING SEDIMENT LOCATION	SD-85	SD-87	SD-88	SD-89	SD-90	SD-99	SD-101
SAMPLE ID	PW-01_0-6	PW-02_0-6	PW-03_0-6	PW-04_0-6	PW-05_0-6	PW-06_0-6	PW-07_0-6
SAMPLE DATE	20100907	20100902	20100907	20100908	20100909	20100903	20100903
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	PW	PW	PW	PW	PW	PW	PW
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	NA	NA	NA	NA	NA	NA	NA
TOP DEPTH	0	0	0	0	0	0	0
BOTTOM DEPTH	6	6	6	6	6	6	6
POLYCYCLIC AROMATIC HYDROCARBONS (UG/L)							
1,4-DIOXANE	NA	NA	0.36 UJ	0.36 UJ	0.36 UJ	NA	NA
ACENAPHTHENE	NA	NA	0.11 J	0.036 UJ	0.17 J	NA	NA
ACENAPHTHYLENE	NA	NA	0.038 UJ	0.038 UJ	0.038 UJ	NA	NA
ANTHRACENE	NA	NA	0.052 J	0.038 UJ	0.038 UJ	NA	NA
BENZO(A)ANTHRACENE	NA	NA	0.037 UJ	0.037 UJ	0.037 UJ	NA	NA
BENZO(A)PYRENE	NA	NA	0.034 UJ	0.034 UJ	0.034 UJ	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	0.039 UJ	0.039 UJ	0.039 UJ	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	0.038 UJ	0.038 UJ	0.038 UJ	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	0.14 UJ	0.14 UJ	0.14 UJ	NA	NA
CHRYSENE	NA	NA	0.035 UJ	0.035 UJ	0.035 UJ	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	0.039 UJ	0.039 UJ	0.039 UJ	NA	NA
FLUORANTHENE	NA	NA	0.91 J	0.04 UJ	0.97 J	NA	NA
FLUORENE	NA	NA	0.054 UJ	0.13 J	0.054 UJ	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	0.05 UJ	0.05 UJ	0.05 UJ	NA	NA
NAPHTHALENE	NA	NA	0.035 UJ	0.074 J	0.035 UJ	NA	NA
PHENANTHRENE	NA	NA	0.55 J	0.44 J	0.47 J	NA	NA
PYRENE	NA	NA	0.16 J	0.039 UJ	0.27 J	NA	NA
PCBS (UG/L)							
AROCLOR-1016	NA	NA	0.1 UJ	0.1 UJ	0.1 UJ	NA	NA
AROCLOR-1221	NA	NA	0.1 UJ	0.1 UJ	0.1 UJ	NA	NA
AROCLOR-1232	NA	NA	0.12 UJ	0.12 UJ	0.12 UJ	NA	NA
AROCLOR-1242	NA	NA	0.074 UJ	0.074 UJ	0.074 UJ	NA	NA
AROCLOR-1248	NA	NA	0.091 UJ	0.091 UJ	0.091 UJ	NA	NA
AROCLOR-1254	NA	NA	0.092 UJ	0.092 UJ	0.092 UJ	NA	NA
AROCLOR-1260	NA	NA	0.49 J	0.18 J	0.61 J	NA	NA
DISSOLVED METALS (UG/L)							
ANTIMONY	0.74 B	4.6	2.2	0.47 B	1.9 J	2	0.29 B
ARSENIC	1.2 K	10.9	23.4	6.2	12.6	14.8	6.7
BERYLLIUM	0.057 B	0.069 B	0.037 U	0.037 U	0.06 B	0.048 B	0.037 U
CADMIUM	10	0.13 J	0.23 J	0.13 J	0.11 U	0.11 U	0.11 U
CHROMIUM	6.3	13.7	11.9	10	13	8.5	10.3
COPPER	4.7	1.3 J	1.2 J	0.98 J	1.2 J	2.2	1.1 J
LEAD	1.2 J	1.6 J	0.54 J	0.1 B	1 J	0.7 J	0.21 B
MERCURY	0.038 UL	0.038 UL	0.038 UL	0.038 UL	0.038 UL	0.038 UL	0.038 UL
NICKEL	6.8	1.2	0.97 B	1.7	1	1.1	0.7 B
SELENIUM	2.6 B	4.8 J	4.9 J	5.1 J	4.6 J	4.4 J	4.9 J
SILVER	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
THALLIUM	0.15 B	0.033 B	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
ZINC	38.9	3.9 J	4.5 J	4.7 J	3.8 J	6.5	2.4 J
MISCELLANEOUS PARAMETERS (MG/L)							
DISSOLVED ORGANIC CARBON	12.5	9.6	8.3	12.2	8.3	6.2	14.3
HARDNESS	540	715	619	724	579	643	669
MISCELLANEOUS PARAMETERS (S.U.)							
PH	7.5	8.1	7.8	7.3	7.8	8.1	7.8

Definitions:
B = Blank contamination
J = Estimated
K = Biased high
L = Biased low
NA = Not Applicable or Not Available
PW = Pore water
U = Non-detected

Table A-6
Summary of Analytical Results for Ex-Situ Pore Water, >6-18"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	PW-01	PW-02	PW-03	PW-04	PW-05	PW-06	PW-07
CORRESPONDING SEDIMENT LOCATION	SD-85	SD-87	SD-88	SD-89	SD-90	SD-99	SD-101
SAMPLE ID	PW-01_6-18	PW-02_6-18	PW-03_6-18	PW-04_6-18	PW-05_6-18	PW-06_6-18	PW-07_6-18
SAMPLE DATE	20100907	20100902	20100907	20100908	20100909	20100903	20100903
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	PW	PW	PW	PW	PW	PW	PW
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	NA	NA	NA	NA	NA	NA	NA
TOP DEPTH	6	6	6	6	6	6	6
BOTTOM DEPTH	18	18	18	18	18	18	18
POLYCYCLIC AROMATIC HYDROCARBONS (UG/L)							
1,4-DIOXANE	NA	NA	0.36 UJ	0.36 UJ	0.36 UJ	NA	NA
ACENAPHTHENE	NA	NA	0.036 UJ	0.11 J	0.44 J	NA	NA
ACENAPHTHYLENE	NA	NA	0.038 UJ	0.038 UJ	0.038 UJ	NA	NA
ANTHRACENE	NA	NA	0.038 UJ	0.038 UJ	0.17 J	NA	NA
BENZO(A)ANTHRACENE	NA	NA	0.037 UJ	0.037 UJ	0.48 J	NA	NA
BENZO(A)PYRENE	NA	NA	0.034 UJ	0.034 UJ	0.23 J	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	0.039 UJ	0.039 UJ	2.6 J	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	0.038 UJ	0.038 UJ	0.82 J	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	0.14 UJ	0.14 UJ	0.98 J	NA	NA
CHRYSENE	NA	NA	0.035 UJ	0.035 UJ	0.39 J	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	0.039 UJ	0.039 UJ	0.039 UJ	NA	NA
FLUORANTHENE	NA	NA	0.85 J	0.04 UJ	2.1 J	NA	NA
FLUORENE	NA	NA	0.11 J	0.16 J	0.24 J	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	0.05 UJ	0.05 UJ	0.98 J	NA	NA
NAPHTHALENE	NA	NA	0.035 UJ	0.035 UJ	0.035 UJ	NA	NA
PHENANTHRENE	NA	NA	0.34 J	0.61 J	0.8 J	NA	NA
PYRENE	NA	NA	0.039 UJ	0.039 UJ	1.4 J	NA	NA
PCBS (UG/L)							
AROCLOR-1016	NA	NA	0.1 UJ	0.1 UJ	0.1 UJ	NA	NA
AROCLOR-1221	NA	NA	0.1 UJ	0.1 UJ	0.1 UJ	NA	NA
AROCLOR-1232	NA	NA	0.12 UJ	0.12 UJ	0.12 UJ	NA	NA
AROCLOR-1242	NA	NA	0.074 UJ	0.074 UJ	0.074 UJ	NA	NA
AROCLOR-1248	NA	NA	0.091 UJ	0.091 UJ	0.091 UJ	NA	NA
AROCLOR-1254	NA	NA	0.092 UJ	0.092 UJ	0.092 UJ	NA	NA
AROCLOR-1260	NA	NA	0.13 J	0.1 J	0.55 J	NA	NA
DISSOLVED METALS (UG/L)							
ANTIMONY	3.6	13.1	1.2 B	0.41 B	3.7	2.3	0.34 B
ARSENIC	2.7	11.3	10.2	5.3	9.5	18.8	3.4
BERYLLIUM	0.04 B	0.044 B	0.037 U	0.037 U	0.049 B	0.071 B	0.037 U
CADMIUM	23	0.14 J	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
CHROMIUM	16.1	14.8	13.7	13.6	12.5	7.8	13.4
COPPER	8.3	1.7 J	1.3 J	0.75 J	0.78 J	2	0.81 J
LEAD	4.5	0.63 J	0.26 J	0.098 B	0.65 J	0.48 J	0.27 J
MERCURY	0.038 UL	0.038 UL	0.038 UL	0.038 UL	0.038 UL	0.038 UL	0.038 UL
NICKEL	2.9	2.3	1	1.3	0.96 B	1.5	0.59 B
SELENIUM	2.2 B	4.9 J	5.4 J	5.4 J	4.4 J	5.2 J	5.8 J
SILVER	0.078 B	0.036 U	0.036 U	0.036 U	0.055 B	0.036 U	0.036 U
THALLIUM	0.081 B	0.018 B	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
ZINC	47.5	4.7 J	3.7 J	2.6 J	3.5 J	4.3 J	1.7 J
MISCELLANEOUS PARAMETERS (MG/L)							
DISSOLVED ORGANIC CARBON	13.1	8.6	10.5	15.8	9.4	8.5	9.7
HARDNESS	328	788	627	767	524	610	686
MISCELLANEOUS PARAMETERS (S.U.)							
PH	7.8	8.1	7.4	7.1	7.6	7.9	7.7

Definitions:
B = Blank contamination
J = Estimated
L = Biased low
NA = Not Applicable or Not Available
PW = Pore water
U = Non-detected

Table A-7
Summary of Analytical Results for Ex-Situ Pore Water, >18-30"
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	PW-01	PW-02	PW-03	PW-04	PW-05	PW-06	PW-07
CORRESPONDING SEDIMENT LOCATION	SD-85	SD-87	SD-88	SD-89	SD-90	SD-99	SD-101
SAMPLE ID	PW-01_18-30	PW-02_18-30	PW-03_18-30	PW-04_18-30	PW-05_18-30	PW-06_18-30	PW-07_18-30
SAMPLE DATE	20100907	20100902	20100907	20100908	20100909	20100903	20100903
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	PW	PW	PW	PW	PW	PW	PW
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	NA	NA	NA	NA	NA	NA	NA
TOP DEPTH	18	18	18	18	18	18	18
BOTTOM DEPTH	30	30	30	30	30	30	30
POLYCYCLIC AROMATIC HYDROCARBONS (UG/L)							
1,4-DIOXANE	NA	NA	0.36 UJ	0.36 UJ	0.36 UJ	NA	NA
ACENAPHTHENE	NA	NA	0.12 J	0.11 J	0.093 J	NA	NA
ACENAPHTHYLENE	NA	NA	0.038 UJ	0.038 UJ	0.038 UJ	NA	NA
ANTHRACENE	NA	NA	0.041 J	0.038 J	0.038 UJ	NA	NA
BENZO(A)ANTHRACENE	NA	NA	0.037 UJ	0.037 UJ	0.037 UJ	NA	NA
BENZO(A)PYRENE	NA	NA	0.034 UJ	0.034 UJ	0.034 UJ	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	0.039 UJ	0.039 UJ	0.039 UJ	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	0.038 UJ	0.038 UJ	0.038 UJ	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	0.14 UJ	0.14 UJ	0.14 UJ	NA	NA
CHRYSENE	NA	NA	0.035 UJ	0.035 UJ	0.035 UJ	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	0.039 UJ	0.039 UJ	0.039 UJ	NA	NA
FLUORANTHENE	NA	NA	0.84 J	0.91 J	0.04 UJ	NA	NA
FLUORENE	NA	NA	0.12 J	0.054 UJ	0.054 UJ	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	0.05 UJ	0.05 UJ	0.05 UJ	NA	NA
NAPHTHALENE	NA	NA	0.035 UJ	0.035 UJ	0.035 UJ	NA	NA
PHENANTHRENE	NA	NA	0.39 J	0.43 J	0.58 J	NA	NA
PYRENE	NA	NA	0.1 J	0.2 J	0.039 UJ	NA	NA
PCBS (UG/L)							
AROCLOR-1016	NA	NA	0.1 UJ	0.1 UJ	0.1 UJ	NA	NA
AROCLOR-1221	NA	NA	0.1 UJ	0.1 UJ	0.1 UJ	NA	NA
AROCLOR-1232	NA	NA	0.12 UJ	0.12 UJ	0.12 UJ	NA	NA
AROCLOR-1242	NA	NA	0.074 UJ	0.074 UJ	0.074 UJ	NA	NA
AROCLOR-1248	NA	NA	0.091 UJ	0.091 UJ	0.091 UJ	NA	NA
AROCLOR-1254	NA	NA	0.092 UJ	0.092 UJ	0.092 UJ	NA	NA
AROCLOR-1260	NA	NA	0.054 UJ	0.054 UJ	0.054 UJ	NA	NA
DISSOLVED METALS (UG/L)							
ANTIMONY	7.6	5.8	0.9 B	0.84 B	1 B	0.86 B	1.5 B
ARSENIC	7.4	5	9.6	6.3	9.8	12.1	6.4
BERYLLIUM	0.037 U	0.037 U	0.037 B	0.043 B	0.037 U	0.046 B	0.049 B
CADMIUM	1.4	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
CHROMIUM	18.7	17.5	9.8	15.5	9.3	14.6	13.6
COPPER	1.4 J	0.77 J	4.8	0.82 J	2.7	2.1	1.6 J
LEAD	2.2	0.25 J	0.35 J	0.24 B	0.56 J	0.33 J	0.19 B
MERCURY	0.038 UL	0.038 UL	0.038 UL	0.038 UL	0.038 UL	0.038 UL	0.038 UL
NICKEL	2.2	2.2	1.8	1.4	1.3	4.4	1.1
SELENIUM	1.3 B	6.5 J	5.1 J	6 J	4.3 J	5 J	5.7 J
SILVER	0.041 B	0.036 U	0.036 U	0.036 U	0.071 B	0.036 U	0.036 U
THALLIUM	0.043 B	0.019 B	0.015 U	0.015 U	0.015 U	0.015 U	0.039 B
ZINC	8.7	1.9 J	21.4	3.2 J	4.3 J	2.9 J	2.4 J
MISCELLANEOUS PARAMETERS (MG/L)							
DISSOLVED ORGANIC CARBON	10.7	11.4	14.9	20.9	11.4	11.2	11.5
HARDNESS	260	880	578	747	441	617	724
MISCELLANEOUS PARAMETERS (S.U.)							
PH	7.7	7.8	7.2	7.1	7.2	7.7	7.7

Definitions:
B = Blank contamination
J = Estimated
L = Biased low
NA = Not Applicable or Not Available
PW = Pore water
U = Non-detected

Table A-8
Summary of Analytical Results for In-Situ Pore Water, Cow Pen Creek
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	CPC-SW/PW-1	CPC-SW/PW-2	CPC-SW/PW-3
SAMPLE ID	CPC-PW-VOC-1	CPC-PW-VOC-2	CPC-PW-VOC-3
SAMPLE DATE	20100902	20100929	20100929
SAMPLE CODE	NORMAL	NORMAL	NORMAL
MATRIX	PW	PW	PW
SAMPLE TYPE	NORMAL	NORMAL	NORMAL
SUBMATRIX	NA	NA	NA
TOP DEPTH	-9999	-9999	-9999
BOTTOM DEPTH	-9999	-9999	-9999
VOLATILES (UG/L)			
1,1,1,2-TETRACHLOROETHANE	0.23 U	0.58 U	0.23 U
1,1,1-TRICHLOROETHANE	0.22 U	0.55 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	0.18 U	0.45 U	0.18 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.28 U	0.7 U	0.28 U
1,1-DICHLOROETHANE	0.15 U	0.38 U	0.25 J
1,1-DICHLOROETHENE	0.19 U	0.48 U	0.19 U
1,1-DICHLOROPROPENE	0.13 U	0.32 U	0.13 U
1,2,3-TRICHLOROBENZENE	0.17 U	0.42 U	0.17 U
1,2,3-TRICHLOROPROPANE	0.43 U	1.1 U	0.43 U
1,2,3-TRIMETHYLBENZENE	0.0059 U	0.015 U	0.0059 U
1,2,4-TRICHLOROBENZENE	0.15 U	0.38 U	0.15 U
1,2,4-TRIMETHYLBENZENE	0.12 U	0.3 U	0.12 U
1,2-DIBROMO-3-CHLOROPROPANE	0.67 U	1.7 U	0.67 U
1,2-DIBROMOETHANE	0.24 U	0.6 U	0.24 U
1,2-DICHLOROBENZENE	0.13 U	0.32 U	0.13 U
1,2-DICHLOROETHANE	0.22 U	0.55 U	0.22 U
1,2-DICHLOROPROPANE	0.18 U	0.45 U	0.18 U
1,3-DICHLOROBENZENE	0.14 U	0.35 U	0.14 U
1,3-DICHLOROPROPANE	0.16 U	0.4 U	0.16 U
1,4-DICHLOROBENZENE	0.13 U	0.32 U	0.13 U
2,2-DICHLOROPROPANE	0.13 U	0.32 U	0.13 U
2-BUTANONE	3.3 J	120 J	3 J
2-CHLOROETHYL VINYL ETHER	0.99 U	2.5 U	0.99 U
2-CHLOROTOLUENE	0.11 U	0.28 U	0.11 U
2-HEXANONE	0.41 U	1 U	0.41 U
4-CHLOROTOLUENE	0.18 U	0.45 U	0.18 U
4-ISOPROPYLTOLUENE	0.12 U	0.3 U	0.12 U
4-METHYL-2-PENTANONE	0.32 U	0.8 U	0.32 U
ACETONE	26 J	140 B	17 B

Table A-8
Summary of Analytical Results for In-Situ Pore Water, Cow Pen Creek
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	CPC-SW/PW-1	CPC-SW/PW-2	CPC-SW/PW-3
SAMPLE ID	CPC-PW-VOC-1	CPC-PW-VOC-2	CPC-PW-VOC-3
SAMPLE DATE	20100902	20100929	20100929
SAMPLE CODE	NORMAL	NORMAL	NORMAL
MATRIX	PW	PW	PW
SAMPLE TYPE	NORMAL	NORMAL	NORMAL
SUBMATRIX	NA	NA	NA
TOP DEPTH	-9999	-9999	-9999
BOTTOM DEPTH	-9999	-9999	-9999
BENZENE	0.13 U	0.32 U	0.13 U
BROMOBENZENE	0.13 U	0.32 U	0.13 U
BROMOCHLOROMETHANE	0.29 U	0.72 U	0.29 U
BROMODICHLOROMETHANE	0.15 U	0.38 U	0.15 U
BROMOFORM	0.64 U	1.6 U	0.64 U
BROMOMETHANE	0.41 U	1 U	0.41 U
CARBON DISULFIDE	0.95 J	0.32 U	0.13 U
CARBON TETRACHLORIDE	0.13 U	0.32 U	0.13 U
CHLOROBENZENE	0.15 U	0.38 UL	0.15 U
CHLORODIBROMOMETHANE	0.18 U	0.45 U	0.18 U
CHLOROETHANE	0.29 U	0.72 U	0.29 U
CHLOROFORM	0.16 U	0.4 U	0.16 U
CHLOROMETHANE	0.3 U	0.75 U	0.3 U
CIS-1,2-DICHLOROETHENE	0.17 U	0.42 U	0.24 J
CIS-1,3-DICHLOROPROPENE	0.14 U	0.35 U	0.14 U
DIBROMOMETHANE	0.28 U	0.7 U	0.28 U
DICHLORODIFLUOROMETHANE	0.31 U	0.78 U	0.31 U
DIISOPROPYL ETHER	1.5 U	3.8 U	1.5 U
ETHYL TERT-BUTYL ETHER	0.11 U	0.28 U	0.11 U
ETHYLBENZENE	0.17 U	0.42 U	0.17 U
HEXACHLOROBUTADIENE	0.3 U	0.75 U	0.3 U
ISOPROPYLBENZENE	0.13 U	0.32 U	0.13 U
M+P-XYLENES	0.24 U	0.6 U	0.24 U
METHYL TERT-BUTYL ETHER	0.17 U	0.42 UJ	0.17 U
METHYLENE CHLORIDE	0.33 U	0.82 U	0.33 U
NAPHTHALENE	0.24 U	0.6 U	0.24 U
N-BUTYLBENZENE	0.12 U	0.3 U	0.12 U
N-PROPYLBENZENE	0.14 U	0.35 U	0.14 U
O-XYLENE	0.14 U	0.35 U	0.14 U
SEC-BUTYLBENZENE	0.13 U	0.32 U	0.13 U

Table A-8
Summary of Analytical Results for In-Situ Pore Water, Cow Pen Creek
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	CPC-SW/PW-1	CPC-SW/PW-2	CPC-SW/PW-3
SAMPLE ID	CPC-PW-VOC-1	CPC-PW-VOC-2	CPC-PW-VOC-3
SAMPLE DATE	20100902	20100929	20100929
SAMPLE CODE	NORMAL	NORMAL	NORMAL
MATRIX	PW	PW	PW
SAMPLE TYPE	NORMAL	NORMAL	NORMAL
SUBMATRIX	NA	NA	NA
TOP DEPTH	-9999	-9999	-9999
BOTTOM DEPTH	-9999	-9999	-9999
STYRENE	0.11 U	0.28 U	0.11 U
TERT-AMYL METHYL ETHER	0.067 U	0.17 U	0.067 U
TERT-BUTYLBENZENE	0.13 U	0.32 U	0.13 U
TERTIARY-BUTYL ALCOHOL	3.9 UR	9.8 UR	3.9 UR
TETRACHLOROETHENE	0.29 U	0.72 U	0.29 U
TOLUENE	0.13 U	0.32 U	0.13 U
TOTAL XYLENES	0.28 U	0.7 U	0.28 U
TRANS-1,2-DICHLOROETHENE	0.19 U	0.48 U	0.19 U
TRANS-1,3-DICHLOROPROPENE	0.19 U	0.48 U	0.19 U
TRICHLOROETHENE	0.17 U	0.42 U	0.17 U
TRICHLOROFLUOROMETHANE	0.21 U	0.52 U	0.21 U
VINYL ACETATE	0.19 U	0.48 UR	0.19 UR
VINYL CHLORIDE	0.22 U	0.55 U	0.55 J

Definitions:
B = Blank contamination
J = Estimated
L = Biased low
NA = Not Applicable or Not Available
PW = Pore water
R = Rejected
U = Non-detected

Table A-9
Summary of Analytical Results for In-Situ Pore Water, Dark Head Cove
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	DHC-SW/PW-1	DHC-SW/PW-2	DHC-SW/PW-3	DHC-SW/PW-4	DHC-SW/PW-5
SAMPLE ID	DHC-PW-VOC-1	DHC-PW-VOC-2	DHC-PW-VOC-3	DHC-PW-VOC-4	DHC-PW-VOC-5
SAMPLE DATE	20100901	20100901	20100902	20100902	20100902
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	PW	PW	PW	PW	PW
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	NA	NA	NA	NA	NA
TOP DEPTH	-9999	-9999	-9999	-9999	-9999
BOTTOM DEPTH	-9999	-9999	-9999	-9999	-9999
VOLATILES (UG/L)					
1,1,1,2-TETRACHLOROETHANE	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
1,1,1-TRICHLOROETHANE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
1,1-DICHLOROETHANE	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,1-DICHLOROETHENE	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
1,1-DICHLOROPROPENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
1,2,3-TRICHLOROBENZENE	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
1,2,3-TRICHLOROPROPANE	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U
1,2,3-TRIMETHYLBENZENE	0.0059 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U
1,2,4-TRICHLOROBENZENE	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,2,4-TRIMETHYLBENZENE	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1,2-DIBROMO-3-CHLOROPROPANE	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U
1,2-DIBROMOETHANE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
1,2-DICHLOROBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
1,2-DICHLOROETHANE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,2-DICHLOROPROPANE	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
1,3-DICHLOROBENZENE	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
1,3-DICHLOROPROPANE	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
1,4-DICHLOROBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
2,2-DICHLOROPROPANE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
2-BUTANONE	1.6 J	7.5	4 J	2 J	6.1
2-CHLOROETHYL VINYL ETHER	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U
2-CHLOROTOLUENE	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
2-HEXANONE	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
4-CHLOROTOLUENE	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
4-ISOPROPYLTOLUENE	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
4-METHYL-2-PENTANONE	0.32 U	0.56 J	0.32 U	0.32 U	0.32 U
ACETONE	4 J	27 J	15 J	11 J	15 J
BENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
BROMOBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
BROMOCHLOROMETHANE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
BROMODICHLOROMETHANE	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
BROMOFORM	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U
BROMOMETHANE	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
CARBON DISULFIDE	0.13 U	0.53 J	0.89 J	0.4 J	0.13 U
CARBON TETRACHLORIDE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
CHLOROBENZENE	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U

Table A-9
Summary of Analytical Results for In-Situ Pore Water, Dark Head Cove
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	DHC-SW/PW-1	DHC-SW/PW-2	DHC-SW/PW-3	DHC-SW/PW-4	DHC-SW/PW-5
SAMPLE ID	DHC-PW-VOC-1	DHC-PW-VOC-2	DHC-PW-VOC-3	DHC-PW-VOC-4	DHC-PW-VOC-5
SAMPLE DATE	20100901	20100901	20100902	20100902	20100902
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	PW	PW	PW	PW	PW
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	NA	NA	NA	NA	NA
TOP DEPTH	-9999	-9999	-9999	-9999	-9999
BOTTOM DEPTH	-9999	-9999	-9999	-9999	-9999
CHLORODIBROMOMETHANE	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
CHLOROETHANE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
CHLOROFORM	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
CHLOROMETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
CIS-1,2-DICHLOROETHENE	0.29 J	0.17 U	0.17 U	0.34 J	0.17 U
CIS-1,3-DICHLOROPROPENE	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
DIBROMOMETHANE	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
DICHLORODIFLUOROMETHANE	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
DIISOPROPYL ETHER	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
ETHYL TERT-BUTYL ETHER	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
ETHYLBENZENE	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
HEXACHLOROBUTADIENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
ISOPROPYLBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
M+P-XYLENES	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
METHYL TERT-BUTYL ETHER	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
METHYLENE CHLORIDE	0.33 U	1.7	0.33 U	0.33 U	0.33 U
NAPHTHALENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
N-BUTYLBENZENE	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
N-PROPYLBENZENE	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
O-XYLENE	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
SEC-BUTYLBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
STYRENE	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
TERT-AMYL METHYL ETHER	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
TERT-BUTYLBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
TERTIARY-BUTYL ALCOHOL	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR
TETRACHLOROETHENE	0.29 U	0.43 J	0.29 U	0.29 U	0.29 U
TOLUENE	0.13 U	0.68 J	0.13 U	0.13 U	0.13 U
TOTAL XYLENES	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
TRANS-1,2-DICHLOROETHENE	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
TRANS-1,3-DICHLOROPROPENE	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
TRICHLOROETHENE	0.88 J	0.17 U	0.17 U	0.17 U	0.17 U
TRICHLOROFLUOROMETHANE	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
VINYL ACETATE	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
VINYL CHLORIDE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U

Table A-9
Summary of Analytical Results for In-Situ Pore Water, Dark Head Cove
Lockheed Martin, Middle River Complex
Middle River, Maryland

Definitions:
J = Estimated
NA = Not Applicable or Not Available
PW = Pore water
R = Rejected
U = Non-detected

Table A-10
Detected Concentrations Table for Surface Water
Lockheed Martin, Middle River Complex
Middle River, Maryland

LOCATION	CPC-SW/PW-1	CPC-SW/PW-2	CPC-SW/PW-3	DHC-SW/PW-1	DHC-SW/PW-2	DHC-SW/PW-3	DHC-SW/PW-4	DHC-SW/PW-5	DHC-SW-6	DHC-SW-7		MRC-SW/SD-1	MSA-SW-1
SAMPLE ID	CPC-SW-VOC-1	CPC-SW-VOC-2	CPC-SW-VOC-3	DHC-SW-VOC-1	DHC-SW-VOC-2	DHC-SW-VOC-3	DHC-SW-VOC-4	DHC-SW-VOC-5	DHC-SW-VOC-6	DHC-SW-VOC-7	DHC-SW-VOC-7-D	MRC-SW-1	MSA-SW-1
SAMPLE DATE	20100902	20100929	20100929	20100901	20100901	20100902	20100902	20100902	20100903	20100903	20100903	20101014	20101014
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOP DEPTH	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999
BOTTOM DEPTH	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999
METALS (UG/L)													
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	1 J
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6 J	1.2 J
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28.3	40.7
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.13 UL	0.13 UL
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.7	4
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.4 J	0.55 J
COPPER	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	23.2	8.8
IRON	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	603	676
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	3
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	23.6	41
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.12 U	0.12 U
MOLYBDENUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.8	2.5
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4 K	2.8 K
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2 U	1.2 U
SILVER	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.08 U	0.08 U
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.19 B	0.18 B
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.7 J	3.1 J
ZINC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	47.8	42.6
VOLATILES (UG/L)													
1,1,1,2-TETRACHLOROETHANE	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	NA	NA
1,1,2,2-TETRACHLOROETHANE	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	NA	NA
1,1-DICHLOROETHANE	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	NA	NA
1,1-DICHLOROETHENE	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	NA	NA
1,1-DICHLOROPROPENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
1,2,3-TRICHLOROBENZENE	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	NA	NA
1,2,3-TRICHLOROPROPANE	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	NA	NA
1,2,3-TRIMETHYLBENZENE	0.0059 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	NA	NA
1,2,4-TRICHLOROBENZENE	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	NA	NA
1,2,4-TRIMETHYLBENZENE	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	NA	NA
1,2-DIBROMOETHANE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	NA	NA
1,2-DICHLOROBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
1,2-DICHLOROETHANE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	NA	NA
1,2-DICHLOROPROPANE	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	NA	NA
1,3-DICHLOROBENZENE	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	NA	NA
1,3-DICHLOROPROPANE	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	NA	NA
1,4-DICHLOROBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
2,2-DICHLOROPROPANE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
2-BUTANONE	0.65 J	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	NA	NA
2-CHLOROETHYL VINYL ETHER	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U	NA	NA
2-CHLOROTOLUENE	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	NA	NA
2-HEXANONE	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	NA	NA
4-CHLOROTOLUENE	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	NA	NA
4-ISOPROPYLTOLUENE	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	NA	NA
4-METHYL-2-PENTANONE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	NA	NA
ACETONE	1.1 U	6.4 B	8.6 B	2.3 J	4.8 J	11 J	12 J	5.8 J	1.1 U	5.1 J	7.8 J	NA	NA
BENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
BROMOBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
BROMOCHLOROMETHANE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	NA	NA
BROMODICHLOROMETHANE	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	NA	NA
BROMOFORM	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U	NA	NA
BROMOMETHANE	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	NA	NA
CARBON DISULFIDE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
CARBON TETRACHLORIDE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
CHLOROBENZENE	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	NA	NA
CHLORODIBROMOMETHANE	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	NA	NA
CHLOROETHANE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	NA	NA
CHLOROFORM	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	NA	NA
CHLOROMETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NA	NA
CIS-1,2-DICHLOROETHENE	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	NA	NA
CIS-1,3-DICHLOROPROPENE	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	NA	NA
DIBROMOMETHANE	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	NA	NA
DICHLORODIFLUOROMETHANE	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	NA	NA
DIISOPROPYL ETHER	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	NA	NA
ETHYL TERT-BUTYL ETHER	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	NA	NA
ETHYLBENZENE	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	NA	NA
HEXACHLOROBUTADIENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NA	NA
ISOPROPYLBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
M+P-XYLENES	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	NA	NA
METHYL TERT-BUTYL ETHER	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	NA	NA
METHYLENE CHLORIDE	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	NA	NA
NAPHTHALENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	NA	NA
N-BUTYLBENZENE	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	NA	NA
N-PROPYLBENZENE	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	NA	NA
O-XYLENE	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	NA	NA
SEC-BUTYLBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
STYRENE	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	NA	NA
TERT-AMYL METHYL ETHER	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	NA	NA
TERT-BUTYLBENZENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
TERTIARY-BUTYL ALCOHOL	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR	NA	NA
TETRACHLOROETHENE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	NA	NA
TOLUENE	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA
TOTAL XYLENES	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	NA	NA
TRANS-1,2-DICHLOROETHENE	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	NA	NA
TRANS-1,3-DICHLOROPROPENE	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	NA	NA
TRICHLOROETHENE	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	NA	NA
TRICHLOROFLUOROMETHANE	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	NA	NA
VINYL ACETATE	0.19 U	0.19 UR	0.19 UR	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	NA	NA
VINYL CHLORIDE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	NA	NA

Definitions:
B = Blank contamination
J = Estimated
K = Biased high
L = Biased low
NA = Not Applicable or Not Available
R = Rejected
SW = Surface water
U = Non-detected

TABLE A-11
FISH TISSUE CONCENTRATIONS FOR SITE AND REFERENCE AREAS
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

AREA:	Bowleys Quarters		Marshy Point		
SAMPLE LOCATION:	BQ1-FS		MP-FS		
SAMPLE ID:	BQ1-FS-CC1	BQ1-FS-WC1	MP-FS-CC1	MP-FS-CC2	MP-FS-WC1
SITE OR REFERENCE SAMPLE:	Reference	Reference	Reference	Reference	Reference
LENGTH OF FISH (inches):	17.5	15.6	20.3	16.1	12.3
SAMPLE DATE:	20101008	20100827	20101008	20100827	20101008
METALS (MG/KG)					
ANTIMONY	0.14 U	0.14 U	0.15 U	0.15 U	0.16 U
ARSENIC	0.19 U	0.19 U	0.2 U	0.2 U	0.22 U
BERYLLIUM	0.012 U	0.012 U	0.013 U	0.014 U	0.015 U
CADMIUM	0.02 U	0.02 U	0.021 U	0.022 U	0.024 U
CHROMIUM	0.11 J	0.19 J	0.11 J	0.092 J	0.13 J
COPPER	0.6 J	0.82 J	0.42 J	1.5 J	1.5 J
LEAD	0.12 U	0.12 U	0.13 U	0.13 U	0.16 J
MERCURY	0.038	0.041 J	0.034	0.044 J	0.029 J
NICKEL	0.32 U	0.32 U	0.34 U	0.35 U	0.38 U
SELENIUM	0.52 K	0.57 K	0.49 K	0.57 K	0.36 J
SILVER	0.048 U	0.048 U	0.052 U	0.052 U	0.057 U
THALLIUM	0.17 U	0.17 U	0.18 U	0.19 U	0.2 U
ZINC	7.4	7.6	6.1	7.2	6.5
MISCELLANEOUS PARAMETERS (%)					
LIPIDS	1.5	0.93	3.2	1.9	0.4
PCBS (UG/KG)					
AROCLOR-1016	0.62 UJ	0.12 UJ	0.62 UJ	0.62 UJ	0.62 UJ
AROCLOR-1221	0.8 UJ	0.16 UJ	0.8 UJ	0.79 UJ	0.8 UJ
AROCLOR-1232	0.71 UJ	0.14 UJ	0.71 UJ	0.71 UJ	0.71 UJ
AROCLOR-1242	0.68 UJ	0.13 UJ	0.68 UJ	0.67 UJ	0.68 UJ
AROCLOR-1248	0.39 UJ	0.078 UJ	0.39 UJ	0.39 UJ	0.39 UJ
AROCLOR-1254	0.59 UJ	0.12 UJ	0.59 UJ	0.59 UJ	0.59 UJ
AROCLOR-1260	0.59 UJ	0.12 UJ	0.59 UJ	0.59 UJ	0.59 UJ
AROCLOR-1262	40 J	25 J	110 J	140 J	8.1 J
AROCLOR-1268	20 J	14 J	62 J	77 J	4.3 J

TABLE A-11
FISH TISSUE CONCENTRATIONS FOR SITE AND REFERENCE AREAS
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

AREA:	Middle River		Cow Pen Creek	Dark Head Cove	Dark Head Cove
SAMPLE LOCATION:	MR-FS		CPC-2	DHC-2	DHC-3
SAMPLE ID:	MR-FS-CC1	MR-FS-CC2	CPC-2-FS-CC1	DHC-2-FS-CC1	DHC-3-FS-CC1
SITE OR REFERENCE SAMPLE:	Reference	Reference	Site	Site	Site
LENGTH OF FISH (inches):	10.6	12	16.9	13	20
SAMPLE DATE:	20101007	20101007	20100826	20100825	20100826
METALS (MG/KG)					
ANTIMONY	0.15 U	0.27 J	0.16 U	0.23 J	0.16 U
ARSENIC	0.21 U	0.2 U	0.22 U	0.21 U	0.22 U
BERYLLIUM	0.014 U	0.014 U	0.015 U	0.014 U	0.015 U
CADMIUM	0.022 U	0.022 U	0.024 U	0.023 U	0.024 U
CHROMIUM	0.13 J	2	0.09 J	0.13 J	0.14 J
COPPER	1.1 J	1.7 J	0.69 J	0.67 J	0.51 J
LEAD	0.13 U	0.17 J	0.14 U	0.14 U	0.14 U
MERCURY	0.055	0.041	0.036 J	0.046 J	0.12 J
NICKEL	0.36 U	0.35 U	0.38 U	0.36 U	0.38 U
SELENIUM	0.39 J	0.54 K	0.68 K	0.57 K	0.5 K
SILVER	0.054 U	0.053 U	0.058 U	0.055 U	0.057 U
THALLIUM	0.19 U	0.19 U	0.21 U	0.2 U	0.2 U
ZINC	6	7.4	7.5	7	8.1
MISCELLANEOUS PARAMETERS (%)					
LIPIDS	0.25	0.17	0.74	0.32	2
PCBS (UG/KG)					
AROCLOR-1016	0.62 UJ	0.62 UJ	0.62 UJ	0.12 UJ	3.1 U
AROCLOR-1221	0.8 UJ	0.8 UJ	0.79 UJ	0.16 UJ	3.9 U
AROCLOR-1232	0.71 UJ	0.71 UJ	0.71 UJ	0.14 UJ	3.5 U
AROCLOR-1242	0.68 UJ	0.68 UJ	0.68 UJ	0.14 UJ	3.4 U
AROCLOR-1248	0.39 UJ	0.39 UJ	0.39 UJ	0.079 UJ	2 U
AROCLOR-1254	0.59 UJ	0.59 UJ	0.59 UJ	0.12 UJ	2.9 U
AROCLOR-1260	0.59 UJ	0.59 UJ	0.59 UJ	0.12 UJ	2.9 U
AROCLOR-1262	18 J	75 J	20 J	47 J	1500
AROCLOR-1268	7.6 J	14 J	12 J	19 J	130 J

TABLE A-11
FISH TISSUE CONCENTRATIONS FOR SITE AND REFERENCE AREAS
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

AREA:	Dark Head Cove			Dark Head Cove	
SAMPLE LOCATION:	DHC-4			DHC-5	
SAMPLE ID:	DHC-4-FS-CC1	DHC-4-FS-CC2	DHC-4-FS-CC3	DHC-5-FS-CC1	DHC-5-FS-CC2
SITE OR REFERENCE SAMPLE:	Site	Site	Site	Site	Site
LENGTH OF FISH (inches):	11.4	12.5	21.1	10.5	11.2
SAMPLE DATE:	20100910	20100910	20100825	20100910	20100910
METALS (MG/KG)					
ANTIMONY	0.13 U	0.16 U	0.15 U	0.16 U	0.16 U
ARSENIC	0.18 U	0.21 U	0.21 U	0.22 U	0.22 U
BERYLLIUM	0.012 U	0.014 U	0.014 U	0.015 U	0.015 U
CADMIUM	0.019 U	0.023 U	0.022 U	0.024 U	0.024 U
CHROMIUM	0.11 J	0.15 J	0.11 J	0.13 J	0.41 J
COPPER	1.6 J	0.87 J	0.96 J	1 J	2 J
LEAD	0.12 U	0.14 U	0.13 U	0.19 J	0.17 J
MERCURY	0.044 J	0.027 J	0.045 J	0.047 J	0.03 J
NICKEL	0.31 U	0.36 U	0.36 U	0.38 U	0.38 U
SELENIUM	0.3 J	0.3 J	0.47 K	0.4 J	0.43 J
SILVER	0.047 U	0.055 U	0.054 U	0.058 U	0.057 U
THALLIUM	0.17 U	0.2 U	0.19 U	0.21 U	0.2 U
ZINC	6	6	8.2	9.8	9.7
MISCELLANEOUS PARAMETERS (%)					
LIPIDS	0.6	0.27	3.8	0.55	1
PCBS (UG/KG)					
AROCLOR-1016	0.12 UJ	0.12 U	1.2 U	0.62 UJ	0.62 UJ
AROCLOR-1221	0.16 UJ	0.16 U	1.6 U	0.8 UJ	0.8 UJ
AROCLOR-1232	0.14 UJ	0.14 U	1.4 U	0.71 UJ	0.71 UJ
AROCLOR-1242	0.14 UJ	0.13 U	1.3 U	0.68 UJ	0.68 UJ
AROCLOR-1248	0.079 UJ	0.077 U	0.78 U	0.39 UJ	0.39 UJ
AROCLOR-1254	0.12 UJ	0.12 U	1.2 U	0.59 UJ	0.59 UJ
AROCLOR-1260	0.12 UJ	0.12 U	1.2 U	0.59 UJ	0.59 UJ
AROCLOR-1262	53 J	100	200	400 J	310 J
AROCLOR-1268	19 J	14 J	36 J	78 J	58 J

Data Qualifier Definitions:
J = Estimated
K = Biased high
U = Non-detected

TABLE A-12

SUMMARY STATISTICS FOR FISH TISSUE DATA FROM SITE
LOCKHEED MARTIN - MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Frequency of Detection	Minimum Detection		Maximum Detection		Sample with Maximum Detection	Minimum Nondetect	Maximum Nondetect	Average of Positive Results	Overall Average
Pesticides (ug/kg)										
AROCLOR-1016	0/8	--		--		--	0.12	3.1	--	0.41
AROCLOR-1221	0/8	--		--		--	0.16	3.9	--	0.52
AROCLOR-1232	0/8	--		--		--	0.14	3.5	--	0.47
AROCLOR-1242	0/8	--		--		--	0.13	3.4	--	0.45
AROCLOR-1248	0/8	--		--		--	0.077	2	--	0.26
AROCLOR-1254	0/8	--		--		--	0.12	2.9	--	0.39
AROCLOR-1260	0/8	--		--		--	0.12	2.9	--	0.39
AROCLOR-1262	8/8	20	J	1500		DHC-3-FS-CC1	--	--	329	329
AROCLOR-1268	8/8	12	J	130	J	DHC-3-FS-CC1	--	--	45.8	45.8
TOTAL AROCLOR	8/8	32		1630		DHC-3-FS-CC1	--	--	375	375
Inorganics (mg/kg)										
ANTIMONY	1/8	0.23	J	0.23	J	DHC-2-FS-CC1	0.13	0.16	0.23	0.10
ARSENIC	0/8	--		--		--	0.18	0.22	--	0.11
BERYLLIUM	0/8	--		--		--	0.012	0.015	--	0.01
CADMIUM	0/8	--		--		--	0.019	0.024	--	0.01
CHROMIUM	8/8	0.09	J	0.41	J	DHC-5-FS-CC2	--	--	0.16	0.16
COPPER	8/8	0.51	J	2	J	DHC-5-FS-CC2	--	--	1.0	1.0
LEAD	2/8	0.17	J	0.19	J	DHC-5-FS-CC1	0.12	0.14	0.18	0.10
MERCURY	8/8	0.027	J	0.12	J	DHC-3-FS-CC1	--	--	0.05	0.05
NICKEL	0/8	--		--		--	0.31	0.38	--	0.18
SELENIUM	8/8	0.3	J	0.68	K	CPC-2-FS-CC1	--	--	0.46	0.46
SILVER	0/8	--		--		--	0.047	0.058	--	0.03
THALLIUM	0/8	--		--		--	0.17	0.21	--	0.10
ZINC	8/8	6		9.8		DHC-5-FS-CC1	--	--	7.8	7.8
Miscellaneous (%)										
LIPIDS	8/8	0.27		3.8		DHC-4-FS-CC3	--	--	1.2	1.2

Footnotes:
1 Not a separate analytical measurement; summation of individual detected Aroclors.

Abbreviations:
J Estimated value
K Biased high
PCB Polychlorinated Biphenyls

TABLE A-12

SUMMARY STATISTICS FOR FISH TISSUE DATA FROM SITE
LOCKHEED MARTIN - MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Associated Samples:
CPC-2-FS-CC1
DHC-2-FS-CC1
DHC-3-FS-CC1
DHC-4-FS-CC1
DHC-4-FS-CC2
DHC-4-FS-CC3
DHC-5-FS-CC1
DHC-5-FS-CC2

TABLE A-13

SUMMARY STATISTICS FOR FISH TISSUE DATA FROM REFERENCE LOCATIONS
LOCKHEED MARTIN - MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Frequency of Detection	Minimum Detection		Maximum Detection		Sample with Maximum Detection	Minimum Nondetect	Maximum Nondetect	Average of Positive Results	Overall Average
Pesticides (ug/kg)										
AROCLOR-1016	0/7	--		--		--	0.12	0.62	--	0.27
AROCLOR-1221	0/7	--		--		--	0.16	0.8	--	0.35
AROCLOR-1232	0/7	--		--		--	0.14	0.71	--	0.31
AROCLOR-1242	0/7	--		--		--	0.13	0.68	--	0.30
AROCLOR-1248	0/7	--		--		--	0.078	0.39	--	0.17
AROCLOR-1254	0/7	--		--		--	0.12	0.59	--	0.26
AROCLOR-1260	0/7	--		--		--	0.12	0.59	--	0.26
AROCLOR-1262	7/7	8.1	J	140	J	MP-FS-CC2	--	--	59.4	59.4
AROCLOR-1268	7/7	4.3	J	77	J	MP-FS-CC2	--	--	28.4	28.4
TOTAL AROCLOR	7/7	12.4		217		MP-FS-CC2	--	--	87.9	87.9
Inorganics (mg/kg)										
ANTIMONY	1/7	0.27	J	0.27	J	MR-FS-CC2	0.14	0.16	0.27	0.10
ARSENIC	0/7	--		--		--	0.19	0.22	--	0.10
BERYLLIUM	0/7	--		--		--	0.012	0.015	--	0.01
CADMIUM	0/7	--		--		--	0.02	0.024	--	0.01
CHROMIUM	7/7	0.092	J	2		MR-FS-CC2	--	--	0.39	0.39
COPPER	7/7	0.42	J	1.7	J	MR-FS-CC2	--	--	1.1	1.09
LEAD	2/7	0.16	J	0.17	J	MR-FS-CC2	0.12	0.13	0.17	0.09
MERCURY	7/7	0.029	J	0.055		MR-FS-CC1	--	--	0.04	0.04
NICKEL	0/7	--		--		--	0.32	0.38		0.17
SELENIUM	7/7	0.36	J	0.57	K	BQ1-FS-WC1	--	--	0.49	0.49
SELENIUM	7/7	0.36	J	0.57	K	MP-FS-CC2	--	--	0.49	0.49
SILVER	0/7	--		--		--	0.048	0.057	--	0.03
THALLIUM	0/7	--		--		--	0.17	0.2	--	0.09
ZINC	7/7	6		7.6		BQ1-FS-WC1	--	--	6.9	6.9
Miscellaneous (%)										
LIPIDS	7/7	0.17		3.2		MP-FS-CC1	--	--	1.2	1.2

Footnotes:
1 Not a separate analytical measurement; summation of individual detected Aroclors.

Abbreviations:
J Estimated value
K Biased high
PCB Polychlorinated Biphenyls

TABLE A-13

SUMMARY STATISTICS FOR FISH TISSUE DATA FROM REFERENCE LOCATIONS
LOCKHEED MARTIN - MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Associated Samples:
BQ1-FS-CC1
BQ1-FS-WC1
MP-FS-CC1
MP-FS-CC2
MP-FS-WC1
MR-FS-CC1
MR-FS-CC2

TABLE A-14

SUMMARY STATISTICS FOR FISH TISSUE DATA FROM REFERENCE LOCATIONS - NO SHORELINE DEVELOPMENT
LOCKHEED MARTIN - MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Frequency of Detection	Minimum Detection		Maximum Detection		Sample with Maximum Detection	Minimum Nondetect	Maximum Nondetect	Average of Positive Results	Overall Average
Pesticides (ug/kg)										
AROCLOR-1016	0/3	--		--		--	0.62	0.62	--	0.31
AROCLOR-1221	0/3	--		--		--	0.79	0.8	--	0.40
AROCLOR-1232	0/3	--		--		--	0.71	0.71	--	0.36
AROCLOR-1242	0/3	--		--		--	0.67	0.68	--	0.34
AROCLOR-1248	0/3	--		--		--	0.39	0.39	--	0.20
AROCLOR-1254	0/3	--		--		--	0.59	0.59	--	0.30
AROCLOR-1260	0/3	--		--		--	0.59	0.59	--	0.30
AROCLOR-1262	3/3	8.1	J	140	J	MP-FS-CC2	--	--	86.0	86.0
AROCLOR-1268	3/3	4.3	J	77	J	MP-FS-CC2	--	--	47.8	47.8
TOTAL AROCLOR	3/3	12.4		217		MP-FS-CC2	--	--	134	134
Inorganics (mg/kg)										
ANTIMONY	0/3	--		--		--	0.15	0.16	--	0.08
ARSENIC	0/3	--		--		--	0.2	0.22	--	0.10
BERYLLIUM	0/3	--		--		--	0.013	0.015	--	0.01
CADMIUM	0/3	--		--		--	0.021	0.024	--	0.01
CHROMIUM	3/3	0.092	J	0.13	J	MP-FS-WC1	--	--	0.11	0.11
COPPER	3/3	0.42	J	1.5	J	MP-FS-CC2	--	--	1.1	1.1
COPPER	3/3	0.42	J	1.5	J	MP-FS-WC1	--	--	1.1	1.1
LEAD	1/3	0.16	J	0.16	J	MP-FS-WC1	0.13	0.13	0.16	0.10
MERCURY	3/3	0.029	J	0.044	J	MP-FS-CC2	--	--	0.04	0.04
NICKEL	0/3	--		--		--	0.34	0.38	--	0.18
SELENIUM	3/3	0.36	J	0.57	K	MP-FS-CC2	--	--	0.47	0.47
SILVER	0/3	--		--		--	0.052	0.057	--	0.03
THALLIUM	0/3	--		--		--	0.18	0.2	--	0.10
ZINC	3/3	6.1		7.2		MP-FS-CC2	--	--	6.6	6.6
Miscellaneous (%)										
LIPIDS	3/3	0.4		3.2		MP-FS-CC1	--	--	1.8	1.8

Footnotes:
1 Not a separate analytical measurement; summation of individual detected Aroclors.

Abbreviations:
J Estimated value
K Biased high
PCB Polychlorinated Biphenyls

TABLE A-14

SUMMARY STATISTICS FOR FISH TISSUE DATA FROM REFERENCE LOCATIONS - NO SHORELINE DEVELOPMENT
LOCKHEED MARTIN - MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Associated Samples:
MP-FS-CC1
MP-FS-CC2
MP-FS-WC1

TABLE A-15

SUMMARY STATISTICS FOR FISH TISSUE DATA FROM REFERENCE - SHORELINE DEVELOPMENT
LOCKHEED MARTIN - MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter	Frequency of Detection	Minimum Detection		Maximum Detection		Sample with Maximum Detection	Minimum Nondetect	Maximum Nondetect	Average of Positive Results	Overall Average
Pesticides (ug/kg)										
AROCLOR-1016	0/4	--		--		--	0.12	0.62	--	0.25
AROCLOR-1221	0/4	--		--		--	0.16	0.8	--	0.32
AROCLOR-1232	0/4	--		--		--	0.14	0.71	--	0.28
AROCLOR-1242	0/4	--		--		--	0.13	0.68	--	0.27
AROCLOR-1248	0/4	--		--		--	0.078	0.39	--	0.16
AROCLOR-1254	0/4	--		--		--	0.12	0.59	--	0.24
AROCLOR-1260	0/4	--		--		--	0.12	0.59	--	0.24
AROCLOR-1262	4/4	18	J	75	J	MR-FS-CC2	--	--	39.5	39.5
AROCLOR-1268	4/4	7.6	J	20	J	BQ1-FS-CC1	--	--	13.9	13.9
TOTAL AROCLOR	4/4	25.6		89		MR-FS-CC2	--	--	53.4	53.4
Inorganics (mg/kg)										
ANTIMONY	1/4	0.27	J	0.27	J	MR-FS-CC2	0.14	0.15	0.27	0.12
ARSENIC	0/4	--		--		--	0.19	0.21	--	0.10
BERYLLIUM	0/4	--		--		--	0.012	0.014	--	0.007
CADMIUM	0/4	--		--		--	0.02	0.022	--	0.01
CHROMIUM	4/4	0.11	J	2		MR-FS-CC2	--	--	0.61	0.61
COPPER	4/4	0.6	J	1.7	J	MR-FS-CC2	--	--	1.1	1.1
LEAD	1/4	0.17	J	0.17	J	MR-FS-CC2	0.12	0.13	0.17	0.09
MERCURY	4/4	0.038		0.055		MR-FS-CC1	--	--	0.04	0.04
NICKEL	0/4	--		--		--	0.32	0.36		0.17
SELENIUM	4/4	0.39	J	0.57	K	BQ1-FS-WC1	--	--	0.51	0.51
SILVER	0/4	--		--		--	0.048	0.054	--	0.03
THALLIUM	0/4	--		--		--	0.17	0.19	--	0.09
ZINC	4/4	6		7.6		BQ1-FS-WC1	--	--	7.1	7.1
Miscellaneous (%)										
LIPIDS	4/4	0.17		1.5		BQ1-FS-CC1	--	--	0.71	0.71

Footnotes:
1 Not a separate analytical measurement; summation of individual detected Aroclors.

Abbreviations:
J Estimated value
K Biased high
PCB Polychlorinated Biphenyls

TABLE A-15

SUMMARY STATISTICS FOR FISH TISSUE DATA FROM REFERENCE - SHORELINE DEVELOPMENT
LOCKHEED MARTIN - MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Associated Samples:
BQ1-FS-CC1
BQ1-FS-WC1
MR-FS-CC1
MR-FS-CC2

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. MARTIN**	**DATE:**	**NOVEMBER 5, 2010**
FROM:	**TERRI SOLOMON**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION- VOC LOCKHEED MIDDLE RIVER CENTER SDG C0J010569**		
SAMPLES:	5/Aqueous		

CPC-PW-VOC-2 CPC-PW-VOC-3 CPC-SW-VOC-2
CPC-SW-VOC-3 TB

Overview

The sample set for Lockheed Middle River Center, SDG C0J010569, consists of four (4) aqueous environmental samples and one (1) trip blank (TB). No field duplicate samples were included in this SDG.

All samples were analyzed for volatile organic compounds (VOC). The samples were collected by Tetra Tech on September 29, 2010 and analyzed by Test America (Pittsburgh). All analyses were conducted in accordance with SW-846 Methods 8260B.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, initial/continuing calibrations, laboratory method/trip blank results, surrogate spike recoveries, blank spike/blank spike duplicate results, matrix spike / matrix spike duplicate recoveries, internal standard recoveries, chromatographic resolution, compound identification, compound quantitation, and detection limits. Areas of concern are listed below.

Major

- The initial calibration relative response factors on 09/09/10 and continuing calibration relative response factors on 10/10/10 at 8:50 and 10/11/10 at 10:44 on instrument A3UX15 were < 0.05 quality control limit for tert-butyl alcohol and vinyl acetate affecting all samples. The nondetected results reported for tert-butyl alcohol and vinyl acetate were qualified as rejected, "UR".

Minor

- The continuing calibration percent differences (%Ds) on 10/10/10 at 8:50 on instrument A3UX15 were > 20% but < 50% quality control limits for 4-methyl-2-pentanone, 2-hexanone, 1,1,2,2-tetrachloroethane, hexachlorobutadiene, chloroethane, acetone, carbon disulfide, methyl tert-butyl ether, tert-butyl alcohol, 2-butanone and 2,2-dichloropropane affecting samples CPC-PW-VOC-3, CPC-PW-VOC-2, CPC-SW-VOC-3 and TB. The positive results reported for 2-butanone were qualified as estimated, "J". No validation actions are required for nondetected results.

- The continuing calibration %D on 10/11/10 at 10:44 on instrument A3UX15 was > 50% quality control limit for methyl tert-butyl ether affecting sample CPC-PW-VOC-2. The nondetected result reported for methyl tert-butyl ether was qualified as estimated, "UJ".

- The continuing calibration percent differences (%Ds) on 10/11/10 at 10:44 on instrument A3UX15 were > 20% but < 50% quality control limits for acetone, carbon disulfide, tert-butyl alcohol, 2-butanone, 2,2-dichloropropane, cis-1,3-dichloropropene, 4-methyl-2-pentanone, trans-1,3-dichloropropene, 2-hexanone, 1,2,4-trichlorobenzene and hexachlorobutadiene affecting sample CPC-PW-VOC-2. The positive result reported for 2-butanone was qualified as estimated, "J". No validation actions are required for nondetected results.

- The following compounds were detected in the method/trip blank at the maximum concentrations indicated below:

Compound	Concentration	Action Level
tert-Butyl alcohol	10 ug/L	50 ug/L
Acetone[(1)]	27 ug/L	270 ug/L

(1) Maximum concentration present in a trip blank.

An action level of 10X the maximum contaminant concentration was established for common laboratory contaminants; 5X for all other compounds to evaluate laboratory contamination. Dilution factors, and sample aliquots were taken into consideration during the application of all action levels. The positive results for acetone were qualified "B" due to blank contamination.

- The laboratory control sample / laboratory control sample duplicate (LCSLCSD) percent recoveries were below the quality control limits for chlorobenzene associated with sample CPC-PW-VOC-2. The nondetected result reported for chlorobenzene was qualified as biased low, "UL".

- Positive results less than the reporting limit (RL) but greater than the method detection limit (MDL) were qualified as estimated, "J".

Notes

The initial calibration percent relative standard deviations (%RSDs) on 09/09/10 on instrument A3UX15 were > 15% but < 50% quality control limits for acetone and methylene chloride affecting all samples. No validation actions were warranted as the sample results for acetone were qualified as a result of blank contamination and the sample results for methylene chloride were nondetects.

The LCSD percent recovery was below the quality control limit for toluene associated with sample CPC-PW-VOC-2. No validation actions were warranted as the LCS was within quality control limits.

Nondetected results are reported to the method detection limit (MDL).

Sample CPC-PW-VOC-2 was analyzed at a 2.5 dilution.

Executive Summary

Laboratory Performance: Several initial and continuing calibration RRFs were < 0.05 quality control limit. Several continuing calibration %Ds were > 20% quality control limit. The LCSLCSD percent recoveries were below the quality control limits for chlorobenzene associated with sample CPC-PW-VOC-2.

Other Factors Affecting Data Quality: Acetone was present in the trip blank. Positive results less than the RL but greater than the MDL were qualified as estimated.

The data for these analyses were reviewed with reference to Region III modifications to U.S. EPA National Functional Guidelines for Organic Data Validation (Sept. 1994). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Terri L. Solomon
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS-GFAA MSA's r < 0.995 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O - Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DOT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02903	NSAMPLE	CPC-PW-VOC-2			CPC-PW-VOC-3			CPC-SW-VOC-2			CPC-SW-VOC-3		
SDG: C0J010569	LAB_ID	C0J010569001			C0J010569002			C0J010569003			C0J010569004		
FRACTION: OV	SAMP_DATE	9/29/2010			9/29/2010			9/29/2010			9/29/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CARBON DISULFIDE		0.32	U		0.13	U		0.13	U		0.13	U	
CARBON TETRACHLORIDE		0.32	U		0.13	U		0.13	U		0.13	U	
CHLOROBENZENE		0.38	UL	E	0.15	U		0.15	U		0.15	U	
CHLORODIBROMOMETHANE		0.45	U		0.18	U		0.18	U		0.18	U	
CHLOROETHANE		0.72	U		0.29	U		0.29	U		0.29	U	
CHLOROFORM		0.4	U		0.16	U		0.16	U		0.16	U	
CHLOROMETHANE		0.75	U		0.3	U		0.3	U		0.3	U	
CIS-1,2-DICHLOROETHENE		0.42	U		0.24	J	P	0.17	U		0.17	U	
CIS-1,3-DICHLOROPROPENE		0.35	U		0.14	U		0.14	U		0.14	U	
DIBROMOMETHANE		0.7	U		0.28	U		0.28	U		0.28	U	
DICHLORODIFLUOROMETHANE		0.78	U		0.31	U		0.31	U		0.31	U	
DIISOPROPYL ETHER		3.8	U		1.5	U		1.5	U		1.5	U	
ETHYL TERT-BUTYL ETHER		0.28	U		0.11	U		0.11	U		0.11	U	
ETHYLBENZENE		0.42	U		0.17	U		0.17	U		0.17	U	
HEXACHLOROBUTADIENE		0.75	U		0.3	U		0.3	U		0.3	U	
ISOPROPYLBENZENE		0.32	U		0.13	U		0.13	U		0.13	U	
M+P-XYLENES		0.6	U		0.24	U		0.24	U		0.24	U	
METHYL TERT-BUTYL ETHER		0.42	UJ	C	0.17	U		0.17	U		0.17	U	
METHYLENE CHLORIDE		0.82	U		0.33	U		0.33	U		0.33	U	
NAPHTHALENE		0.6	U		0.24	U		0.24	U		0.24	U	
N-BUTYLBENZENE		0.3	U		0.12	U		0.12	U		0.12	U	
N-PROPYLBENZENE		0.35	U		0.14	U		0.14	U		0.14	U	
O-XYLENE		0.35	U		0.14	U		0.14	U		0.14	U	
SEC-BUTYLBENZENE		0.32	U		0.13	U		0.13	U		0.13	U	
STYRENE		0.28	U		0.11	U		0.11	U		0.11	U	
TERT-AMYL METHYL ETHER		0.17	U		0.067	U		0.067	U		0.067	U	
TERT-BUTYLBENZENE		0.32	U		0.13	U		0.13	U		0.13	U	
TERTIARY-BUTYL ALCOHOL		9.8	UR	C	3.9	UR	C	3.9	UR	C	3.9	UR	C
TETRACHLOROETHENE		0.72	U		0.29	U		0.29	U		0.29	U	
TOLUENE		0.32	U		0.13	U		0.13	U		0.13	U	
TOTAL XYLENES		0.7	U		0.28	U		0.28	U		0.28	U	
TRANS-1,2-DICHLOROETHENE		0.48	U		0.19	U		0.19	U		0.19	U	
TRANS-1,3-DICHLOROPROPENE		0.48	U		0.19	U		0.19	U		0.19	U	
TRICHLOROETHENE		0.42	U		0.17	U		0.17	U		0.17	U	
TRICHLOROFLUOROMETHANE		0.52	U		0.21	U		0.21	U		0.21	U	

PROJ_NO: 02903 SDG: C0J010569 FRACTION: OV MEDIA: WATER	NSAMPLE	CPC-PW-VOC-2			CPC-PW-VOC-3			CPC-SW-VOC-2			CPC-SW-VOC-3		
	LAB_ID	C0J010569001			C0J010569002			C0J010569003			C0J010569004		
	SAMP_DATE	9/29/2010			9/29/2010			9/29/2010			9/29/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		0.58	U		0.23	U		0.23	U		0.23	U	
1,1,1-TRICHLOROETHANE		0.55	U		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.45	U		0.18	U		0.18	U		0.18	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.7	U		0.28	U		0.28	U		0.28	U	
1,1-DICHLOROETHANE		0.38	U		0.25	J	P	0.15	U		0.15	U	
1,1-DICHLOROETHENE		0.48	U		0.19	U		0.19	U		0.19	U	
1,1-DICHLOROPROPENE		0.32	U		0.13	U		0.13	U		0.13	U	
1,2,3-TRICHLOROBENZENE		0.42	U		0.17	U		0.17	U		0.17	U	
1,2,3-TRICHLOROPROPANE		1.1	U		0.43	U		0.43	U		0.43	U	
1,2,3-TRIMETHYLBENZENE		0.015	U		0.0059	U		0.0059	U		0.0059	U	
1,2,4-TRICHLOROBENZENE		0.38	U		0.15	U		0.15	U		0.15	U	
1,2,4-TRIMETHYLBENZENE		0.3	U		0.12	U		0.12	U		0.12	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.7	U		0.67	U		0.67	U		0.67	U	
1,2-DIBROMOETHANE		0.6	U		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROBENZENE		0.32	U		0.13	U		0.13	U		0.13	U	
1,2-DICHLOROETHANE		0.55	U		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROPROPANE		0.45	U		0.18	U		0.18	U		0.18	U	
1,3-DICHLOROBENZENE		0.35	U		0.14	U		0.14	U		0.14	U	
1,3-DICHLOROPROPANE		0.4	U		0.16	U		0.16	U		0.16	U	
1,4-DICHLOROBENZENE		0.32	U		0.13	U		0.13	U		0.13	U	
2,2-DICHLOROPROPANE		0.32	U		0.13	U		0.13	U		0.13	U	
2-BUTANONE		120	J	C	3	J	CP	0.57	U		0.57	U	
2-CHLOROETHYL VINYL ETHER		2.5	U		0.99	U		0.99	U		0.99	U	
2-CHLOROTOLUENE		0.28	U		0.11	U		0.11	U		0.11	U	
2-HEXANONE		1	U		0.41	U		0.41	U		0.41	U	
4-CHLOROTOLUENE		0.45	U		0.18	U		0.18	U		0.18	U	
4-ISOPROPYLTOLUENE		0.3	U		0.12	U		0.12	U		0.12	U	
4-METHYL-2-PENTANONE		0.8	U		0.32	U		0.32	U		0.32	U	
ACETONE		140	B	B	17	B	B	6.4	B	B	8.6	B	B
BENZENE		0.32	U		0.13	U		0.13	U		0.13	U	
BROMOBENZENE		0.32	U		0.13	U		0.13	U		0.13	U	
BROMOCHLOROMETHANE		0.72	U		0.29	U		0.29	U		0.29	U	
BROMODICHLOROMETHANE		0.38	U		0.15	U		0.15	U		0.15	U	
BROMOFORM		1.6	U		0.64	U		0.64	U		0.64	U	
BROMOMETHANE		1	U		0.41	U		0.41	U		0.41	U	

PROJ_NO: 02903	NSAMPLE	CPC-PW-VOC-2			CPC-PW-VOC-3			CPC-SW-VOC-2			CPC-SW-VOC-3		
SDG: C0J010569	LAB_ID	C0J010569001			C0J010569002			C0J010569003			C0J010569004		
FRACTION: OV	SAMP_DATE	9/29/2010			9/29/2010			9/29/2010			9/29/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
VINYL ACETATE		0.48	UR	C	0.19	UR	C	0.19	UR	C	0.19	UR	C
VINYL CHLORIDE		0.55	U		0.55	J	P	0.22	U		0.22	U	

PROJ_NO: 02903	NSAMPLE	TB
SDG: C0J010569	LAB_ID	C0J010569005
FRACTION: OV	SAMP_DATE	9/29/2010
MEDIA: WATER	QC_TYPE	NM
	UNITS	UG/L
	PCT_SOLIDS	0.0
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE	0.23	U	
1,1,1-TRICHLOROETHANE	0.22	U	
1,1,2,2-TETRACHLOROETHANE	0.18	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.28	U	
1,1-DICHLOROETHANE	0.15	U	
1,1-DICHLOROETHENE	0.19	U	
1,1-DICHLOROPROPENE	0.13	U	
1,2,3-TRICHLOROBENZENE	0.17	U	
1,2,3-TRICHLOROPROPANE	0.43	U	
1,2,3-TRIMETHYLBENZENE	0.0059	U	
1,2,4-TRICHLOROBENZENE	0.15	U	
1,2,4-TRIMETHYLBENZENE	0.12	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.67	U	
1,2-DIBROMOETHANE	0.24	U	
1,2-DICHLOROBENZENE	0.13	U	
1,2-DICHLOROETHANE	0.22	U	
1,2-DICHLOROPROPANE	0.18	U	
1,3-DICHLOROBENZENE	0.14	U	
1,3-DICHLOROPROPANE	0.16	U	
1,4-DICHLOROBENZENE	0.13	U	
2,2-DICHLOROPROPANE	0.13	U	
2-BUTANONE	0.57	U	
2-CHLOROETHYL VINYL ETHER	0.99	U	
2-CHLOROTOLUENE	0.11	U	
2-HEXANONE	0.41	U	
4-CHLOROTOLUENE	0.18	U	
4-ISOPROPYLTOLUENE	0.12	U	
4-METHYL-2-PENTANONE	0.32	U	
ACETONE	27		
BENZENE	0.13	U	
BROMOBENZENE	0.13	U	
BROMOCHLOROMETHANE	0.29	U	
BROMODICHLOROMETHANE	0.15	U	
BROMOFORM	0.64	U	
BROMOMETHANE	0.41	U	

PROJ_NO: 02903 SDG: C0J010569 FRACTION: OV MEDIA: WATER	NSAMPLE	TB
	LAB_ID	C0J010569005
	SAMP_DATE	9/29/2010
	QC_TYPE	NM
	UNITS	UG/L
	PCT_SOLIDS	0.0
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
CARBON DISULFIDE	0.13	U	
CARBON TETRACHLORIDE	0.13	U	
CHLOROBENZENE	0.15	U	
CHLORODIBROMOMETHANE	0.18	U	
CHLOROETHANE	0.29	U	
CHLOROFORM	0.16	U	
CHLOROMETHANE	0.3	U	
CIS-1,2-DICHLOROETHENE	0.17	U	
CIS-1,3-DICHLOROPROPENE	0.14	U	
DIBROMOMETHANE	0.28	U	
DICHLORODIFLUOROMETHANE	0.31	U	
DIISOPROPYL ETHER	1.5	U	
ETHYL TERT-BUTYL ETHER	0.11	U	
ETHYLBENZENE	0.17	U	
HEXACHLOROBUTADIENE	0.3	U	
ISOPROPYLBENZENE	0.13	U	
M+P-XYLENES	0.24	U	
METHYL TERT-BUTYL ETHER	0.17	U	
METHYLENE CHLORIDE	0.33	U	
NAPHTHALENE	0.24	U	
N-BUTYLBENZENE	0.12	U	
N-PROPYLBENZENE	0.14	U	
O-XYLENE	0.14	U	
SEC-BUTYLBENZENE	0.13	U	
STYRENE	0.11	U	
TERT-AMYL METHYL ETHER	0.067	U	
TERT-BUTYLBENZENE	0.13	U	
TERTIARY-BUTYL ALCOHOL	3.9	UR	C
TETRACHLOROETHENE	0.29	U	
TOLUENE	0.13	U	
TOTAL XYLENES	0.28	U	
TRANS-1,2-DICHLOROETHENE	0.19	U	
TRANS-1,3-DICHLOROPROPENE	0.19	U	
TRICHLOROETHENE	0.17	U	
TRICHLOROFLUOROMETHANE	0.21	U	

PROJ_NO: 02903	NSAMPLE	TB
SDG: C0J010569	LAB_ID	C0J010569005
FRACTION: OV	SAMP_DATE	9/29/2010
MEDIA: WATER	QC_TYPE	NM
	UNITS	UG/L
	PCT_SOLIDS	0.0
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
VINYL ACETATE	0.19	UR	C
VINYL CHLORIDE	0.22	U	

Appendix B

Results as Reported by the Laboratory

Tetra Tech NUS, Inc

Client Sample ID: CPC-PW-VOC-2

GC/MS Volatiles

Lot-Sample #...: C0J010569-001	**Work Order #...:** L7VVF1AA	**Matrix.....:** WATER
Date Sampled...: 09/29/10	**Date Received..:** 10/01/10	**MS Run #.....:** 0285072
Prep Date.....: 10/11/10	**Analysis Date..:** 10/11/10	
Prep Batch #...: 0285139	**Analysis Time..:** 13:28	
Dilution Factor: 2.5	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX15	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**140**	**12**	**ug/L**	**2.8**
Bromobenzene	ND	2.5	ug/L	0.32
Bromochloromethane	ND	2.5	ug/L	0.72
Bromodichloromethane	ND	2.5	ug/L	0.38
2-Butanone	**120**	**12**	**ug/L**	**1.4**
n-Butylbenzene	ND	2.5	ug/L	0.30
sec-Butylbenzene	ND	2.5	ug/L	0.32
tert-Butylbenzene	ND	2.5	ug/L	0.32
Carbon disulfide	ND	2.5	ug/L	0.32
Dibromochloromethane	ND	2.5	ug/L	0.45
1,2-Dibromo-3-chloro-propane	ND	5.0	ug/L	1.7
2-Chloroethyl vinyl ether	ND	12	ug/L	2.5
2-Chlorotoluene	ND	2.5	ug/L	0.28
4-Chlorotoluene	ND	2.5	ug/L	0.45
1,2-Dibromoethane	ND	2.5	ug/L	0.60
Dibromomethane	ND	2.5	ug/L	0.70
1,2-Dichlorobenzene	ND	2.5	ug/L	0.32
1,3-Dichlorobenzene	ND	2.5	ug/L	0.35
1,4-Dichlorobenzene	ND	2.5	ug/L	0.32
Dichlorodifluoromethane	ND	2.5	ug/L	0.78
cis-1,2-Dichloroethene	ND	2.5	ug/L	0.42
trans-1,2-Dichloroethene	ND	2.5	ug/L	0.48
1,3-Dichloropropane	ND	2.5	ug/L	0.40
2,2-Dichloropropane	ND	2.5	ug/L	0.32
1,1-Dichloropropene	ND	2.5	ug/L	0.32
Trichlorofluoromethane	ND	2.5	ug/L	0.52
Hexachlorobutadiene	ND	2.5	ug/L	0.75
2-Hexanone	ND	12	ug/L	1.0
Isopropylbenzene	ND	2.5	ug/L	0.32
p-Isopropyltoluene	ND	2.5	ug/L	0.30
tert-Butyl alcohol	ND	50	ug/L	9.8
4-Methyl-2-pentanone	ND	12	ug/L	0.80
Naphthalene	ND	2.5	ug/L	0.60
n-Propylbenzene	ND	2.5	ug/L	0.35
Styrene	ND	2.5	ug/L	0.28
1,1,1,2-Tetrachloroethane	ND	2.5	ug/L	0.58

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Tetra Tech NUS, Inc

Client Sample ID: CPC-PW-VOC-2

GC/MS Volatiles

Lot-Sample #...: C0J010569-001 **Work Order #...:** L7VVF1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	2.5	ug/L	0.42
1,2,4-Trichloro-benzene	ND	2.5	ug/L	0.38
1,2,3-Trichloropropane	ND	2.5	ug/L	1.1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.5	ug/L	0.70
1,2,4-Trimethylbenzene	ND	2.5	ug/L	0.30
Vinyl acetate	ND	5.0	ug/L	0.48
o-Xylene	ND	2.5	ug/L	0.35
Xylenes (total)	ND	5.0	ug/L	0.70
Methyl tert-butyl ether	ND	12	ug/L	0.42
m-Xylene & p-Xylene	ND	5.0	ug/L	0.60
1,2,3-Trimethylbenzene	ND	12	ug/L	0.015
Diisopropyl Ether (DIPE)	ND	12	ug/L	3.8
Ethyl-t-Butyl Ether (ETBE)	ND	12	ug/L	0.28
Tert-amyl methyl ether (TAME)	ND	12	ug/L	0.17
Benzene	ND	2.5	ug/L	0.32
Bromoform	ND	2.5	ug/L	1.6
Bromomethane	ND	2.5	ug/L	1.0
Carbon tetrachloride	ND	2.5	ug/L	0.32
Chlorobenzene	ND	2.5	ug/L	0.38
Chloroethane	ND	2.5	ug/L	0.72
Chloroform	ND	2.5	ug/L	0.40
Chloromethane	ND	2.5	ug/L	0.75
1,1-Dichloroethane	ND	2.5	ug/L	0.38
1,2-Dichloroethane	ND	2.5	ug/L	0.55
1,1-Dichloroethene	ND	2.5	ug/L	0.48
1,2-Dichloropropane	ND	2.5	ug/L	0.45
cis-1,3-Dichloropropene	ND	2.5	ug/L	0.35
trans-1,3-Dichloropropene	ND	2.5	ug/L	0.48
Ethylbenzene	ND	2.5	ug/L	0.42
Methylene chloride	ND	2.5	ug/L	0.82
1,1,2,2-Tetrachloroethane	ND	2.5	ug/L	0.45
Tetrachloroethene	ND	2.5	ug/L	0.72
Toluene	ND	2.5	ug/L	0.32
1,1,1-Trichloroethane	ND	2.5	ug/L	0.55
Trichloroethene	ND	2.5	ug/L	0.42
Vinyl chloride	ND	2.5	ug/L	0.55

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	81	(73 - 122)
1,2-Dichloroethane-d4	104	(61 - 128)
Toluene-d8	86	(76 - 110)
4-Bromofluorobenzene	85	(74 - 116)

Tetra Tech NUS, Inc

Client Sample ID: CPC-PW-VOC-3

GC/MS Volatiles

Lot-Sample #...: C0J010569-002	**Work Order #...:** L7VVH1AA	**Matrix.....:** WATER
Date Sampled...: 09/29/10	**Date Received..:** 10/01/10	**MS Run #.....:** 0285125
Prep Date.....: 10/10/10	**Analysis Date..:** 10/10/10	
Prep Batch #...: 0285220	**Analysis Time..:** 15:35	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX15	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**17 B**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	**3.0 J**	**5.0**	**ug/L**	**0.57**
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	**0.24 J**	**1.0**	**ug/L**	**0.17**
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: CPC-PW-VOC-3

GC/MS Volatiles

Lot-Sample #...: C0J010569-002 **Work Order #...:** L7VVH1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	**0.25 J**	**1.0**	**ug/L**	**0.15**
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	**0.55 J**	**1.0**	**ug/L**	**0.22**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	81	(73 - 122)
1,2-Dichloroethane-d4	102	(61 - 128)
Toluene-d8	85	(76 - 110)
4-Bromofluorobenzene	83	(74 - 116)

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Tetra Tech NUS, Inc

Client Sample ID: CPC-PW-VOC-3

GC/MS Volatiles

Lot-Sample #...: C0J010569-002 Work Order #...: L7VVH1AA Matrix.....: WATER

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: CPC-SW-VOC-2

GC/MS Volatiles

Lot-Sample #...:	C0J010569-003	**Work Order #...:**	L7VVK1AA	**Matrix.....:**	WATER
Date Sampled...:	09/29/10	**Date Received..:**	10/01/10	**MS Run #.....:**	0285125
Prep Date.....:	10/10/10	**Analysis Date..:**	10/10/10		
Prep Batch #...:	0285220	**Analysis Time..:**	15:58		
Dilution Factor:	1	**Initial Wgt/Vol:**	5 mL	**Final Wgt/Vol..:**	5 mL
Analyst ID.....:	043582	**Instrument ID..:**	UX15		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**6.4 B**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: CPC-SW-VOC-2

GC/MS Volatiles

Lot-Sample #...: C0J010569-003 **Work Order #...:** L7VVK1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	80	(73 - 122)
1,2-Dichloroethane-d4	105	(61 - 128)
Toluene-d8	86	(76 - 110)
4-Bromofluorobenzene	82	(74 - 116)

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Tetra Tech NUS, Inc

Client Sample ID: CPC-SW-VOC-2

GC/MS Volatiles

Lot-Sample #...: C0J010569-003 **Work Order #...:** L7VVK1AA **Matrix.....:** WATER

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: CPC-SW-VOC-3

GC/MS Volatiles

Lot-Sample #...: C0J010569-004	**Work Order #...:** L7VVL1AA	**Matrix.....:** WATER	
Date Sampled...: 09/29/10	**Date Received..:** 10/01/10	**MS Run #.....:** 0285125	
Prep Date.....: 10/10/10	**Analysis Date..:** 10/10/10		
Prep Batch #...: 0285220	**Analysis Time..:** 16:21		
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL	
Analyst ID.....: 043582	**Instrument ID..:** UX15		
	Method.....: SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**8.6 B**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: CPC-SW-VOC-3

GC/MS Volatiles

Lot-Sample #...: C0J010569-004 **Work Order #...:** L7VVL1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	80	(73 - 122)
1,2-Dichloroethane-d4	104	(61 - 128)
Toluene-d8	84	(76 - 110)
4-Bromofluorobenzene	83	(74 - 116)

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: CPC-SW-VOC-3

GC/MS Volatiles

Lot-Sample #...: C0J010569-004 Work Order #...: L7VVL1AA Matrix.....: WATER

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: TB

GC/MS Volatiles

Lot-Sample #...: C0J010569-005	**Work Order #...:** L7VV11AA	**Matrix.....:** WATER	
Date Sampled...: 09/29/10	**Date Received..:** 10/01/10	**MS Run #.....:** 0285125	
Prep Date.....: 10/10/10	**Analysis Date..:** 10/10/10		
Prep Batch #...: 0285220	**Analysis Time..:** 16:44		
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL	
Analyst ID.....: 043582	**Instrument ID..:** UX15		
	Method.....: SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**27 B**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: TB

GC/MS Volatiles

Lot-Sample #...: C0J010569-005 **Work Order #...:** L7VV11AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	82	(73 - 122)
1,2-Dichloroethane-d4	104	(61 - 128)
Toluene-d8	88	(76 - 110)
4-Bromofluorobenzene	83	(74 - 116)

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: TB

GC/MS Volatiles

Lot-Sample #...: C0J010569-005 Work Order #...: L7VV11AA Matrix.....: WATER

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Appendix C

Support Documentation

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0J010569

Sample Receiving:
TestAmerica's Pittsburgh laboratory received samples on October 1, 2010. The cooler was received within the proper temperature range.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

GC/MS Volatiles:
TestAmerica's North Canton laboratory performed the VOA analysis. All data is included in the package.

Due to the concentration of target compounds detected, sample CPC-PW-VOC-2 was analyzed at a dilution.

The laboratory control standard for batch 0285139 was flagged as being outside of the control limits for chlorobenzene. The laboratory control duplicate for this batch was flagged as being outside of the control limits for toluene and chlorobenzene. The limits in the data system were updated prior to data entry. The compounds did recover within the control limits prior to the update.

The method blank for batch 0285220 had tert-butyl-alcohol and acetone detected between the MDL and the reporting limits. The results were flagged with a "J" qualifier. Any sample in this batch that had these compounds detected had the results flagged with a "B" qualifier.

METHODS SUMMARY

C0J010569

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Volatile Organics by GC/MS	SW846 8260B	SW846 5030B

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

C0J010569

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L7VVF	001	CPC-PW-VOC-2	09/29/10	09:50
L7VVH	002	CPC-PW-VOC-3	09/29/10	
L7VVK	003	CPC-SW-VOC-2	09/29/10	
L7VVL	004	CPC-SW-VOC-3	09/29/10	
L7VV1	005	TB	09/29/10	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

C0J010569

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client: Tetra-Tech Nus	Project Manager: Mike Martin	Date: 9/29/10	Chain of Custody Number: 154252
Address: 20251 Century Blvd Ste 2000	Telephone Number (Area Code)/Fax Number: 301 528 3022	Lab Number:	Page ____ of ____
City: Germantown; State: MD; Zip Code: 20874	Site Contact: Tony Apanavage; Lab Contact: Veronica Bontot		
Project Name and Location (State): MRC Sediment Middle River, MD	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Analysis (Attach list if more space is needed): VOCs - 8260; 1,4 Dioxane 8270 SIM

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	8260 VOC	8270 SIM	Special Instructions/ Conditions of Receipt
CPC-PW-VOC-2	9/29/10	9:50		X						X			X	X	1 vial
CPC-PW-VOC-3															1 vial
CPC-SW-VOC-2															2 vials
CPC-SW-VOC-3															2 vials
TB															

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other Per contract

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: Rick Samuels	9/30/10	1420	1. Received By: [signature]	9/30/10	1420
2. Relinquished By: [signature]	9/30/10	1530	2. Received By:		
3. Relinquished By:			3. Received By: [signature]	10/1/10	1000

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

HOLDTIME

SDG C0J010569

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	TB	C0J010569005	SUR	09/29/2010	10/10/2010	10/10/2010	11	0	11
OV	UG/L	TB	C0J010569005	NM	09/29/2010	10/10/2010	10/10/2010	11	0	11
OV	UG/L	CPC-SW-VOC-3	C0J010569004	SUR	09/29/2010	10/10/2010	10/10/2010	11	0	11
OV	UG/L	CPC-SW-VOC-3	C0J010569004	NM	09/29/2010	10/10/2010	10/10/2010	11	0	11
OV	UG/L	CPC-SW-VOC-2	C0J010569003	SUR	09/29/2010	10/10/2010	10/10/2010	11	0	11
OV	UG/L	CPC-SW-VOC-2	C0J010569003	NM	09/29/2010	10/10/2010	10/10/2010	11	0	11
OV	UG/L	CPC-PW-VOC-3	C0J010569002	SUR	09/29/2010	10/10/2010	10/10/2010	11	0	11
OV	UG/L	CPC-PW-VOC-3	C0J010569002	NM	09/29/2010	10/10/2010	10/10/2010	11	0	11
OV	UG/L	CPC-PW-VOC-2	C0J010569001	SUR	09/29/2010	10/11/2010	10/11/2010	12	0	12
OV	UG/L	CPC-PW-VOC-2	C0J010569001	NM	09/29/2010	10/11/2010	10/11/2010	12	0	12

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: NORTH CANTON Contract:

Lab Code: TACAN Case No.: SAS No.: SDG No.: C0J010569

Lab File ID: BFB494 BFB Injection Date: 09/09/10

Instrument ID: A3UX15 BFB Injection Time: 0915

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.8
75	30.0 - 60.0% of mass 95	45.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	0.5 (0.5)1
174	50.0 - 100.0% of mass 95	87.4
175	5.0 - 9.0% of mass 174	6.0 (6.8)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.2 (96.3)1
177	5.0 - 9.0% of mass 176	5.3 (6.2)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD040	200NG-IC	UXC0996	09/09/10	1002
02	VSTD020	100NG-IC	UXC0997	09/09/10	1025
03	VSTD010	50NG-IC	UXC0998	09/09/10	1048
04	VSTD005	25NG-IC	UXC0999	09/09/10	1110
05	VSTD002	10NG-IC	UXC1000	09/09/10	1133
06	VSTD001	5NG-IC	UXC1001	09/09/10	1155
07	VSTD040	200NG-A9IC	UXC1003	09/09/10	1239
08	VSTD020	100NG-A9IC	UXC1004	09/09/10	1302
09	VSTD010	50NG-A9IC	UXC1005	09/09/10	1324
10	VSTD005	25NG-A9IC	UXC1006	09/09/10	1347
11	VSTD002	10NG-A9IC	UXC1007	09/09/10	1410
12	VSTD001	5NG-A9IC	UXC1008	09/09/10	1433
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date : 13-Sep-2010 08:32

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 17-MAY-2010 08:17
End Cal Date : 09-SEP-2010 14:33
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux15.i\C00909A-IC.b\8260LLUX15.m
Last Edit : 09-Sep-2010 14:55 evansl
Curve Type : Average

Calibration File Names:
Level 1: \\cansvr11\dd\chem\MSV\a3ux15.i\C00909A-IC.b\UXC1008.D
Level 2: \\cansvr11\dd\chem\MSV\a3ux15.i\C00909A-IC.b\UXC1007.D
Level 3: \\cansvr11\dd\chem\MSV\a3ux15.i\C00909A-IC.b\UXC1006.D
Level 4: \\cansvr11\dd\chem\MSV\a3ux15.i\C00909A-IC.b\UXC1005.D
Level 5: \\cansvr11\dd\chem\MSV\a3ux15.i\C00909A-IC.b\UXC1004.D
Level 6: \\cansvr11\dd\chem\MSV\a3ux15.i\C00909A-IC.b\UXC1003.D

	Compound	5.000 Level 1	10.000 Level 2	25.000 Level 3	50.000 Level 4	100.000 Level 5	200.000 Level 6	RRF	% RSD
	8 Dichlorodifluoromethane	0.17826	0.18237	0.16747	0.17205	0.17372	0.16218	0.17268	4.208
	9 Chloromethane	0.37654	0.35861	0.35398	0.30865	0.32345	0.29750	0.33645	9.270
	10 Vinyl Chloride	0.26616	0.24115	0.24188	0.23870	0.23818	0.22453	0.24177	5.595
	11 Bromomethane	0.09999	0.09821	0.08468	0.07558	0.08426	0.07278	0.08592	13.095
	12 Chloroethane	0.14624	0.12759	0.12232	0.10875	0.11565	0.10475	0.12088	12.407
	13 Trichlorofluoromethane	0.28349	0.27024	0.26062	0.25212	0.26629	0.24030	0.26218	5.704
	14 Dichlorofluoromethane	0.31496	0.35430	0.34735	0.30885	0.33143	0.34005	0.33282	5.409
	15 Acrolein	0.03182	0.03203	0.03034	0.02907	0.02953	0.02895	0.03029	4.486
	16 Acetone	0.11240	0.07745	0.08076	0.07315	0.07335	0.07171	0.08147	19.047
	17 1,1-Dichloroethene	0.26494	0.24013	0.23476	0.22987	0.23197	0.22185	0.23725	6.254
	18 Freon-113	0.20486	0.15768	0.17367	0.17233	0.17885	0.17017	0.17626	8.895
	19 Iodomethane	0.48203	0.44706	0.43909	0.43904	0.43860	0.43224	0.44634	4.056
	20 Carbon Disulfide	0.75348	0.69790	0.71210	0.71005	0.72070	0.70647	0.71678	2.714
	21 Methylene Chloride	0.47940	0.35384	0.28842	0.26995	0.26513	0.24915	0.31765	27.464
	22 Acetonitrile	0.03379	0.03071	0.02802	0.02699	0.02701	0.02514	0.02861	10.914
	23 Acrylonitrile	0.10610	0.08839	0.08779	0.08152	0.08398	0.08087	0.08811	10.609
	24 Methyl tert-butyl ether	0.65560	0.59306	0.58067	0.57728	0.57375	0.56161	0.59033	5.685
	25 trans-1,2-Dichloroethene	0.31517	0.27576	0.27357	0.26577	0.27005	0.26030	0.27677	7.086
	26 Hexane	0.06949	0.04964	0.04890	0.04983	0.05311	0.04972	0.05345	14.956
	27 Vinyl acetate	0.32158	0.29332	0.30255	0.31542	0.33916	0.35159	0.32060	6.837
	28 1,1-Dichloroethane	0.53632	0.48615	0.49799	0.48573	0.49491	0.48374	0.49747	3.991
	29 tert-Butyl Alcohol	0.01821	0.01635	0.01647	0.01590	0.01597	0.01402	0.01615	8.306
	30 2-Butanone	0.08880	0.08067	0.08065	0.08094	0.08557	0.08783	0.08408	4.510
M	31 1,2-Dichloroethene (total)	0.31741	0.28025	0.28095	0.27618	0.27783	0.26818	0.28347	6.085
	32 cis-1,2-dichloroethene	0.31965	0.28474	0.28832	0.28660	0.28561	0.27606	0.29016	5.191
	33 2,2-Dichloropropane	0.34176	0.29788	0.30150	0.29453	0.30229	0.28759	0.30426	6.290
	34 Bromochloromethane	0.15366	0.13760	0.13771	0.13548	0.13791	0.13481	0.13953	5.048
	35 Chloroform	0.47121	0.43865	0.42346	0.43222	0.43170	0.42782	0.43751	3.945

Report Date : 13-Sep-2010 08:32

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 17-MAY-2010 08:17
End Cal Date : 09-SEP-2010 14:33
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux15.i\C00909A-IC.b\8260LLUX15.m
Last Edit : 09-Sep-2010 14:55 evansl
Curve Type : Average

	Compound	5.000 Level 1	10.000 Level 2	25.000 Level 3	50.000 Level 4	100.000 Level 5	200.000 Level 6	RRF	% RSD	
	36 Tetrahydrofuran	0.08645	0.05770	0.05949	0.05665	0.05674	0.05719	0.06237	18.989	
	37 1,1,1-Trichloroethane	0.41965	0.37084	0.37319	0.37578	0.37755	0.36750	0.38075	5.091	
	38 1,1-Dichloropropene	0.34579	0.31702	0.32275	0.32082	0.32213	0.32615	0.32578	3.143	
	39 Carbon Tetrachloride	0.34341	0.31084	0.33068	0.33201	0.34680	0.34282	0.33442	3.968	
	40 1,2-Dichloroethane	0.37323	0.33653	0.33191	0.34215	0.35469	0.35545	0.34899	4.356	
	41 Benzene	1.11171	0.96776	0.92799	0.92638	0.96158	0.98167	0.97951	6.987	
	42 Trichloroethene	0.32016	0.27037	0.27168	0.27267	0.28421	0.28370	0.28380	6.636	
	43 1,2-Dichloropropane	0.26748	0.22970	0.23696	0.23856	0.24599	0.25045	0.24486	5.407	
	44 1,4-Dioxane	0.00223	0.00206	0.00178	0.00181	0.00185	0.00134	0.00184	16.358	<-
	45 Dibromomethane	0.13563	0.11835	0.11795	0.11933	0.12427	0.12455	0.12335	5.420	
	46 Bromodichloromethane	0.26602	0.23924	0.24309	0.26451	0.27678	0.28923	0.26314	7.310	
	47 2-Chloroethyl vinyl ether	0.08625	0.07817	0.08118	0.09410	0.10323	0.11306	0.09267	14.581	
	48 cis-1,3-Dichloropropene	0.27946	0.24880	0.27202	0.29892	0.32464	0.34264	0.29441	11.830	
	49 4-Methyl-2-pentanone	0.17219	0.16198	0.16750	0.17491	0.18678	0.19245	0.17597	6.586	
	50 Toluene	1.49585	1.36379	1.37467	1.37486	1.41720	1.41094	1.40622	3.477	
	51 trans-1,3-Dichloropropene	0.29309	0.28499	0.29543	0.32753	0.35173	0.36217	0.31916	10.289	
	52 Ethyl Methacrylate	0.25444	0.25367	0.24539	0.26109	0.27419	0.26872	0.25958	4.084	
	53 1,1,2-Trichloroethane	0.22766	0.20546	0.20853	0.21145	0.21426	0.20854	0.21265	3.731	
	54 1,3-Dichloropropane	0.36480	0.33774	0.34165	0.35827	0.36599	0.36208	0.35509	3.458	
	55 Tetrachloroethene	0.32904	0.27571	0.29312	0.28669	0.28600	0.27029	0.29014	7.153	
	56 2-Hexanone	0.14233	0.14780	0.13765	0.14999	0.15259	0.15067	0.14684	3.893	
	57 Dibromochloromethane	0.23328	0.22316	0.22967	0.24184	0.26606	0.26998	0.24400	8.033	
	58 1,2-Dibromoethane	0.21019	0.18561	0.19302	0.20881	0.21336	0.21337	0.20406	5.780	
	59 Chlorobenzene	0.98308	0.89128	0.88875	0.88560	0.91765	0.91050	0.91281	4.025	
	60 1,1,1,2-Tetrachloroethane	0.34778	0.32735	0.34947	0.34332	0.35105	0.33916	0.34302	2.572	
	61 Ethylbenzene	0.54232	0.47637	0.48531	0.49011	0.49284	0.48267	0.49493	4.833	
	62 m + p-Xylene	0.67162	0.61970	0.61762	0.61047	0.61670	0.60599	0.62368	3.853	
M	63 Xylenes (total)	0.67366	0.62415	0.62616	0.61261	0.61716	0.60001	0.62563	4.048	
	64 Xylene-o	0.67773	0.63305	0.64323	0.61690	0.61808	0.58803	0.62950	4.785	
	65 Styrene	0.97770	0.91546	0.90836	0.92141	0.96427	0.96054	0.94129	3.141	
	66 Bromoform	0.11324	0.12321	0.11618	0.13287	0.14288	0.14870	0.12951	11.139	
	67 Isopropylbenzene	1.69503	1.57175	1.64106	1.60046	1.64525	1.64306	1.63277	2.595	
	68 1,1,2,2-Tetrachloroethane	0.47198	0.41501	0.43037	0.44856	0.44440	0.43718	0.44125	4.337	
	69 1,4-Dichloro-2-butene	0.14345	0.12837	0.12079	0.13774	0.15448	0.16073	0.14093	10.787	
	70 1,2,3-Trichloropropane	0.14441	0.15092	0.14100	0.15036	0.14949	0.14552	0.14695	2.681	
	71 Bromobenzene	0.67626	0.64011	0.64726	0.66731	0.67497	0.66797	0.66231	2.271	

Report Date : 13-Sep-2010 08:32

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 17-MAY-2010 08:17
End Cal Date : 09-SEP-2010 14:33
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux15.i\C00909A-IC.b\8260LLUX15.m
Last Edit : 09-Sep-2010 14:55 evansl
Curve Type : Average

Compound	5.000 Level 1	10.000 Level 2	25.000 Level 3	50.000 Level 4	100.000 Level 5	200.000 Level 6	___ RRF	% RSD	
72 n-Propylbenzene	0.76976	0.68426	0.72254	0.75958	0.78215	0.77132	0.74827	5.010	
73 2-Chlorotoluene	0.73623	0.68787	0.68297	0.69712	0.71296	0.70263	0.70330	2.748	
74 1,3,5-Trimethylbenzene	2.21827	2.07260	2.25803	2.33051	2.42448	2.51154	2.30257	6.764	
75 4-Chlorotoluene	0.73770	0.65132	0.67344	0.68430	0.69540	0.69306	0.68920	4.161	
76 tert-Butylbenzene	1.89406	1.78128	1.99075	2.11698	2.22495	2.28110	2.04819	9.480	
77 1,2,4-Trimethylbenzene	2.40229	2.24100	2.28043	2.38485	2.49109	2.56890	2.39476	5.164	
78 sec-Butylbenzene	2.72755	2.47426	2.71828	2.84375	2.97088	3.11541	2.80835	7.934	
79 4-Isopropyltoluene	2.38884	2.20572	2.37241	2.49050	2.61704	2.74394	2.46974	7.747	
80 1,3-Dichlorobenzene	1.53961	1.36236	1.32584	1.36674	1.36135	1.37839	1.38905	5.459	
81 1,4-Dichlorobenzene	1.57748	1.38357	1.32472	1.37215	1.37041	1.40787	1.40603	6.276	
82 n-Butylbenzene	2.16850	1.90646	2.01890	2.08873	2.17292	2.23638	2.09865	5.748	
83 1,2-Dichlorobenzene	1.56601	1.38028	1.33174	1.32561	1.32958	1.33950	1.37879	6.809	
84 1,2-Dibromo-3-chloropropane	0.11010	0.09477	0.09830	0.10274	0.10215	0.10467	0.10212	5.169	
85 1,2,4-Trichlorobenzene	1.22334	1.16261	1.12676	1.10925	1.07833	1.00821	1.11808	6.556	
86 Hexachlorobutadiene	0.49303	0.41843	0.42204	0.42304	0.41206	0.37426	0.42381	9.088	
87 Naphthalene	2.49079	2.35364	2.38251	2.38065	2.32562	2.15148	2.34745	4.736	
88 1,2,3-Trichlorobenzene	1.13964	1.08352	1.04455	1.01519	0.95854	0.83320	1.01244	10.574	
89 Ethyl Ether	0.23018	0.22835	0.21743	0.21247	0.21923	0.21872	0.22106	3.082	
90 Ethanol	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
91 3-Chloropropene	0.14058	0.14048	0.13704	0.14125	0.14450	0.14924	0.14218	2.949	
92 Isopropyl Ether	0.23055	0.22682	0.22603	0.22197	0.22813	0.22863	0.22702	1.288	
93 2-Chloro-1,3-butadiene	0.50597	0.49716	0.49082	0.49053	0.50362	0.51250	0.50010	1.759	
94 Propionitrile	0.03237	0.03035	0.02877	0.02754	0.02868	0.02799	0.02928	6.102	
95 Ethyl Acetate	0.15284	0.15846	0.14864	0.14323	0.15432	0.15088	0.15139	3.433	
96 Methacrylonitrile	0.14567	0.12579	0.13076	0.12389	0.12805	0.12959	0.13063	5.958	
97 Isobutanol	0.00983	0.00931	0.00868	0.00865	0.00892	0.00878	0.00903	5.096	<-
98 Cyclohexane	0.57222	0.45145	0.49514	0.49085	0.50533	0.48618	0.50019	7.947	
99 n-Butanol	0.00662	0.00663	0.00694	0.00665	0.00705	0.00600	0.00665	5.527	<-
100 Methyl Methacrylate	0.15314	0.14686	0.13780	0.13925	0.14939	0.14849	0.14582	4.138	
101 2-Nitropropane	0.03514	0.03234	0.03049	0.03105	0.03476	0.03842	0.03370	8.873	
102 Chloropicrin	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
103 Cyclohexanone	0.01834	0.01698	0.01845	0.01746	0.01756	0.01699	0.01763	3.632	
104 Pentachloroethane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
105 Benzyl Chloride	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
134 Thiophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
135 Crotononitrile(1st Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-

Report Date : 13-Sep-2010 08:32

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 17-MAY-2010 08:17
End Cal Date : 09-SEP-2010 14:33
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux15.i\C00909A-IC.b\8260LLUX15.m
Last Edit : 09-Sep-2010 14:55 evansl
Curve Type : Average

	Compound	5.000 Level 1	10.000 Level 2	25.000 Level 3	50.000 Level 4	100.000 Level 5	200.000 Level 6	RRF	% RSD	
	136 Crotononitrile(2nd Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
M	137 Total Crotononitrile	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	138 Paraldehyde	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	139 3,3,5-Trimethylcyclohexanone	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	140 1-Chlorohexane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	141 1,3,5-Trichlorobenzene	1.30759	1.19775	1.19985	1.18448	1.14979	1.11838	1.19297	5.395	
	143 Methyl Acetate	0.19433	0.18368	0.18099	0.18050	0.18119	0.17508	0.18263	3.499	
	144 Methylcyclohexane	0.44472	0.34792	0.38685	0.39118	0.40474	0.38654	0.39366	7.973	
	145 Dimethoxymethane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	146 2-Methylnaphthalene	1.37295	0.95044	1.44755	1.48469	1.57655	1.62034	1.40875	17.140	
	147 Tetrahydrothiophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	148 1,4-Dichlorobutane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	151 Ethyl Acrylate	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	152 Vinyl Acetate-86	0.02585	0.02798	0.02466	0.02587	0.02658	0.02803	0.02649	4.987	
	153 1,3-Butadiene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	154 n-Heptane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	155 tert-Butyl Ethyl Ether	0.80997	0.82607	0.80315	0.80304	0.83968	0.87217	0.82568	3.261	
	156 tert-Amyl Methyl Ether	0.57533	0.56743	0.55176	0.55100	0.57869	0.60029	0.57075	3.248	
	157 1,2,3-Trimethylbezene	2.27576	2.17354	2.34365	2.26368	2.51464	2.70654	2.37963	8.258	
$	4 Dibromofluoromethane	0.26758	0.26151	0.24987	0.24587	0.25495	0.24453	0.25405	3.584	
$	5 1,2-Dichloroethane-d4	0.30378	0.27710	0.27543	0.26693	0.27522	0.26851	0.27783	4.809	
$	6 Toluene-d8	1.26674	1.21878	1.21614	1.17857	1.21694	1.17844	1.21260	2.691	
$	7 Bromofluorobenzene	0.48849	0.45719	0.42872	0.40514	0.42455	0.39849	0.43376	7.796	

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: NORTH CANTON Contract:

Lab Code: TACAN Case No.: SAS No.: SDG No.: C0J010569

Lab File ID: BFB512 BFB Injection Date: 10/10/10

Instrument ID: A3UX15 BFB Injection Time: 0805

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	29.7
75	30.0 - 60.0% of mass 95	52.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.5 (0.7)1
174	50.0 - 100.0% of mass 95	74.9
175	5.0 - 9.0% of mass 174	5.4 (7.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	71.3 (95.2)1
177	5.0 - 9.0% of mass 176	4.2 (5.9)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	50NG-CC	UXC1511	10/10/10	0850
02	VSTD010	50NG-A9CC	UXC1512	10/10/10	0912
03	L8A09CHK	L8A091AC	UXC1513	10/10/10	0935
04	L8A09CKDUP	L8A091AD	UXC1514	10/10/10	0957
05	L8A09BLK	L8A091AA	UXC1515	10/10/10	1020
06	CPC-PW-VOC-3	L7VVH1AA	UXC1529	10/10/10	1535
07	CPC-SW-VOC-2	L7VVK1AA	UXC1530	10/10/10	1558
08	CPC-SW-VOC-3	L7VVL1AA	UXC1531	10/10/10	1621
09	TB	L7VV11AA	UXC1532	10/10/10	1644
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Data File: \\cansvr11\dd\chem\MSV\a3ux15.i\C01010A.b\UXC1511.D
Report Date: 10-Oct-2010 10:24

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux15.i Injection Date: 10-OCT-2010 08:50
Lab File ID: UXC1511.D Init. Cal. Date(s): 17-MAY-2010 09-SEP-2010
Analysis Type: WATER Init. Cal. Times: 08:17 14:33
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux15.i\C01010A.b\8260LLUX15.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
48 cis-1,3-Dichloropropene	0.29441	0.24282	0.24282	0.010	17.52500	50.00000	Averaged
49 4-Methyl-2-pentanone	0.17597	0.22276	0.22276	0.010	-26.59265	50.00000	Averaged
50 Toluene	1.40622	1.26425	1.26425	0.010	10.09539	20.00000	Averaged
51 trans-1,3-Dichloropropene	0.31916	0.25590	0.25590	0.010	19.82004	50.00000	Averaged
52 Ethyl Methacrylate	0.25958	0.25072	0.25072	0.010	3.41218	50.00000	Averaged
53 1,1,2-Trichloroethane	0.21265	0.21651	0.21651	0.010	-1.81551	50.00000	Averaged
54 1,3-Dichloropropane	0.35509	0.38532	0.38532	0.010	-8.51397	50.00000	Averaged
55 Tetrachloroethene	0.29014	0.23979	0.23979	0.010	17.35519	50.00000	Averaged
56 2-Hexanone	0.14684	0.19042	0.19042	0.010	-29.68171	50.00000	Averaged
57 Dibromochloromethane	0.24400	0.24567	0.24567	0.010	-0.68584	50.00000	Averaged
58 1,2-Dibromoethane	0.20406	0.21962	0.21962	0.010	-7.62691	50.00000	Averaged
59 Chlorobenzene	0.91281	0.82070	0.82070	0.300	10.09068	50.00000	Averaged
60 1,1,1,2-Tetrachloroethane	0.34302	0.30858	0.30858	0.010	10.04079	50.00000	Averaged
61 Ethylbenzene	0.49493	0.43178	0.43178	0.010	12.76100	20.00000	Averaged
62 m + p-Xylene	0.62368	0.54606	0.54606	0.010	12.44550	50.00000	Averaged
M 63 Xylenes (total)	0.62563	0.55043	0.55043	0.010	12.01868	50.00000	Averaged
64 Xylene-o	0.62950	0.55917	0.55917	0.010	11.17251	50.00000	Averaged
65 Styrene	0.94129	0.82015	0.82015	0.010	12.86942	50.00000	Averaged
66 Bromoform	0.12951	0.12588	0.12588	0.100	2.80926	50.00000	Averaged
67 Isopropylbenzene	1.63277	1.46641	1.46641	0.010	10.18894	50.00000	Averaged
68 1,1,2,2-Tetrachloroethane	0.44125	0.53715	0.53715	0.300	-21.73271	50.00000	Averaged
69 1,4-Dichloro-2-butene	0.14093	0.08179	0.08179	0.010	41.96054	50.00000	Averaged
70 1,2,3-Trichloropropane	0.14695	0.17542	0.17542	0.010	-19.37381	50.00000	Averaged
71 Bromobenzene	0.66231	0.60842	0.60842	0.010	8.13749	50.00000	Averaged
72 n-Propylbenzene	0.74827	0.69421	0.69421	0.010	7.22473	50.00000	Averaged
73 2-Chlorotoluene	0.70330	0.64731	0.64731	0.010	7.96002	50.00000	Averaged
74 1,3,5-Trimethylbenzene	2.30257	2.16150	2.16150	0.010	6.12677	50.00000	Averaged
75 4-Chlorotoluene	0.68920	0.63594	0.63594	0.010	7.72840	50.00000	Averaged
76 tert-Butylbenzene	2.04819	1.95095	1.95095	0.010	4.74755	50.00000	Averaged
77 1,2,4-Trimethylbenzene	2.39476	2.30923	2.30923	0.010	3.57142	50.00000	Averaged
78 sec-Butylbenzene	2.80835	2.67703	2.67703	0.010	4.67615	50.00000	Averaged
79 4-Isopropyltoluene	2.46974	2.30899	2.30899	0.010	6.50896	50.00000	Averaged
80 1,3-Dichlorobenzene	1.38905	1.23643	1.23643	0.010	10.98751	50.00000	Averaged
81 1,4-Dichlorobenzene	1.40603	1.24441	1.24441	0.010	11.49511	50.00000	Averaged
82 n-Butylbenzene	2.09865	1.94940	1.94940	0.010	7.11143	50.00000	Averaged
83 1,2-Dichlorobenzene	1.37879	1.26384	1.26384	0.010	8.33655	50.00000	Averaged
84 1,2-Dibromo-3-chloropropane	0.10212	0.10305	0.10305	0.010	-0.90483	50.00000	Averaged
85 1,2,4-Trichlorobenzene	1.11808	0.90233	0.90233	0.010	19.29643	50.00000	Averaged
86 Hexachlorobutadiene	0.42381	0.30150	0.30150	0.010	28.85890	50.00000	Averaged
87 Naphthalene	2.34745	2.30418	2.30418	0.010	1.84331	50.00000	Averaged
88 1,2,3-Trichlorobenzene	1.01244	0.86453	0.86453	0.010	14.60957	50.00000	Averaged
98 Cyclohexane	0.50019	0.51292	0.51292	0.010	-2.54455	50.00000	Averaged
143 Methyl Acetate	0.18263	0.22656	0.22656	0.010	-24.05696	50.00000	Averaged

Data File: \\cansvr11\dd\chem\MSV\a3ux15.i\C01010A.b\UXC1511.D
Report Date: 10-Oct-2010 10:24

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux15.i Injection Date: 10-OCT-2010 08:50
Lab File ID: UXC1511.D Init. Cal. Date(s): 17-MAY-2010 09-SEP-2010
Analysis Type: WATER Init. Cal. Times: 08:17 14:33
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux15.i\C01010A.b\8260LLUX15.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
$ 4 Dibromofluoromethane	0.25405	0.22158	0.22158	0.010	12.78169	50.00000	Averaged
$ 5 1,2-Dichloroethane-d4	0.27783	0.28702	0.28702	0.010	-3.30936	50.00000	Averaged
$ 6 Toluene-d8	1.21260	1.07564	1.07564	0.010	11.29515	50.00000	Averaged
$ 7 Bromofluorobenzene	0.43376	0.38138	0.38138	0.010	12.07605	50.00000	Averaged
8 Dichlorodifluoromethane	0.17268	0.17469	0.17469	0.010	-1.16601	50.00000	Averaged
9 Chloromethane	0.33645	0.35553	0.35553	0.100	-5.66983	50.00000	Averaged
10 Vinyl Chloride	0.24177	0.28108	0.28108	0.010	-16.26317	20.00000	Averaged
11 Bromomethane	0.08592	0.09123	0.09123	0.010	-6.18921	50.00000	Averaged
12 Chloroethane	0.12088	0.14963	0.14963	0.010	-23.78288	50.00000	Averaged
13 Trichlorofluoromethane	0.26218	0.24861	0.24861	0.010	5.17295	50.00000	Averaged
15 Acrolein	0.03029	0.03870	0.03870	0.010	-27.76941	50.00000	Averaged
16 Acetone	100	132	0.09737	0.010	-32.33716	0.000e+000	Wt Linear
17 1,1-Dichloroethene	0.23725	0.19455	0.19455	0.010	17.99847	20.00000	Averaged
18 Freon-113	0.17626	0.17068	0.17068	0.010	3.16629	50.00000	Averaged
19 Iodomethane	0.44634	0.34024	0.34024	0.010	23.77194	50.00000	Averaged
20 Carbon Disulfide	0.71678	0.56246	0.56246	0.010	21.53012	50.00000	Averaged
21 Methylene Chloride	50.00000	47.81238	0.25860	0.010	4.37524	0.000e+000	Wt Linear
22 Acetonitrile	0.02861	0.03505	0.03505	0.010	-22.49833	50.00000	Averaged
23 Acrylonitrile	0.08811	0.10376	0.10376	0.010	-17.76467	50.00000	Averaged
24 Methyl tert-butyl ether	0.59033	0.30623	0.30623	0.010	48.12609	50.00000	Averaged
25 trans-1,2-Dichloroethene	0.27677	0.23559	0.23559	0.010	14.87932	50.00000	Averaged
26 Hexane	0.05345	0.04868	0.04868	0.010	8.91902	20.00000	Averaged
27 Vinyl acetate	0.32060	0.34626	0.34626	0.010	-8.00382	50.00000	Averaged
28 1,1-Dichloroethane	0.49747	0.46890	0.46890	0.100	5.74333	50.00000	Averaged
29 tert-Butyl Alcohol	0.01615	0.01064	0.01064	0.010	34.12144	50.00000	Averaged
30 2-Butanone	0.08408	0.11259	0.11259	0.010	-33.91788	50.00000	Averaged
M 31 1,2-Dichloroethene (total)	0.28347	0.24531	0.24531	0.010	13.46088	50.00000	Averaged
32 cis-1,2-dichloroethene	0.29016	0.25503	0.25503	0.010	12.10743	50.00000	Averaged
33 2,2-Dichloropropane	0.30426	0.17690	0.17690	0.010	41.86027	50.00000	Averaged
34 Bromochloromethane	0.13953	0.12587	0.12587	0.010	9.78685	50.00000	Averaged
35 Chloroform	0.43751	0.40272	0.40272	0.010	7.95264	20.00000	Averaged
36 Tetrahydrofuran	50.00000	67.77761	0.07800	0.010	-35.55522	0.000e+000	Wt Linear
37 1,1,1-Trichloroethane	0.38075	0.31113	0.31113	0.010	18.28647	50.00000	Averaged
38 1,1-Dichloropropene	0.32578	0.30753	0.30753	0.010	5.59986	50.00000	Averaged
39 Carbon Tetrachloride	0.33442	0.28550	0.28550	0.010	14.63054	50.00000	Averaged
40 1,2-Dichloroethane	0.34899	0.38837	0.38837	0.010	-11.28346	50.00000	Averaged
41 Benzene	0.97951	0.88090	0.88090	0.010	10.06766	50.00000	Averaged
42 Trichloroethene	0.28380	0.24016	0.24016	0.010	15.37661	50.00000	Averaged
43 1,2-Dichloropropane	0.24486	0.23869	0.23869	0.010	2.51701	20.00000	Averaged
44 1,4-Dioxane	2500	3628	0.00277	0.010	-45.12263	0.000e+000	Quadratic <-
45 Dibromomethane	0.12335	0.12604	0.12604	0.010	-2.18226	50.00000	Averaged
46 Bromodichloromethane	0.26314	0.25744	0.25744	0.010	2.16847	50.00000	Averaged
47 2-Chloroethyl vinyl ether	0.09267	0.10115	0.10115	0.010	-9.15706	50.00000	Averaged

Data File: \\cansvr11\dd\chem\MSV\a3ux15.i\C01010A.b\UXC1511.D
Report Date: 10-Oct-2010 10:24

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux15.i Injection Date: 10-OCT-2010 08:50
Lab File ID: UXC1511.D Init. Cal. Date(s): 17-MAY-2010 09-SEP-2010
Analysis Type: WATER Init. Cal. Times: 08:17 14:33
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux15.i\C01010A.b\8260LLUX15.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
144 Methylcyclohexane	0.39366	0.37869	0.37869	0.010	3.80239	50.00000	Averaged
141 1,3,5-Trichlorobenzene	1.19297	0.95023	0.95023	0.010	20.34781	50.00000	Averaged
152 Vinyl Acetate-86	0.02649	0.02242	0.02242	0.010	15.39360	50.00000	Averaged

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: NORTH CANTON Contract:

Lab Code: TACAN Case No.: SAS No.: SDG No.: C0J010569

Lab File ID: BFB513 BFB Injection Date: 10/11/10

Instrument ID: A3UX15 BFB Injection Time: 1001

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	29.2
75	30.0 - 60.0% of mass 95	51.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.5 (0.7)1
174	50.0 - 100.0% of mass 95	75.7
175	5.0 - 9.0% of mass 174	5.0 (6.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	72.3 (95.6)1
177	5.0 - 9.0% of mass 176	4.8 (6.7)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	50NG-CC	UXC1539	10/11/10	1044
02	VSTD010	50NG-A9CC	UXC1540	10/11/10	1106
03	L8AGJCHK	L8AGJ1AC	UXC1541	10/11/10	1129
04	L8AGJCKDUP	L8AGJ1AD	UXC1542	10/11/10	1152
05	L8AGJBLK	L8AGJ1AA	UXC1543	10/11/10	1214
06	CPC-PW-VOC-2	L7VVF1AA	UXC1546	10/11/10	1328
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Data File: \\cansvr11\dd\chem\MSV\a3ux15.i\C01011A.b\UXC1539.D
Report Date: 11-Oct-2010 11:59

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux15.i Injection Date: 11-OCT-2010 10:44
Lab File ID: UXC1539.D Init. Cal. Date(s): 17-MAY-2010 09-SEP-2010
Analysis Type: WATER Init. Cal. Times: 08:17 14:33
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux15.i\C01011A.b\8260LLUX15.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
$ 4 Dibromofluoromethane	0.25405	0.21934	0.21934	0.010	13.66146	50.00000	Averaged
$ 5 1,2-Dichloroethane-d4	0.27783	0.28081	0.28081	0.010	-1.07315	50.00000	Averaged
$ 6 Toluene-d8	1.21260	1.09000	1.09000	0.010	10.11090	50.00000	Averaged
$ 7 Bromofluorobenzene	0.43376	0.37698	0.37698	0.010	13.09109	50.00000	Averaged
8 Dichlorodifluoromethane	0.17268	0.17290	0.17290	0.010	-0.12836	50.00000	Averaged
9 Chloromethane	0.33645	0.34581	0.34581	0.100	-2.78106	50.00000	Averaged
10 Vinyl Chloride	0.24177	0.28614	0.28614	0.010	-18.35297	20.00000	Averaged
11 Bromomethane	0.08592	0.09096	0.09096	0.010	-5.87241	50.00000	Averaged
12 Chloroethane	0.12088	0.13384	0.13384	0.010	-10.71394	50.00000	Averaged
13 Trichlorofluoromethane	0.26218	0.25756	0.25756	0.010	1.76099	50.00000	Averaged
15 Acrolein	0.03029	0.03896	0.03896	0.010	-28.62344	50.00000	Averaged
16 Acetone	100	137	0.10044	0.010	-36.64817	0.000e+000	Wt Linear
17 1,1-Dichloroethene	0.23725	0.20509	0.20509	0.010	13.55528	20.00000	Averaged
18 Freon-113	0.17626	0.17993	0.17993	0.010	-2.08338	50.00000	Averaged
19 Iodomethane	0.44634	0.32662	0.32662	0.010	26.82311	50.00000	Averaged
20 Carbon Disulfide	0.71678	0.56413	0.56413	0.010	21.29763	50.00000	Averaged
21 Methylene Chloride	50.00000	47.81220	0.25860	0.010	4.37559	0.000e+000	Wt Linear
22 Acetonitrile	0.02861	0.03608	0.03608	0.010	-26.11623	50.00000	Averaged
23 Acrylonitrile	0.08811	0.10294	0.10294	0.010	-16.83039	50.00000	Averaged
24 Methyl tert-butyl ether	0.59033	0.28810	0.28810	0.010	51.19706	50.00000	Averaged<-
25 trans-1,2-Dichloroethene	0.27677	0.23458	0.23458	0.010	15.24488	50.00000	Averaged
26 Hexane	0.05345	0.05307	0.05307	0.010	0.70817	20.00000	Averaged
27 Vinyl acetate	0.32060	0.31243	0.31243	0.010	2.55025	50.00000	Averaged
28 1,1-Dichloroethane	0.49747	0.46856	0.46856	0.100	5.81175	50.00000	Averaged
29 tert-Butyl Alcohol	0.01615	0.00889	0.00889	0.010	44.97720	50.00000	Averaged<-
30 2-Butanone	0.08408	0.11877	0.11877	0.010	-41.26016	50.00000	Averaged
M 31 1,2-Dichloroethene (total)	0.28347	0.23941	0.23941	0.010	15.54063	50.00000	Averaged
32 cis-1,2-dichloroethene	0.29016	0.24425	0.24425	0.010	15.82227	50.00000	Averaged
33 2,2-Dichloropropane	0.30426	0.16144	0.16144	0.010	46.94088	50.00000	Averaged
34 Bromochloromethane	0.13953	0.12165	0.12165	0.010	12.81433	50.00000	Averaged
35 Chloroform	0.43751	0.39835	0.39835	0.010	8.95134	20.00000	Averaged
36 Tetrahydrofuran	50.00000	66.92807	0.07705	0.010	-33.85614	0.000e+000	Wt Linear
37 1,1,1-Trichloroethane	0.38075	0.30705	0.30705	0.010	19.35700	50.00000	Averaged
38 1,1-Dichloropropene	0.32578	0.31570	0.31570	0.010	3.09165	50.00000	Averaged
39 Carbon Tetrachloride	0.33442	0.28250	0.28250	0.010	15.52762	50.00000	Averaged
40 1,2-Dichloroethane	0.34899	0.38223	0.38223	0.010	-9.52313	50.00000	Averaged
41 Benzene	0.97951	0.87780	0.87780	0.010	10.38433	50.00000	Averaged
42 Trichloroethene	0.28380	0.24573	0.24573	0.010	13.41532	50.00000	Averaged
43 1,2-Dichloropropane	0.24486	0.24449	0.24449	0.010	0.15180	20.00000	Averaged
44 1,4-Dioxane	2500	1350	0.00121	0.010	45.98662	0.000e+000	Quadratic<-
45 Dibromomethane	0.12335	0.12590	0.12590	0.010	-2.06751	50.00000	Averaged
46 Bromodichloromethane	0.26314	0.25131	0.25131	0.010	4.49809	50.00000	Averaged
47 2-Chloroethyl vinyl ether	0.09267	0.10657	0.10657	0.010	-15.00434	50.00000	Averaged

Data File: \\cansvr11\dd\chem\MSV\a3ux15.i\C01011A.b\UXC1539.D
Report Date: 11-Oct-2010 11:59

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux15.i Injection Date: 11-OCT-2010 10:44
Lab File ID: UXC1539.D Init. Cal. Date(s): 17-MAY-2010 09-SEP-2010
Analysis Type: WATER Init. Cal. Times: 08:17 14:33
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux15.i\C01011A.b\8260LLUX15.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
48 cis-1,3-Dichloropropene	0.29441	0.22855	0.22855	0.010	22.37267	50.00000	Averaged
49 4-Methyl-2-pentanone	0.17597	0.23635	0.23635	0.010	-34.31231	50.00000	Averaged
50 Toluene	1.40622	1.27215	1.27215	0.010	9.53408	20.00000	Averaged
51 trans-1,3-Dichloropropene	0.31916	0.24810	0.24810	0.010	22.26454	50.00000	Averaged
52 Ethyl Methacrylate	0.25958	0.24771	0.24771	0.010	4.57431	50.00000	Averaged
53 1,1,2-Trichloroethane	0.21265	0.21673	0.21673	0.010	-1.91657	50.00000	Averaged
54 1,3-Dichloropropane	0.35509	0.39617	0.39617	0.010	-11.56890	50.00000	Averaged
55 Tetrachloroethene	0.29014	0.25036	0.25036	0.010	13.71064	50.00000	Averaged
56 2-Hexanone	0.14684	0.20329	0.20329	0.010	-38.44154	50.00000	Averaged
57 Dibromochloromethane	0.24400	0.23555	0.23555	0.010	3.46222	50.00000	Averaged
58 1,2-Dibromoethane	0.20406	0.22230	0.22230	0.010	-8.93796	50.00000	Averaged
59 Chlorobenzene	0.91281	0.81679	0.81679	0.300	10.51942	50.00000	Averaged
60 1,1,1,2-Tetrachloroethane	0.34302	0.28772	0.28772	0.010	16.12236	50.00000	Averaged
61 Ethylbenzene	0.49493	0.43439	0.43439	0.010	12.23207	20.00000	Averaged
62 m + p-Xylene	0.62368	0.55442	0.55442	0.010	11.10561	50.00000	Averaged
M 63 Xylenes (total)	0.62563	0.55531	0.55531	0.010	11.23913	50.00000	Averaged
64 Xylene-o	0.62950	0.55709	0.55709	0.010	11.50332	50.00000	Averaged
65 Styrene	0.94129	0.81233	0.81233	0.010	13.70036	50.00000	Averaged
66 Bromoform	0.12951	0.12200	0.12200	0.100	5.80079	50.00000	Averaged
67 Isopropylbenzene	1.63277	1.48211	1.48211	0.010	9.22734	50.00000	Averaged
68 1,1,2,2-Tetrachloroethane	0.44125	0.51215	0.51215	0.300	-16.06789	50.00000	Averaged
69 1,4-Dichloro-2-butene	0.14093	0.08680	0.08680	0.010	38.40952	50.00000	Averaged
70 1,2,3-Trichloropropane	0.14695	0.16734	0.16734	0.010	-13.87756	50.00000	Averaged
71 Bromobenzene	0.66231	0.58590	0.58590	0.010	11.53670	50.00000	Averaged
72 n-Propylbenzene	0.74827	0.68773	0.68773	0.010	8.09082	50.00000	Averaged
73 2-Chlorotoluene	0.70330	0.62342	0.62342	0.010	11.35688	50.00000	Averaged
74 1,3,5-Trimethylbenzene	2.30257	2.15840	2.15840	0.010	6.26136	50.00000	Averaged
75 4-Chlorotoluene	0.68920	0.63207	0.63207	0.010	8.28976	50.00000	Averaged
76 tert-Butylbenzene	2.04819	1.96395	1.96395	0.010	4.11251	50.00000	Averaged
77 1,2,4-Trimethylbenzene	2.39476	2.21928	2.21928	0.010	7.32755	50.00000	Averaged
78 sec-Butylbenzene	2.80835	2.67806	2.67806	0.010	4.63945	50.00000	Averaged
79 4-Isopropyltoluene	2.46974	2.29520	2.29520	0.010	7.06736	50.00000	Averaged
80 1,3-Dichlorobenzene	1.38905	1.16343	1.16343	0.010	16.24257	50.00000	Averaged
81 1,4-Dichlorobenzene	1.40603	1.18918	1.18918	0.010	15.42281	50.00000	Averaged
82 n-Butylbenzene	2.09865	1.91748	1.91748	0.010	8.63240	50.00000	Averaged
83 1,2-Dichlorobenzene	1.37879	1.18910	1.18910	0.010	13.75777	50.00000	Averaged
84 1,2-Dibromo-3-chloropropane	0.10212	0.09110	0.09110	0.010	10.78893	50.00000	Averaged
85 1,2,4-Trichlorobenzene	1.11808	0.84131	0.84131	0.010	24.75466	50.00000	Averaged
86 Hexachlorobutadiene	0.42381	0.28806	0.28806	0.010	32.03146	50.00000	Averaged
87 Naphthalene	2.34745	2.10503	2.10503	0.010	10.32678	50.00000	Averaged
88 1,2,3-Trichlorobenzene	1.01244	0.80010	0.80010	0.010	20.97285	50.00000	Averaged
98 Cyclohexane	0.50019	0.55239	0.55239	0.010	-10.43485	50.00000	Averaged
143 Methyl Acetate	0.18263	0.22663	0.22663	0.010	-24.09344	50.00000	Averaged

Data File: \\cansvr11\dd\chem\MSV\a3ux15.i\C01011A.b\UXC1539.D
Report Date: 11-Oct-2010 11:59

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux15.i Injection Date: 11-OCT-2010 10:44
Lab File ID: UXC1539.D Init. Cal. Date(s): 17-MAY-2010 09-SEP-2010
Analysis Type: WATER Init. Cal. Times: 08:17 14:33
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux15.i\C01011A.b\8260LLUX15.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
144 Methylcyclohexane	0.39366	0.40785	0.40785	0.010	-3.60501	50.00000	Averaged
141 1,3,5-Trichlorobenzene	1.19297	0.88879	0.88879	0.010	25.49819	50.00000	Averaged
152 Vinyl Acetate-86	0.02649	0.02144	0.02144	0.010	19.08469	50.00000	Averaged

SW846 8260B METHOD BLANK SUMMARY

BLANK WORKORDER NO.: L8AGJ1AA

Lab Name: TestAmerica Laboratories, Inc.

Lab Code: TALPIT

SDG Number:

Lab File ID: UXC1543.D

Lot Number: C0J010569

Date Analyzed: 10/11/10

Time Analyzed: 12:14

Matrix: WATER

Date Extracted: 10/11/10

GC Column: DB624 ID: .18

Extraction Method: 5030B

Instrument ID: UX15

Level: (low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CPC-PW-VOC-2	L7VVF1AA	UXC1546.D	10/11/10	13:28
02	INTRA-LAB QC	L7XQF1AA	UXC1547.D	10/11/10	13:51
03	LAB MS/MSD	L7XQF1AE S	UXC1565.D	10/11/10	20:32
04	LAB MS/MSD	L7XQF1AF D	UXC1566.D	10/11/10	20:55
05	CHECK SAMPLE	L8AGJ1AC C	UXC1541.D	10/11/10	11:29
06	DUPLICATE CHECK	L8AGJ1AD L	UXC1542.D	10/11/10	11:52
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08					
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COMMENTS:

FORM IV

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0J010569 **Work Order #...:** L8AGJ1AA **Matrix.....:** WATER
MB Lot-Sample #: A0J120000-139

Prep Date.....: 10/11/10 **Analysis Time..:** 12:14
Analysis Date..: 10/11/10 **Prep Batch #...:** 0285139 **Final Wgt/Vol..:** 5 mL
Dilution Factor: 1 **Initial Wgt/Vol:** 5 mL **Instrument ID..:** UX15
Analyst ID.....: 043582

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acetone	ND	5.0	ug/L	SW846 8260B
Bromobenzene	ND	1.0	ug/L	SW846 8260B
Bromochloromethane	ND	1.0	ug/L	SW846 8260B
Bromodichloromethane	ND	1.0	ug/L	SW846 8260B
n-Butylbenzene	ND	1.0	ug/L	SW846 8260B
sec-Butylbenzene	ND	1.0	ug/L	SW846 8260B
tert-Butylbenzene	ND	1.0	ug/L	SW846 8260B
Carbon disulfide	ND	1.0	ug/L	SW846 8260B
Dibromochloromethane	ND	1.0	ug/L	SW846 8260B
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	SW846 8260B
2-Chloroethyl vinyl ether	ND	5.0	ug/L	SW846 8260B
2-Chlorotoluene	ND	1.0	ug/L	SW846 8260B
4-Chlorotoluene	ND	1.0	ug/L	SW846 8260B
1,2-Dibromoethane	ND	1.0	ug/L	SW846 8260B
Dibromomethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,3-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,4-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
Dichlorodifluoromethane	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,3-Dichloropropane	ND	1.0	ug/L	SW846 8260B
2,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Trichlorofluoromethane	ND	1.0	ug/L	SW846 8260B
Hexachlorobutadiene	ND	1.0	ug/L	SW846 8260B
2-Hexanone	ND	5.0	ug/L	SW846 8260B
Isopropylbenzene	ND	1.0	ug/L	SW846 8260B
p-Isopropyltoluene	ND	1.0	ug/L	SW846 8260B
Naphthalene	ND	1.0	ug/L	SW846 8260B
n-Propylbenzene	ND	1.0	ug/L	SW846 8260B
Styrene	ND	1.0	ug/L	SW846 8260B
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
1,2,3-Trichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,2,4-Trichloro-benzene	ND	1.0	ug/L	SW846 8260B
1,2,3-Trichloropropane	ND	1.0	ug/L	SW846 8260B
1,2,4-Trimethylbenzene	ND	1.0	ug/L	SW846 8260B
Vinyl acetate	ND	2.0	ug/L	SW846 8260B

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0J010569 **Work Order #...:** L8AGJ1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
2-Butanone	ND	5.0	ug/L	SW846 8260B
4-Methyl-2-pentanone	ND	5.0	ug/L	SW846 8260B
tert-Butyl alcohol	ND	20	ug/L	SW846 8260B
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	2.0	ug/L	SW846 8260B
1,2,3-Trimethylbenzene	ND	5.0	ug/L	SW846 8260B
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	5.0	ug/L	SW846 8260B
Tert-amyl methyl ether (T	ND	5.0	ug/L	SW846 8260B
Xylenes (total)	ND	2.0	ug/L	SW846 8260B
Methyl tert-butyl ether	ND	5.0	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
Bromoform	ND	1.0	ug/L	SW846 8260B
Bromomethane	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chlorobenzene	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
Chloromethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	1.0	ug/L	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	81	(75 - 121)
1,2-Dichloroethane-d4	102	(63 - 129)
Toluene-d8	86	(74 - 115)
4-Bromofluorobenzene	85	(66 - 117)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

SW846 8260B METHOD BLANK SUMMARY

BLANK WORKORDER NO.: L8A091AA

Lab Name: TestAmerica Laboratories, Inc.

Lab Code: TALPIT

SDG Number:

Lab File ID: UXC1515.D

Lot Number: C0J010569

Date Analyzed: 10/10/10

Time Analyzed: 10:20

Matrix: WATER

Date Extracted:10/10/10

GC Column: DB624 ID: .18

Extraction Method: 5030B

Instrument ID: UX15

Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	INTRA-LAB QC	L7T2Q1AA	UXC1517.D	10/10/10	11:05
02	LAB MS/MSD	L7T2Q1AK S	UXC1537.D	10/10/10	18:36
03	LAB MS/MSD	L7T2Q1AL D	UXC1538.D	10/10/10	18:58
04	CPC-PW-VOC-3	L7VVH1AA	UXC1529.D	10/10/10	15:35
05	CPC-SW-VOC-2	L7VVK1AA	UXC1530.D	10/10/10	15:58
06	CPC-SW-VOC-3	L7VVL1AA	UXC1531.D	10/10/10	16:21
07	TB	L7VV11AA	UXC1532.D	10/10/10	16:44
08	CHECK SAMPLE	L8A091AC C	UXC1513.D	10/10/10	09:35
09	DUPLICATE CHECK	L8A091AD L	UXC1514.D	10/10/10	09:57
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COMMENTS:

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0J010569 **Work Order #...:** L8A091AA **Matrix.....:** WATER
MB Lot-Sample #: A0J120000-220

Prep Date.....: 10/10/10 **Analysis Time..:** 10:20
Analysis Date..: 10/10/10 **Prep Batch #...:** 0285220 **Final Wgt/Vol..:** 5 mL
Dilution Factor: 1 **Initial Wgt/Vol:** 5 mL **Instrument ID..:** UX15
Analyst ID.....: 043582

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Bromodichloromethane	ND	1.0	ug/L	SW846 8260B
1,2,3-Trichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,2,3-Trichloropropane	ND	1.0	ug/L	SW846 8260B
Vinyl acetate	ND	2.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	2.0	ug/L	SW846 8260B
1,2,3-Trimethylbenzene	ND	5.0	ug/L	SW846 8260B
Carbon disulfide	ND	1.0	ug/L	SW846 8260B
Dibromochloromethane	ND	1.0	ug/L	SW846 8260B
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	SW846 8260B
1,2-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,3-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,4-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
Dichlorodifluoromethane	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
Trichlorofluoromethane	ND	1.0	ug/L	SW846 8260B
Isopropylbenzene	ND	1.0	ug/L	SW846 8260B
Styrene	ND	1.0	ug/L	SW846 8260B
1,2,4-Trichloro-benzene	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	SW846 8260B
Bromobenzene	ND	1.0	ug/L	SW846 8260B
Bromochloromethane	ND	1.0	ug/L	SW846 8260B
n-Butylbenzene	ND	1.0	ug/L	SW846 8260B
sec-Butylbenzene	ND	1.0	ug/L	SW846 8260B
tert-Butylbenzene	ND	1.0	ug/L	SW846 8260B
2-Chloroethyl vinyl ether	ND	5.0	ug/L	SW846 8260B
2-Chlorotoluene	ND	1.0	ug/L	SW846 8260B
4-Chlorotoluene	ND	1.0	ug/L	SW846 8260B
Dibromomethane	ND	1.0	ug/L	SW846 8260B
1,3-Dichloropropane	ND	1.0	ug/L	SW846 8260B
2,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Hexachlorobutadiene	ND	1.0	ug/L	SW846 8260B
p-Isopropyltoluene	ND	1.0	ug/L	SW846 8260B
tert-Butyl alcohol	**10 J**	**20**	**ug/L**	**SW846 8260B**
n-Propylbenzene	ND	1.0	ug/L	SW846 8260B

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0J010569 **Work Order #...:** L8A091AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	5.0	ug/L	SW846 8260B
Tert-amyl methyl ether (T	ND	5.0	ug/L	SW846 8260B
Acetone	**1.5 J**	**5.0**	**ug/L**	**SW846 8260B**
2-Butanone	ND	5.0	ug/L	SW846 8260B
1,2-Dibromoethane	ND	1.0	ug/L	SW846 8260B
2-Hexanone	ND	5.0	ug/L	SW846 8260B
4-Methyl-2-pentanone	ND	5.0	ug/L	SW846 8260B
Naphthalene	ND	1.0	ug/L	SW846 8260B
1,2,4-Trimethylbenzene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	2.0	ug/L	SW846 8260B
Methyl tert-butyl ether	ND	5.0	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
Bromoform	ND	1.0	ug/L	SW846 8260B
Bromomethane	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chlorobenzene	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
Chloromethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	1.0	ug/L	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	82	(75 - 121)
1,2-Dichloroethane-d4	102	(63 - 129)
Toluene-d8	88	(74 - 115)
4-Bromofluorobenzene	88	(66 - 117)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0J010569 **Work Order #...:** L8A091AA **Matrix.....:** WATER

NOTE(S):

J Estimated result. Result is less than RL.

SW846 8260B SURROGATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0J010569

Extraction: XXI25QK01

	CLIENT ID.	SRG01	SRG02	SRG03	SRG04	TOT OUT
01	INTRA-LAB QC	82	100	88	89	00
02	CPC-PW-VOC-2	81	104	86	85	00
03	CPC-PW-VOC-3	81	102	85	83	00
04	CPC-SW-VOC-2	80	105	86	82	00
05	CPC-SW-VOC-3	80	104	84	83	00
06	TB	82	104	88	83	00
07	INTRA-LAB QC	82	103	87	85	00
08	METHOD BLK. L8AGJ1AA	81	102	86	85	00
09	METHOD BLK. L8A091AA	82	102	88	88	00
10	LCS L8AGJ1AC	85	102	89	90	00
11	LCS L8A091AC	87	100	89	89	00
12	LAB MS/MSD D	82	99	86	85	00
13	LAB MS/MSD D	82	97	87	87	00
14	LCSD L8AGJ1AD	83	102	87	90	00
15	LCSD L8A091AD	88	100	88	86	00
16	LAB MS/MSD S	85	100	90	89	00
17	LAB MS/MSD S	83	100	88	87	00

SURROGATES		QC LIMITS
SRG01	= Dibromofluoromethane	(75-121)
SRG02	= 1,2-Dichloroethane-d4	(63-129)
SRG03	= Toluene-d8	(74-115)
SRG04	= 4-Bromofluorobenzene	(66-117)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8260B CHECK SAMPLE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: A0J120000 WO #: L8AGJ1AC
BATCH: 0285139

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	10.0	8.47	85	78 - 131	
Trichloroethene	10.0	8.05	80	76 - 117	
Benzene	10.0	8.67	87	83 - 112	
Toluene	10.0	8.45	84	84 - 111	
Chlorobenzene	10.0	8.43	84*	85 - 110	a

NOTES(S):

a Spiked analyte recovery is outside stated control limits.

* Values outside of QC limits

Spike Recovery: 1 out of 5 outside limits

COMMENTS:

FORM III

SW846 8260B CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: A0J120000 WO #: L8AGJ1AD
BATCH: 0285139

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	10.0	8.02	80	78 - 131	
Trichloroethene	10.0	8.07	81	76 - 117	
Benzene	10.0	8.29	83	83 - 112	
Toluene	10.0	8.27	83*	84 - 111	a
Chlorobenzene	10.0	8.27	83*	85 - 110	a

NOTES(S):

a Spiked analyte recovery is outside stated control limits.

* Values outside of QC limits

Spike Recovery: 2 out of 5 outside limits

COMMENTS:

FORM III

SW846 8260B CHECK SAMPLE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: A0J120000 WO #: L8A091AC
BATCH: 0285220

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	10.0	8.82	88	78 - 131	
Trichloroethene	10.0	8.37	84	76 - 117	
Benzene	10.0	8.81	88	83 - 112	
Toluene	10.0	8.74	87	84 - 111	
Chlorobenzene	10.0	8.58	86	85 - 110	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260B CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: A0J120000 WO #: L8A091AD
BATCH: 0285220

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	10.0	8.46	85	78- 131	
Trichloroethene	10.0	8.47	85	76- 117	
Benzene	10.0	8.83	88	83- 112	
Toluene	10.0	8.53	85	84- 111	
Chlorobenzene	10.0	8.47	85	85- 110	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260B MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Matrix Spike ID: LAB MS/MSD

Lot #: A0J040428 WO #: L7XQF1AE
BATCH: 0285139

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	MS CONCENT. (ug/L)	MS % REC	LIMITS REC	QUAL
1,1-Dichloroethene	1430	ND	1130	79	74 - 135	
Trichloroethene	1430	ND	1210	85	66 - 120	
Benzene	1430	370	1680	92	72 - 121	
Toluene	1430	3200	4630	99	78 - 114	
Chlorobenzene	1430	ND	1280	90	80 - 110	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260B MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Matrix Spike ID: LAB MS/MSD

Lot #: A0J040428 WO #: L7XQF1AF
BATCH: 0285139

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENT. (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	QUAL
1,1-Dichloroethene	1430	1170	82	3.4	30	74 - 135	
Trichloroethene	1430	1190	83	2.2	30	66 - 120	
Benzene	1430	1680	92	0.49	30	72 - 121	
Toluene	1430	4650	101	0.43	30	78 - 114	
Chlorobenzene	1430	1270	89	0.53	30	80 - 110	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260B MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Matrix Spike ID: LAB MS/MSD

Lot #: A0J010482 WO #: L7T2Q1AK
BATCH: 0285220

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	MS CONCENT. (ug/L)	MS % REC	LIMITS REC	QUAL
1,1-Dichloroethene	33.3	ND	27.2	82	74 - 135	
Trichloroethene	33.3	ND	29.2	88	66 - 120	
Benzene	33.3	ND	32.0	96	72 - 121	
Toluene	33.3	1.6	32.8	93	78 - 114	
Chlorobenzene	33.3	ND	31.1	93	80 - 110	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

SW846 8260B MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Matrix Spike ID: LAB MS/MSD

Lot #: A0J010482 WO #: L7T2Q1AL
BATCH: 0285220

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENT. (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	QUAL
1,1-Dichloroethene	33.3	26.3	79	3.4	30	74 - 135	
Trichloroethene	33.3	27.2	82	7.2	30	66 - 120	
Benzene	33.3	29.5	89	8.1	30	72 - 121	
Toluene	33.3	29.5	84	11	30	78 - 114	
Chlorobenzene	33.3	27.8	84	11	30	80 - 110	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: NORTH CANTON Contract:

Lab Code: TACAN Case No.: SAS No.: SDG No.: C0J010569

Lab File ID (Standard): UXC1511 Date Analyzed: 10/10/10

Instrument ID: A3UX15 Time Analyzed: 0850

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 AREA #	RT	IS2 (CBZ) AREA #	RT	IS3 (DCB) AREA #	RT
	12 HOUR STD	1368359	6.72	956593	9.43	526416	11.40
	UPPER LIMIT	2736718	7.22	1913186	9.93	1052832	11.90
	LOWER LIMIT	684180	6.22	478297	8.93	263208	10.90
	EPA SAMPLE NO.						
01	L8A09CHK	1321163	6.72	870395	9.43	495332	11.40
02	L8A09CKDUP	1329611	6.72	927602	9.43	517269	11.40
03	L8A09BLK	1297573	6.72	857998	9.43	495342	11.40
04	CPC-PW-VOC-3	1316344	6.72	911329	9.43	493386	11.40
05	CPC-SW-VOC-2	1314877	6.72	883474	9.43	471126	11.40
06	CPC-SW-VOC-3	1333638	6.72	909637	9.43	484702	11.40
07	TB	1299063	6.72	864414	9.43	454329	11.40
08							
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IS1 = Fluorobenzene
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DCB) = 1,4-Dichlorobenzene-d4

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: NORTH CANTON Contract:

Lab Code: TACAN Case No.: SAS No.: SDG No.: C0J010569

Lab File ID (Standard): UXC1539 Date Analyzed: 10/11/10

Instrument ID: A3UX15 Time Analyzed: 1044

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 AREA #	RT	IS2 (CBZ) AREA #	RT	IS3 (DCB) AREA #	RT
	12 HOUR STD	1311318	6.72	932071	9.43	528912	11.40
	UPPER LIMIT	2622636	7.22	1864142	9.93	1057824	11.90
	LOWER LIMIT	655659	6.22	466036	8.93	264456	10.90
	EPA SAMPLE NO.						
01	L8AGJCHK	1316013	6.72	925268	9.43	532944	11.40
02	L8AGJCKDUP	1376395	6.72	992562	9.43	548593	11.40
03	L8AGJBLK	1308176	6.72	882184	9.43	495702	11.40
04	CPC-PW-VOC-2	1270474	6.72	862442	9.43	481358	11.40
05							
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20							
21							
22							

IS1 = Fluorobenzene
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DCB) = 1,4-Dichlorobenzene-d4

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

Data File: \\cansvr11\dd\chem\MSV\a3ux15.i\C01010A.b\UXC1529.D
Report Date: 12-Oct-2010 13:32

TestAmerica North Canton

VOLATILE REPORT SW-846 Method 8260A/B

Data file : \\cansvr11\dd\chem\MSV\a3ux15.i\C01010A.b\UXC1529.D
Lab Smp Id: L7VVH1AA Client Smp ID: CPC-PW-VOC-3
Inj Date : 10-OCT-2010 15:35
Operator : 43582 Inst ID: a3ux15.i
Smp Info : L7VVH1AA,5ML/5ML
Misc Info : C01010A,8260LLUX15,,43582
Comment :
Method : \\cansvr11\dd\chem\MSV\a3ux15.i\C01010A.b\8260LLUX15.m
Meth Date : 10-Oct-2010 10:24 a3ux15.i Quant Type: ISTD
Cal Date : 09-SEP-2010 14:33 Cal File: UXC1008.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 4-8260+IX.sub
Target Version: 4.14
Processing Host: CANSVR11

Sample PW-VOC-3
Vinyl chloride
rep result 0.55ug/L

Concentration Formula: Amt * DF * 1/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample volume
Va	100.000	Injection Volume
Cpnd Variable		Local Compound Variable

$$\frac{(17548)(250)}{(328884)(0.2477)(100)}$$

0.55 ug/L

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	FINAL (ug/L)
* 1 Fluorobenzene	96	6.717	6.717	(1.000)	1316344	50.0000	
* 2 Chlorobenzene-d5	117	9.433	9.433	(1.000)	911329	50.0000	
* 3 1,4-Dichlorobenzene-d4	152	11.402	11.402	(1.000)	493386	50.0000	
$ 4 Dibromofluoromethane	113	6.041	6.030	(0.899)	269546	40.3006	8.060
$ 5 1,2-Dichloroethane-d4	65	6.374	6.374	(0.949)	373336	51.0417	10.208
$ 6 Toluene-d8	98	8.188	8.188	(0.868)	942630	42.6499	8.530
$ 7 Bromofluorobenzene	95	10.429	10.429	(1.106)	328884	41.5993	8.320
8 Dichlorodifluoromethane	85	Compound Not Detected.					
9 Chloromethane	50	Compound Not Detected.					
10 Vinyl Chloride	62	1.666	1.666	(0.248)	17548	2.75698	0.5514
11 Bromomethane	94	Compound Not Detected.					
12 Chloroethane	64	Compound Not Detected.					
13 Trichlorofluoromethane	101	Compound Not Detected.					
15 Acrolein	56	Compound Not Detected.					
16 Acetone	43	3.077	3.077	(0.458)	164512	83.2459	16.649
17 1,1-Dichloroethene	96	Compound Not Detected.					
18 Freon-113	151	Compound Not Detected.					
19 Iodomethane	142	Compound Not Detected.					
20 Carbon Disulfide	76	Compound Not Detected.					
21 Methylene Chloride	84	Compound Not Detected.					

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. MARTIN**	**DATE:**	**November 2, 2010**
FROM:	**MEGAN CARSON**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION- VOC LOCKHEED MIDDLE RIVER CENTER SDG C0I080421**		

SAMPLES: 15/Water/

CPC-PW-VOC-1	CPC-SW-VOC-1	DHC-PW-VOC-1
DHC-PW-VOC-2	DHC-PW-VOC-3	DHC-PW-VOC-4
DHC-PW-VOC-5	DHC-SW-VOC-1	DHC-SW-VOC-2
DHC-SW-VOC-3	DHC-SW-VOC-4	DHC-SW-VOC-5
DHC-SW-VOC-6	DHC-SW-VOC-7	DHC-SW-VOC-DUP

Overview

The sample set for Middle River Complex, SDG C0I080421, consists of fifteen (15) aqueous environmental samples. This SDG contained one field duplicate pair: DHC-SW-VOC-DUP/ DHC-SW-VOC-7.

All samples were analyzed for volatile organic compounds (VOC). The samples were collected by Tetra Tech NUS on September 1st, 2nd, and 3rd, 2010 and analyzed by Test America. VOC analyses were performed by method 8260B.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, initial and continuing calibration results, laboratory method blank results, surrogate spike recoveries, internal standard recoveries, matrix spike/ matrix spike duplicate recoveries, laboratory control standard recoveries, detection limits, compound quantitation, field duplicate precision and compound identification. Areas of concern with respect to data quality are listed below.

Areas of concern with respect to data quality are listed below.

Major Problems –

- The initial calibration analyzed on 9/13/10 had a relative response factor (RRF) < 0.05 for tert-butyl alcohol. All samples in the SDG were affected. Non-detect results were qualified as rejected (UR).
- The continuing calibration analyzed on 9/15/10 had a relative response factor (RRF) < 0.05 for tert-butyl alcohol. All samples in the SDG were affected. Non-detect results were qualified as rejected (UR).

Minor Problems-

- The initial calibration analyzed on 9/13/10 had a relative percent difference > 15% but <50% for acetone. All samples in the SDG were affected. Positive acetone results were qualified as estimated (J). Non-detects were not qualified because the percent difference was <50%.
- Positive results greater than the method detection limit but less than the reporting limit were

qualified as estimated (J).

Notes

LCS percent recovery report only included 1,1-dichloroethene, trichloroethene, benzene, toluene, and chlorobenzene.

No MS/MSD was performed on a sample from this SDG.

Executive Summary

Laboratory Performance: tert-butyl alcohol was rejected in all samples because of a low RRF. Calibration noncompliances for acetone resulted in the qualification of positive results.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to Region III modifications to U.S. EPA National Functional Guidelines for Organic Data Validation (Sept. 1994). The text of this report has been formulated to address only those problem areas affecting data quality.

Megan Carson

Tetra Tech NUS
Megan Carson
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery Noncompliance
F	=	Lab Duplicate Imprecision
G	=	Field Duplicate Imprecision
H	=	Holding Time Exceedance
I	=	ICP Serial Dilution Noncompliance
J	=	GFAA PDS - GFAA MSA's $r < 0.995$
K	=	ICP Interference - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02903	NSAMPLE	CPC-PW-VOC-1			CPC-SW-VOC-1			DHC-PW-VOC-1			DHC-PW-VOC-2		
SDG: C0I080421	LAB_ID	C0I080421011			C0I080421012			C0I080421001			C0I080421003		
FRACTION: OV	SAMP_DATE	9/2/2010			9/2/2010			9/1/2010			9/1/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		0.23	U		0.23	U		0.23	U		0.23	U	
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.18	U		0.18	U		0.18	U		0.18	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,1-DICHLOROETHANE		0.15	U		0.15	U		0.15	U		0.15	U	
1,1-DICHLOROETHENE		0.19	U		0.19	U		0.19	U		0.19	U	
1,1-DICHLOROPROPENE		0.13	U		0.13	U		0.13	U		0.13	U	
1,2,3-TRICHLOROBENZENE		0.17	U		0.17	U		0.17	U		0.17	U	
1,2,3-TRICHLOROPROPANE		0.43	U		0.43	U		0.43	U		0.43	U	
1,2,3-TRIMETHYLBENZENE		0.0059	U		0.0059	U		0.0059	U		0.0059	U	
1,2,4-TRICHLOROBENZENE		0.15	U		0.15	U		0.15	U		0.15	U	
1,2,4-TRIMETHYLBENZENE		0.12	U		0.12	U		0.12	U		0.12	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.67	U		0.67	U		0.67	U		0.67	U	
1,2-DIBROMOETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
1,2-DICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROPROPANE		0.18	U		0.18	U		0.18	U		0.18	U	
1,3-DICHLOROBENZENE		0.14	U		0.14	U		0.14	U		0.14	U	
1,3-DICHLOROPROPANE		0.16	U		0.16	U		0.16	U		0.16	U	
1,4-DICHLOROBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
2,2-DICHLOROPROPANE		0.13	U		0.13	U		0.13	U		0.13	U	
2-BUTANONE		3.3	J	P	0.65	J	P	1.6	J	P	7.5		
2-CHLOROETHYL VINYL ETHER		0.99	U		0.99	U		0.99	U		0.99	U	
2-CHLOROTOLUENE		0.11	U		0.11	U		0.11	U		0.11	U	
2-HEXANONE		0.41	U		0.41	U		0.41	U		0.41	U	
4-CHLOROTOLUENE		0.18	U		0.18	U		0.18	U		0.18	U	
4-ISOPROPYLTOLUENE		0.12	U		0.12	U		0.12	U		0.12	U	
4-METHYL-2-PENTANONE		0.32	U		0.32	U		0.32	U		0.56	J	P
ACETONE		26	J	C	1.1	U		4	J	CP	27	J	C
BENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
BROMOBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
BROMOCHLOROMETHANE		0.29	U		0.29	U		0.29	U		0.29	U	
BROMODICHLOROMETHANE		0.15	U		0.15	U		0.15	U		0.15	U	
BROMOFORM		0.64	U		0.64	U		0.64	U		0.64	U	
BROMOMETHANE		0.41	U		0.41	U		0.41	U		0.41	U	
CARBON DISULFIDE		0.95	J	P	0.13	U		0.13	U		0.53	J	P

PROJ_NO: 02903	NSAMPLE	DHC-PW-VOC-3			DHC-PW-VOC-4			DHC-PW-VOC-5			DHC-SW-VOC-1		
SDG: C0I080421	LAB_ID	C0I080421009			C0I080421005			C0I080421007			C0I080421002		
FRACTION: OV	SAMP_DATE	9/2/2010			9/2/2010			9/2/2010			9/1/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		0.23	U		0.23	U		0.23	U		0.23	U	
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.18	U		0.18	U		0.18	U		0.18	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,1-DICHLOROETHANE		0.15	U		0.15	U		0.15	U		0.15	U	
1,1-DICHLOROETHENE		0.19	U		0.19	U		0.19	U		0.19	U	
1,1-DICHLOROPROPENE		0.13	U		0.13	U		0.13	U		0.13	U	
1,2,3-TRICHLOROBENZENE		0.17	U		0.17	U		0.17	U		0.17	U	
1,2,3-TRICHLOROPROPANE		0.43	U		0.43	U		0.43	U		0.43	U	
1,2,3-TRIMETHYLBENZENE		0.0059	U		0.0059	U		0.0059	U		0.0059	U	
1,2,4-TRICHLOROBENZENE		0.15	U		0.15	U		0.15	U		0.15	U	
1,2,4-TRIMETHYLBENZENE		0.12	U		0.12	U		0.12	U		0.12	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.67	U		0.67	U		0.67	U		0.67	U	
1,2-DIBROMOETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
1,2-DICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROPROPANE		0.18	U		0.18	U		0.18	U		0.18	U	
1,3-DICHLOROBENZENE		0.14	U		0.14	U		0.14	U		0.14	U	
1,3-DICHLOROPROPANE		0.16	U		0.16	U		0.16	U		0.16	U	
1,4-DICHLOROBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
2,2-DICHLOROPROPANE		0.13	U		0.13	U		0.13	U		0.13	U	
2-BUTANONE		4	J	P	2	J	P	6.1			0.57	U	
2-CHLOROETHYL VINYL ETHER		0.99	U		0.99	U		0.99	U		0.99	U	
2-CHLOROTOLUENE		0.11	U		0.11	U		0.11	U		0.11	U	
2-HEXANONE		0.41	U		0.41	U		0.41	U		0.41	U	
4-CHLOROTOLUENE		0.18	U		0.18	U		0.18	U		0.18	U	
4-ISOPROPYLTOLUENE		0.12	U		0.12	U		0.12	U		0.12	U	
4-METHYL-2-PENTANONE		0.32	U		0.32	U		0.32	U		0.32	U	
ACETONE		15	J	C	11	J	C	15	J	C	2.3	J	CP
BENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
BROMOBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
BROMOCHLOROMETHANE		0.29	U		0.29	U		0.29	U		0.29	U	
BROMODICHLOROMETHANE		0.15	U		0.15	U		0.15	U		0.15	U	
BROMOFORM		0.64	U		0.64	U		0.64	U		0.64	U	
BROMOMETHANE		0.41	U		0.41	U		0.41	U		0.41	U	
CARBON DISULFIDE		0.89	J	P	0.4	J	P	0.13	U		0.13	U	

PROJ_NO: 02903	NSAMPLE	DHC-SW-VOC-2			DHC-SW-VOC-3			DHC-SW-VOC-4			DHC-SW-VOC-5		
SDG: C0I080421	LAB_ID	C0I080421004			C0I080421010			C0I080421006			C0I080421008		
FRACTION: OV	SAMP_DATE	9/1/2010			9/2/2010			9/2/2010			9/2/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		0.23	U		0.23	U		0.23	U		0.23	U	
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.18	U		0.18	U		0.18	U		0.18	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,1-DICHLOROETHANE		0.15	U		0.15	U		0.15	U		0.15	U	
1,1-DICHLOROETHENE		0.19	U		0.19	U		0.19	U		0.19	U	
1,1-DICHLOROPROPENE		0.13	U		0.13	U		0.13	U		0.13	U	
1,2,3-TRICHLOROBENZENE		0.17	U		0.17	U		0.17	U		0.17	U	
1,2,3-TRICHLOROPROPANE		0.43	U		0.43	U		0.43	U		0.43	U	
1,2,3-TRIMETHYLBENZENE		0.0059	U		0.0059	U		0.0059	U		0.0059	U	
1,2,4-TRICHLOROBENZENE		0.15	U		0.15	U		0.15	U		0.15	U	
1,2,4-TRIMETHYLBENZENE		0.12	U		0.12	U		0.12	U		0.12	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.67	U		0.67	U		0.67	U		0.67	U	
1,2-DIBROMOETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
1,2-DICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROPROPANE		0.18	U		0.18	U		0.18	U		0.18	U	
1,3-DICHLOROBENZENE		0.14	U		0.14	U		0.14	U		0.14	U	
1,3-DICHLOROPROPANE		0.16	U		0.16	U		0.16	U		0.16	U	
1,4-DICHLOROBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
2,2-DICHLOROPROPANE		0.13	U		0.13	U		0.13	U		0.13	U	
2-BUTANONE		0.57	U		0.57	U		0.57	U		0.57	U	
2-CHLOROETHYL VINYL ETHER		0.99	U		0.99	U		0.99	U		0.99	U	
2-CHLOROTOLUENE		0.11	U		0.11	U		0.11	U		0.11	U	
2-HEXANONE		0.41	U		0.41	U		0.41	U		0.41	U	
4-CHLOROTOLUENE		0.18	U		0.18	U		0.18	U		0.18	U	
4-ISOPROPYLTOLUENE		0.12	U		0.12	U		0.12	U		0.12	U	
4-METHYL-2-PENTANONE		0.32	U		0.32	U		0.32	U		0.32	U	
ACETONE		4.8	J	CP	11	J	C	12	J	C	5.8	J	C
BENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
BROMOBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
BROMOCHLOROMETHANE		0.29	U		0.29	U		0.29	U		0.29	U	
BROMODICHLOROMETHANE		0.15	U		0.15	U		0.15	U		0.15	U	
BROMOFORM		0.64	U		0.64	U		0.64	U		0.64	U	
BROMOMETHANE		0.41	U		0.41	U		0.41	U		0.41	U	
CARBON DISULFIDE		0.13	U		0.13	U		0.13	U		0.13	U	

PROJ_NO: 02903	NSAMPLE	DHC-SW-VOC-6			DHC-SW-VOC-7			DHC-SW-VOC-DUP		
SDG: C0I080421	LAB_ID	C0I080421014			C0I080421013			C0I080421015		
FRACTION: OV	SAMP_DATE	9/3/2010			9/3/2010			9/3/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF							DHC-SW-VOC-7		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		0.23	U		0.23	U		0.23	U	
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.18	U		0.18	U		0.18	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.28	U		0.28	U		0.28	U	
1,1-DICHLOROETHANE		0.15	U		0.15	U		0.15	U	
1,1-DICHLOROETHENE		0.19	U		0.19	U		0.19	U	
1,1-DICHLOROPROPENE		0.13	U		0.13	U		0.13	U	
1,2,3-TRICHLOROBENZENE		0.17	U		0.17	U		0.17	U	
1,2,3-TRICHLOROPROPANE		0.43	U		0.43	U		0.43	U	
1,2,3-TRIMETHYLBENZENE		0.0059	U		0.0059	U		0.0059	U	
1,2,4-TRICHLOROBENZENE		0.15	U		0.15	U		0.15	U	
1,2,4-TRIMETHYLBENZENE		0.12	U		0.12	U		0.12	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.67	U		0.67	U		0.67	U	
1,2-DIBROMOETHANE		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROBENZENE		0.13	U		0.13	U		0.13	U	
1,2-DICHLOROETHANE		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROPROPANE		0.18	U		0.18	U		0.18	U	
1,3-DICHLOROBENZENE		0.14	U		0.14	U		0.14	U	
1,3-DICHLOROPROPANE		0.16	U		0.16	U		0.16	U	
1,4-DICHLOROBENZENE		0.13	U		0.13	U		0.13	U	
2,2-DICHLOROPROPANE		0.13	U		0.13	U		0.13	U	
2-BUTANONE		0.57	U		0.57	U		0.57	U	
2-CHLOROETHYL VINYL ETHER		0.99	U		0.99	U		0.99	U	
2-CHLOROTOLUENE		0.11	U		0.11	U		0.11	U	
2-HEXANONE		0.41	U		0.41	U		0.41	U	
4-CHLOROTOLUENE		0.18	U		0.18	U		0.18	U	
4-ISOPROPYLTOLUENE		0.12	U		0.12	U		0.12	U	
4-METHYL-2-PENTANONE		0.32	U		0.32	U		0.32	U	
ACETONE		1.1	U		5.1	J	C	7.8	J	C
BENZENE		0.13	U		0.13	U		0.13	U	
BROMOBENZENE		0.13	U		0.13	U		0.13	U	
BROMOCHLOROMETHANE		0.29	U		0.29	U		0.29	U	
BROMODICHLOROMETHANE		0.15	U		0.15	U		0.15	U	
BROMOFORM		0.64	U		0.64	U		0.64	U	
BROMOMETHANE		0.41	U		0.41	U		0.41	U	
CARBON DISULFIDE		0.13	U		0.13	U		0.13	U	

PROJ_NO: 02903	NSAMPLE	CPC-PW-VOC-1			CPC-SW-VOC-1			DHC-PW-VOC-1			DHC-PW-VOC-2		
SDG: C0I080421	LAB_ID	C0I080421011			C0I080421012			C0I080421001			C0I080421003		
FRACTION: OV	SAMP_DATE	9/2/2010			9/2/2010			9/1/2010			9/1/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CARBON TETRACHLORIDE		0.13	U		0.13	U		0.13	U		0.13	U	
CHLOROBENZENE		0.15	U		0.15	U		0.15	U		0.15	U	
CHLORODIBROMOMETHANE		0.18	U		0.18	U		0.18	U		0.18	U	
CHLOROETHANE		0.29	U		0.29	U		0.29	U		0.29	U	
CHLOROFORM		0.16	U		0.16	U		0.16	U		0.16	U	
CHLOROMETHANE		0.3	U		0.3	U		0.3	U		0.3	U	
CIS-1,2-DICHLOROETHENE		0.17	U		0.17	U		0.29	J	P	0.17	U	
CIS-1,3-DICHLOROPROPENE		0.14	U		0.14	U		0.14	U		0.14	U	
DIBROMOMETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
DICHLORODIFLUOROMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
DIISOPROPYL ETHER		1.5	U		1.5	U		1.5	U		1.5	U	
ETHYL TERT-BUTYL ETHER		0.11	U		0.11	U		0.11	U		0.11	U	
ETHYLBENZENE		0.17	U		0.17	U		0.17	U		0.17	U	
HEXACHLOROBUTADIENE		0.3	U		0.3	U		0.3	U		0.3	U	
ISOPROPYLBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
M+P-XYLENES		0.24	U		0.24	U		0.24	U		0.24	U	
METHYL TERT-BUTYL ETHER		0.17	U		0.17	U		0.17	U		0.17	U	
METHYLENE CHLORIDE		0.33	U		0.33	U		0.33	U		1.7		
NAPHTHALENE		0.24	U		0.24	U		0.24	U		0.24	U	
N-BUTYLBENZENE		0.12	U		0.12	U		0.12	U		0.12	U	
N-PROPYLBENZENE		0.14	U		0.14	U		0.14	U		0.14	U	
O-XYLENE		0.14	U		0.14	U		0.14	U		0.14	U	
SEC-BUTYLBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
STYRENE		0.11	U		0.11	U		0.11	U		0.11	U	
TERT-AMYL METHYL ETHER		0.067	U		0.067	U		0.067	U		0.067	U	
TERT-BUTYLBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
TERTIARY-BUTYL ALCOHOL		3.9	UR	C	3.9	UR	C	3.9	UR	C	3.9	UR	C
TETRACHLOROETHENE		0.29	U		0.29	U		0.29	U		0.43	J	P
TOLUENE		0.13	U		0.13	U		0.13	U		0.68	J	P
TOTAL XYLENES		0.28	U		0.28	U		0.28	U		0.28	U	
TRANS-1,2-DICHLOROETHENE		0.19	U		0.19	U		0.19	U		0.19	U	
TRANS-1,3-DICHLOROPROPENE		0.19	U		0.19	U		0.19	U		0.19	U	
TRICHLOROETHENE		0.17	U		0.17	U		0.88	J	P	0.17	U	
TRICHLOROFLUOROMETHANE		0.21	U		0.21	U		0.21	U		0.21	U	
VINYL ACETATE		0.19	U		0.19	U		0.19	U		0.19	U	
VINYL CHLORIDE		0.22	U		0.22	U		0.22	U		0.22	U	

PROJ_NO: 02903	NSAMPLE	DHC-PW-VOC-3			DHC-PW-VOC-4			DHC-PW-VOC-5			DHC-SW-VOC-1		
SDG: C0I080421	LAB_ID	C0I080421009			C0I080421005			C0I080421007			C0I080421002		
FRACTION: OV	SAMP_DATE	9/2/2010			9/2/2010			9/2/2010			9/1/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CARBON TETRACHLORIDE		0.13	U		0.13	U		0.13	U		0.13	U	
CHLOROBENZENE		0.15	U		0.15	U		0.15	U		0.15	U	
CHLORODIBROMOMETHANE		0.18	U		0.18	U		0.18	U		0.18	U	
CHLOROETHANE		0.29	U		0.29	U		0.29	U		0.29	U	
CHLOROFORM		0.16	U		0.16	U		0.16	U		0.16	U	
CHLOROMETHANE		0.3	U		0.3	U		0.3	U		0.3	U	
CIS-1,2-DICHLOROETHENE		0.17	U		0.34	J	P	0.17	U		0.17	U	
CIS-1,3-DICHLOROPROPENE		0.14	U		0.14	U		0.14	U		0.14	U	
DIBROMOMETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
DICHLORODIFLUOROMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
DIISOPROPYL ETHER		1.5	U		1.5	U		1.5	U		1.5	U	
ETHYL TERT-BUTYL ETHER		0.11	U		0.11	U		0.11	U		0.11	U	
ETHYLBENZENE		0.17	U		0.17	U		0.17	U		0.17	U	
HEXACHLOROBUTADIENE		0.3	U		0.3	U		0.3	U		0.3	U	
ISOPROPYLBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
M+P-XYLENES		0.24	U		0.24	U		0.24	U		0.24	U	
METHYL TERT-BUTYL ETHER		0.17	U		0.17	U		0.17	U		0.17	U	
METHYLENE CHLORIDE		0.33	U		0.33	U		0.33	U		0.33	U	
NAPHTHALENE		0.24	U		0.24	U		0.24	U		0.24	U	
N-BUTYLBENZENE		0.12	U		0.12	U		0.12	U		0.12	U	
N-PROPYLBENZENE		0.14	U		0.14	U		0.14	U		0.14	U	
O-XYLENE		0.14	U		0.14	U		0.14	U		0.14	U	
SEC-BUTYLBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
STYRENE		0.11	U		0.11	U		0.11	U		0.11	U	
TERT-AMYL METHYL ETHER		0.067	U		0.067	U		0.067	U		0.067	U	
TERT-BUTYLBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
TERTIARY-BUTYL ALCOHOL		3.9	UR	C	3.9	UR	C	3.9	UR	C	3.9	UR	C
TETRACHLOROETHENE		0.29	U		0.29	U		0.29	U		0.29	U	
TOLUENE		0.13	U		0.13	U		0.13	U		0.13	U	
TOTAL XYLENES		0.28	U		0.28	U		0.28	U		0.28	U	
TRANS-1,2-DICHLOROETHENE		0.19	U		0.19	U		0.19	U		0.19	U	
TRANS-1,3-DICHLOROPROPENE		0.19	U		0.19	U		0.19	U		0.19	U	
TRICHLOROETHENE		0.17	U		0.17	U		0.17	U		0.17	U	
TRICHLOROFLUOROMETHANE		0.21	U		0.21	U		0.21	U		0.21	U	
VINYL ACETATE		0.19	U		0.19	U		0.19	U		0.19	U	
VINYL CHLORIDE		0.22	U		0.22	U		0.22	U		0.22	U	

PROJ_NO: 02903	NSAMPLE	DHC-SW-VOC-2			DHC-SW-VOC-3			DHC-SW-VOC-4			DHC-SW-VOC-5		
SDG: C0I080421	LAB_ID	C0I080421004			C0I080421010			C0I080421006			C0I080421008		
FRACTION: OV	SAMP_DATE	9/1/2010			9/2/2010			9/2/2010			9/2/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CARBON TETRACHLORIDE		0.13	U		0.13	U		0.13	U		0.13	U	
CHLOROBENZENE		0.15	U		0.15	U		0.15	U		0.15	U	
CHLORODIBROMOMETHANE		0.18	U		0.18	U		0.18	U		0.18	U	
CHLOROETHANE		0.29	U		0.29	U		0.29	U		0.29	U	
CHLOROFORM		0.16	U		0.16	U		0.16	U		0.16	U	
CHLOROMETHANE		0.3	U		0.3	U		0.3	U		0.3	U	
CIS-1,2-DICHLOROETHENE		0.17	U		0.17	U		0.17	U		0.17	U	
CIS-1,3-DICHLOROPROPENE		0.14	U		0.14	U		0.14	U		0.14	U	
DIBROMOMETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
DICHLORODIFLUOROMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
DIISOPROPYL ETHER		1.5	U		1.5	U		1.5	U		1.5	U	
ETHYL TERT-BUTYL ETHER		0.11	U		0.11	U		0.11	U		0.11	U	
ETHYLBENZENE		0.17	U		0.17	U		0.17	U		0.17	U	
HEXACHLOROBUTADIENE		0.3	U		0.3	U		0.3	U		0.3	U	
ISOPROPYLBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
M+P-XYLENES		0.24	U		0.24	U		0.24	U		0.24	U	
METHYL TERT-BUTYL ETHER		0.17	U		0.17	U		0.17	U		0.17	U	
METHYLENE CHLORIDE		0.33	U		0.33	U		0.33	U		0.33	U	
NAPHTHALENE		0.24	U		0.24	U		0.24	U		0.24	U	
N-BUTYLBENZENE		0.12	U		0.12	U		0.12	U		0.12	U	
N-PROPYLBENZENE		0.14	U		0.14	U		0.14	U		0.14	U	
O-XYLENE		0.14	U		0.14	U		0.14	U		0.14	U	
SEC-BUTYLBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
STYRENE		0.11	U		0.11	U		0.11	U		0.11	U	
TERT-AMYL METHYL ETHER		0.067	U		0.067	U		0.067	U		0.067	U	
TERT-BUTYLBENZENE		0.13	U		0.13	U		0.13	U		0.13	U	
TERTIARY-BUTYL ALCOHOL		3.9	UR	C	3.9	UR	C	3.9	UR	C	3.9	UR	C
TETRACHLOROETHENE		0.29	U		0.29	U		0.29	U		0.29	U	
TOLUENE		0.13	U		0.13	U		0.13	U		0.13	U	
TOTAL XYLENES		0.28	U		0.28	U		0.28	U		0.28	U	
TRANS-1,2-DICHLOROETHENE		0.19	U		0.19	U		0.19	U		0.19	U	
TRANS-1,3-DICHLOROPROPENE		0.19	U		0.19	U		0.19	U		0.19	U	
TRICHLOROETHENE		0.17	U		0.17	U		0.17	U		0.17	U	
TRICHLOROFLUOROMETHANE		0.21	U		0.21	U		0.21	U		0.21	U	
VINYL ACETATE		0.19	U		0.19	U		0.19	U		0.19	U	
VINYL CHLORIDE		0.22	U		0.22	U		0.22	U		0.22	U	

PROJ_NO: 02903	NSAMPLE	DHC-SW-VOC-6			DHC-SW-VOC-7			DHC-SW-VOC-DUP		
SDG: C0I080421	LAB_ID	C0I080421014			C0I080421013			C0I080421015		
FRACTION: OV	SAMP_DATE	9/3/2010			9/3/2010			9/3/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF							DHC-SW-VOC-7		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CARBON TETRACHLORIDE		0.13	U		0.13	U		0.13	U	
CHLOROBENZENE		0.15	U		0.15	U		0.15	U	
CHLORODIBROMOMETHANE		0.18	U		0.18	U		0.18	U	
CHLOROETHANE		0.29	U		0.29	U		0.29	U	
CHLOROFORM		0.16	U		0.16	U		0.16	U	
CHLOROMETHANE		0.3	U		0.3	U		0.3	U	
CIS-1,2-DICHLOROETHENE		0.17	U		0.17	U		0.17	U	
CIS-1,3-DICHLOROPROPENE		0.14	U		0.14	U		0.14	U	
DIBROMOMETHANE		0.28	U		0.28	U		0.28	U	
DICHLORODIFLUOROMETHANE		0.31	U		0.31	U		0.31	U	
DIISOPROPYL ETHER		1.5	U		1.5	U		1.5	U	
ETHYL TERT-BUTYL ETHER		0.11	U		0.11	U		0.11	U	
ETHYLBENZENE		0.17	U		0.17	U		0.17	U	
HEXACHLOROBUTADIENE		0.3	U		0.3	U		0.3	U	
ISOPROPYLBENZENE		0.13	U		0.13	U		0.13	U	
M+P-XYLENES		0.24	U		0.24	U		0.24	U	
METHYL TERT-BUTYL ETHER		0.17	U		0.17	U		0.17	U	
METHYLENE CHLORIDE		0.33	U		0.33	U		0.33	U	
NAPHTHALENE		0.24	U		0.24	U		0.24	U	
N-BUTYLBENZENE		0.12	U		0.12	U		0.12	U	
N-PROPYLBENZENE		0.14	U		0.14	U		0.14	U	
O-XYLENE		0.14	U		0.14	U		0.14	U	
SEC-BUTYLBENZENE		0.13	U		0.13	U		0.13	U	
STYRENE		0.11	U		0.11	U		0.11	U	
TERT-AMYL METHYL ETHER		0.067	U		0.067	U		0.067	U	
TERT-BUTYLBENZENE		0.13	U		0.13	U		0.13	U	
TERTIARY-BUTYL ALCOHOL		3.9	UR	C	3.9	UR	C	3.9	UR	C
TETRACHLOROETHENE		0.29	U		0.29	U		0.29	U	
TOLUENE		0.13	U		0.13	U		0.13	U	
TOTAL XYLENES		0.28	U		0.28	U		0.28	U	
TRANS-1,2-DICHLOROETHENE		0.19	U		0.19	U		0.19	U	
TRANS-1,3-DICHLOROPROPENE		0.19	U		0.19	U		0.19	U	
TRICHLOROETHENE		0.17	U		0.17	U		0.17	U	
TRICHLOROFLUOROMETHANE		0.21	U		0.21	U		0.21	U	
VINYL ACETATE		0.19	U		0.19	U		0.19	U	
VINYL CHLORIDE		0.22	U		0.22	U		0.22	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Tetra Tech NUS, Inc

Client Sample ID: CPC-PW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-011	**Work Order #...:** L6MNP1AA	**Matrix.....:** WATER
Date Sampled...: 09/02/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10	
Prep Batch #...: 0259157	**Analysis Time..:** 15:04	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX11	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**26**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	**3.3 J**	**5.0**	**ug/L**	**0.57**
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	**0.95 J**	**1.0**	**ug/L**	**0.13**
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: CPC-PW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-011 Work Order #...: L6MNP1AA Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	83	(73 - 122)
1,2-Dichloroethane-d4	78	(61 - 128)
Toluene-d8	84	(76 - 110)
4-Bromofluorobenzene	92	(74 - 116)

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Tetra Tech NUS, Inc

Client Sample ID: CPC-PW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-011 Work Order #...: L6MNP1AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: CPC-SW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-012	**Work Order #...:** L6MNQ1AA	**Matrix.....:** WATER
Date Sampled...: 09/02/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10	
Prep Batch #...: 0259157	**Analysis Time..:** 18:50	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX11	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
Acetone	ND	5.0	ug/L	1.1
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	**0.65 J**	**5.0**	**ug/L**	**0.57**
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11

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Tetra Tech NUS, Inc

Client Sample ID: CPC-SW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-012 **Work Order #...:** L6MNQ1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	81	(73 - 122)
1,2-Dichloroethane-d4	78	(61 - 128)
Toluene-d8	83	(76 - 110)
4-Bromofluorobenzene	92	(74 - 116)

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Tetra Tech NUS, Inc

Client Sample ID: CPC-SW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-012 Work Order #...: L6MNQ1AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-001	**Work Order #...:** L6MM81AA	**Matrix.....:** WATER
Date Sampled...: 09/01/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10	
Prep Batch #...: 0259157	**Analysis Time..:** 10:56	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX11	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**4.0 J**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	**1.6 J**	**5.0**	**ug/L**	**0.57**
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	**0.29 J**	**1.0**	**ug/L**	**0.17**
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-001 **Work Order #...:** L6MM81AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	**0.88 J**	**1.0**	**ug/L**	**0.17**
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	80	(73 - 122)
1,2-Dichloroethane-d4	77	(61 - 128)
Toluene-d8	84	(76 - 110)
4-Bromofluorobenzene	91	(74 - 116)

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Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-001 Work Order #...: L6MM81AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-2

GC/MS Volatiles

Lot-Sample #...: C0I080421-003	**Work Order #...:** L6MNC1AA	**Matrix.....:** WATER
Date Sampled...: 09/01/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10	
Prep Batch #...: 0259157	**Analysis Time..:** 11:41	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX11	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**27**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	**7.5**	**5.0**	**ug/L**	**0.57**
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	**0.53 J**	**1.0**	**ug/L**	**0.13**
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	**0.56 J**	**5.0**	**ug/L**	**0.32**
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-2

GC/MS Volatiles

Lot-Sample #...: C0I080421-003 **Work Order #...:** L6MNC1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	**1.7**	**1.0**	**ug/L**	**0.33**
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	**0.43 J**	**1.0**	**ug/L**	**0.29**
Toluene	**0.68 J**	**1.0**	**ug/L**	**0.13**
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	82	(73 - 122)
1,2-Dichloroethane-d4	77	(61 - 128)
Toluene-d8	85	(76 - 110)
4-Bromofluorobenzene	95	(74 - 116)

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Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-2

GC/MS Volatiles

Lot-Sample #...: C0I080421-003 Work Order #...: L6MNC1AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-3

GC/MS Volatiles

Lot-Sample #...:	C0I080421-009	**Work Order #...:**	L6MNM1AA	**Matrix.....:**	WATER
Date Sampled...:	09/02/10	**Date Received..:**	09/04/10	**MS Run #.....:**	0259092
Prep Date.....:	09/15/10	**Analysis Date..:**	09/15/10		
Prep Batch #...:	0259157	**Analysis Time..:**	14:19		
Dilution Factor:	1	**Initial Wgt/Vol:**	5 mL	**Final Wgt/Vol..:**	5 mL
Analyst ID.....:	043582	**Instrument ID..:**	UX11		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**15**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	**4.0 J**	**5.0**	**ug/L**	**0.57**
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	**0.89 J**	**1.0**	**ug/L**	**0.13**
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-3

GC/MS Volatiles

Lot-Sample #...: C0I080421-009 Work Order #...: L6MNM1AA Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	83	(73 - 122)
1,2-Dichloroethane-d4	79	(61 - 128)
Toluene-d8	84	(76 - 110)
4-Bromofluorobenzene	96	(74 - 116)

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Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-3

GC/MS Volatiles

Lot-Sample #...: C0I080421-009 Work Order #...: L6MNM1AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-4

GC/MS Volatiles

Lot-Sample #...: C0I080421-005	**Work Order #...:** L6MNF1AA	**Matrix.....:** WATER
Date Sampled...: 09/02/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10	
Prep Batch #...: 0259157	**Analysis Time..:** 12:49	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX11	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**11**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	**2.0 J**	**5.0**	**ug/L**	**0.57**
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	**0.40 J**	**1.0**	**ug/L**	**0.13**
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	**0.34 J**	**1.0**	**ug/L**	**0.17**
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-4

GC/MS Volatiles

Lot-Sample #...: C0I080421-005 Work Order #...: L6MNF1AA Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	81	(73 - 122)
1,2-Dichloroethane-d4	76	(61 - 128)
Toluene-d8	84	(76 - 110)
4-Bromofluorobenzene	94	(74 - 116)

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Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-4

GC/MS Volatiles

Lot-Sample #...: C0I080421-005 Work Order #...: L6MNF1AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-5

GC/MS Volatiles

Lot-Sample #...: C0I080421-007	**Work Order #...:** L6MNK1AA	**Matrix.....:** WATER
Date Sampled...: 09/02/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10	
Prep Batch #...: 0259157	**Analysis Time..:** 13:34	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX11	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**15**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	**6.1**	**5.0**	**ug/L**	**0.57**
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-PW-VOC-5

GC/MS Volatiles

Lot-Sample #...: C0I080421-007 Work Order #...: L6MNK1AA Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	82	(73 - 122)
1,2-Dichloroethane-d4	77	(61 - 128)
Toluene-d8	85	(76 - 110)
4-Bromofluorobenzene	95	(74 - 116)

Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-002	**Work Order #...:** L6MNA1AA	**Matrix.....:** WATER
Date Sampled...: 09/01/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10	
Prep Batch #...: 0259157	**Analysis Time..:** 11:19	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX11	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Acetone	**2.3 J**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13

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Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-002 **Work Order #...:** L6MNA1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	80	(73 - 122)
1,2-Dichloroethane-d4	77	(61 - 128)
Toluene-d8	85	(76 - 110)
4-Bromofluorobenzene	91	(74 - 116)

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Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-1

GC/MS Volatiles

Lot-Sample #...: C0I080421-002 Work Order #...: L6MNA1AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-2

GC/MS Volatiles

Lot-Sample #...: C0I080421-004	**Work Order #...:** L6MNE1AA	**Matrix.....:** WATER	
Date Sampled...: 09/01/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092	
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10		
Prep Batch #...: 0259157	**Analysis Time..:** 12:04		
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL	
Analyst ID.....: 043582	**Instrument ID..:** UX11		
	Method.....: SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**4.8 J**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-2

GC/MS Volatiles

Lot-Sample #...: C0I080421-004 Work Order #...: L6MNE1AA Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	81	(73 - 122)
1,2-Dichloroethane-d4	76	(61 - 128)
Toluene-d8	84	(76 - 110)
4-Bromofluorobenzene	91	(74 - 116)

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Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-2

GC/MS Volatiles

Lot-Sample #...: C0I080421-004 Work Order #...: L6MNE1AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-3

GC/MS Volatiles

Lot-Sample #...:	C0I080421-010	**Work Order #...:**	L6MNN1AA	**Matrix.....:**	WATER
Date Sampled...:	09/02/10	**Date Received..:**	09/04/10	**MS Run #.....:**	0259092
Prep Date.....:	09/15/10	**Analysis Date..:**	09/15/10		
Prep Batch #...:	0259157	**Analysis Time..:**	14:42		
Dilution Factor:	1	**Initial Wgt/Vol:**	5 mL	**Final Wgt/Vol..:**	5 mL
Analyst ID.....:	043582	**Instrument ID..:**	UX11		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**11**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-3

GC/MS Volatiles

Lot-Sample #...: C0I080421-010 Work Order #...: L6MNN1AA Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	83	(73 - 122)
1,2-Dichloroethane-d4	79	(61 - 128)
Toluene-d8	83	(76 - 110)
4-Bromofluorobenzene	92	(74 - 116)

Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-4

GC/MS Volatiles

Lot-Sample #...: C0I080421-006	**Work Order #...:** L6MNH1AA	**Matrix.....:** WATER	
Date Sampled...: 09/02/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092	
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10		
Prep Batch #...: 0259157	**Analysis Time..:** 13:12		
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL	
Analyst ID.....: 043582	**Instrument ID..:** UX11		
	Method.....: SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**12**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-4

GC/MS Volatiles

Lot-Sample #...: C0I080421-006 Work Order #...: L6MNH1AA Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	82	(73 - 122)
1,2-Dichloroethane-d4	77	(61 - 128)
Toluene-d8	83	(76 - 110)
4-Bromofluorobenzene	92	(74 - 116)

Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-5

GC/MS Volatiles

Lot-Sample #...:	C0I080421-008	**Work Order #...:**	L6MNL1AA	**Matrix.....:**	WATER
Date Sampled...:	09/02/10	**Date Received..:**	09/04/10	**MS Run #.....:**	0259092
Prep Date.....:	09/15/10	**Analysis Date..:**	09/15/10		
Prep Batch #...:	0259157	**Analysis Time..:**	13:57		
Dilution Factor:	1	**Initial Wgt/Vol:**	5 mL	**Final Wgt/Vol..:**	5 mL
Analyst ID.....:	043582	**Instrument ID..:**	UX11		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**5.8**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-5

GC/MS Volatiles

Lot-Sample #...: C0I080421-008 **Work Order #...:** L6MNL1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	80	(73 - 122)
1,2-Dichloroethane-d4	78	(61 - 128)
Toluene-d8	84	(76 - 110)
4-Bromofluorobenzene	92	(74 - 116)

Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-6

GC/MS Volatiles

Lot-Sample #...: C0I080421-014	**Work Order #...:** L6MNV1AA	**Matrix.....:** WATER
Date Sampled...: 09/03/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10	
Prep Batch #...: 0259157	**Analysis Time..:** 16:12	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX11	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	5.0	ug/L	1.1
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-6

GC/MS Volatiles

Lot-Sample #...: C0I080421-014 **Work Order #...:** L6MNV1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	82	(73 - 122)
1,2-Dichloroethane-d4	78	(61 - 128)
Toluene-d8	83	(76 - 110)
4-Bromofluorobenzene	91	(74 - 116)

Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-7

GC/MS Volatiles

Lot-Sample #...: C0I080421-013	**Work Order #...:** L6MNT1AA	**Matrix.....:** WATER
Date Sampled...: 09/03/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10	
Prep Batch #...: 0259157	**Analysis Time..:** 15:50	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX11	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**5.1**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

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Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-7

GC/MS Volatiles

Lot-Sample #...: C0I080421-013 Work Order #...: L6MNT1AA Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	81	(73 - 122)
1,2-Dichloroethane-d4	77	(61 - 128)
Toluene-d8	84	(76 - 110)
4-Bromofluorobenzene	89	(74 - 116)

Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-DUP

GC/MS Volatiles

Lot-Sample #...: C0I080421-015	**Work Order #...:** L6MNW1AA	**Matrix.....:** WATER
Date Sampled...: 09/03/10	**Date Received..:** 09/04/10	**MS Run #.....:** 0259092
Prep Date.....: 09/15/10	**Analysis Date..:** 09/15/10	
Prep Batch #...: 0259157	**Analysis Time..:** 16:35	
Dilution Factor: 1	**Initial Wgt/Vol:** 5 mL	**Final Wgt/Vol..:** 5 mL
Analyst ID.....: 043582	**Instrument ID..:** UX11	
	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**7.8**	**5.0**	**ug/L**	**1.1**
Bromobenzene	ND	1.0	ug/L	0.13
Bromochloromethane	ND	1.0	ug/L	0.29
Bromodichloromethane	ND	1.0	ug/L	0.15
2-Butanone	ND	5.0	ug/L	0.57
n-Butylbenzene	ND	1.0	ug/L	0.12
sec-Butylbenzene	ND	1.0	ug/L	0.13
tert-Butylbenzene	ND	1.0	ug/L	0.13
Carbon disulfide	ND	1.0	ug/L	0.13
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	0.67
2-Chloroethyl vinyl ether	ND	5.0	ug/L	0.99
2-Chlorotoluene	ND	1.0	ug/L	0.11
4-Chlorotoluene	ND	1.0	ug/L	0.18
1,2-Dibromoethane	ND	1.0	ug/L	0.24
Dibromomethane	ND	1.0	ug/L	0.28
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,3-Dichloropropane	ND	1.0	ug/L	0.16
2,2-Dichloropropane	ND	1.0	ug/L	0.13
1,1-Dichloropropene	ND	1.0	ug/L	0.13
Trichlorofluoromethane	ND	1.0	ug/L	0.21
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	0.41
Isopropylbenzene	ND	1.0	ug/L	0.13
p-Isopropyltoluene	ND	1.0	ug/L	0.12
tert-Butyl alcohol	ND	20	ug/L	3.9
4-Methyl-2-pentanone	ND	5.0	ug/L	0.32
Naphthalene	ND	1.0	ug/L	0.24
n-Propylbenzene	ND	1.0	ug/L	0.14
Styrene	ND	1.0	ug/L	0.11
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.23

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: DHC-SW-VOC-DUP

GC/MS Volatiles

Lot-Sample #...: C0I080421-015 Work Order #...: L6MNW1AA Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.17
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.15
1,2,3-Trichloropropane	ND	1.0	ug/L	0.43
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.12
Vinyl acetate	ND	2.0	ug/L	0.19
o-Xylene	ND	1.0	ug/L	0.14
Xylenes (total)	ND	2.0	ug/L	0.28
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
m-Xylene & p-Xylene	ND	2.0	ug/L	0.24
1,2,3-Trimethylbenzene	ND	5.0	ug/L	0.0059
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.5
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	0.11
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.067
Benzene	ND	1.0	ug/L	0.13
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	ND	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
Methylene chloride	ND	1.0	ug/L	0.33
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,1,1-Trichloroethane	ND	1.0	ug/L	0.22
Trichloroethene	ND	1.0	ug/L	0.17
Vinyl chloride	ND	1.0	ug/L	0.22

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	81	(73 - 122)
1,2-Dichloroethane-d4	77	(61 - 128)
Toluene-d8	84	(76 - 110)
4-Bromofluorobenzene	89	(74 - 116)

APPENDIX C

SUPPORT DOCUMENTATION

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0I080421

Sample Receiving:
TestAmerica's Pittsburgh laboratory received samples on September 4, 2010. The cooler was received within the proper temperature range.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

GC/MS Volatiles:
TestAmerica's North Canton laboratory performed the VOA analysis. All data is included in the package.

412 963-2435

METHODS SUMMARY

C0I080421

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Volatile Organics by GC/MS	SW846 8260B	SW846 5030B

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

C0I080421

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L6MM8	001	DHC-PW-VOC-1	09/01/10	13:45
L6MNA	002	DHC-SW-VOC-1	09/01/10	13:55
L6MNC	003	DHC-PW-VOC-2	09/01/10	15:44
L6MNE	004	DHC-SW-VOC-2	09/01/10	15:55
L6MNF	005	DHC-PW-VOC-4	09/02/10	09:50
L6MNH	006	DHC-SW-VOC-4	09/02/10	10:02
L6MNK	007	DHC-PW-VOC-5	09/02/10	10:20
L6MNL	008	DHC-SW-VOC-5	09/02/10	11:20
L6MNM	009	DHC-PW-VOC-3	09/02/10	12:25
L6MNN	010	DHC-SW-VOC-3	09/02/10	12:29
L6MNP	011	CPC-PW-VOC-1	09/02/10	16:42
L6MNQ	012	CPC-SW-VOC-1	09/02/10	16:45
L6MNT	013	DHC-SW-VOC-7	09/03/10	08:15
L6MNV	014	DHC-SW-VOC-6	09/03/10	08:00
L6MNW	015	DHC-SW-VOC-DUP	09/03/10	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

testAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client: TetraTech NUS	Project Manager: Mike Martin	Date:	Chain of Custody Number: 154250
Address: 20251 Century Blvd ste 2000	Telephone Number (Area Code)/Fax Number: 301 528 3022	Lab Number:	Page 1 of 2
City: German Town; State: MD; Zip Code: 20874	Site Contact: Tony Apanavage; Lab Contact: Veronica Bortot		
Project Name and Location (State): Mike Martin	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Analysis (Attach list if more space is needed): 8260 VOC; 8270C SIM

Special Instructions/Conditions of Receipt: VOCs by 8260; 1,4 dioxane by 8270C SIM

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	8260 VOC	8270C SIM	Special Instructions/Conditions of Receipt
DHC-PW-VOC-1	9/1/10	1345		X						X			X	X	
DHC-SW-VOC-1	"	1355		X						X			X	X	
DHC-PW-VOC-2	"	1544		X						X			X	X	only 1 vial collected
DHC-SW-VOC-2	"	1555		X						X			X	X	
DHC-PW-VOC-4	9/2/10	950		X						X			X	X	
DHC-SW-VOC-4	"	1002		X						X			X	X	
DHC-PW-VOC-5	"	1020		X						X			X	X	only 1 vial collected
DHC-SW-VOC-5	"	1120		X						X			X	X	
DHC-PW-VOC-3	"	1225		X						X			X	X	
DHC-Pens SW-VOC-3	"	1229		X						X			X	X	
CPC-PW-VOC-1	"	1642		X						X			X	X	only 1 vial collected
CPC-SW-VOC-1	"	1645		X						X			X	X	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other Standard

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: Rick Samuels	9/2/10	1853	1. Received By: [signature]	9/3/10	1430
2. Relinquished By: [signature]	9/3/10	1600	2. Received By:		
3. Relinquished By:			3. Received By: [signature]	9/4/10	10:00

Comments:

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

[redacted]

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☑

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client: Tetra Tech NUS	Project Manager: Mike Martin	Date: 9-3-10	Chain of Custody Number: 114514
Address: 20251 Century Blvd Ste 200	Telephone Number (Area Code)/Fax Number: (301) 528-5552	Lab Number:	Page 2 of 2
City: Germantown; State: MD; Zip Code: 20874	Site Contact: Tony Apanavage; Lab Contact: Veronica Bontat		
Project Name and Location (State): Mike Martin	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): VOCs	Special Instructions/ Conditions of Receipt
DHC-SW-VOC-7	9-3-10	0815		X						2			X	
DHC-SW-VOC-6	9-3-10	0800		X						2			X	
DHC-SW-VOC-DUP	9-3-10	0000		X						2			X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	9-3-10	0822	1. Received By: [signature]	9/3/10	1430
2. Relinquished By: [signature]	9/3/10	1600	2. Received By:		
3. Relinquished By:			3. Received By: [signature]	9/4/10	10 00

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

MIDDLE RIVER CENTER
WATER DATA
C0I080421

FRACTION	CHEMICAL	DHC-SW-VOC-DUP	UNITS	DHC-SW-VOC-7	RPD	D
OV	ACETONE	7.8 J	UG/L	5.1 J	41.86	2.70

No Qual
Both <2xRL

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

Data File: \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\UXJ2196.D
Report Date: 16-Sep-2010 09:44

TestAmerica North Canton

VOLATILE REPORT SW-846 Method 8260A/8260B

Data file : \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\UXJ2196.D
Lab Smp Id: L6MNC1AA Client Smp ID: DHC-PW-VOC-2
Inj Date : 15-SEP-2010 11:41
Operator : 43582 Inst ID: a3ux11.i
Smp Info : L6MNC1AA,5ML/5ML
Misc Info : J00915A,8260LLUX11,,43582
Comment :
Method : \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\8260LLUX11.m
Meth Date : 15-Sep-2010 09:09 a3ux11.i Quant Type: ISTD
Cal Date : 05-AUG-2010 18:19 Cal File: UXJ1313.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 4-8260+IX.sub
Target Version: 4.14
Processing Host: CANSVR11

Concentration Formula: Amt * DF * 1/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample volume
Va	100.000	Injection Volume
Cpnd Variable		Local Compound Variable

$\frac{487096}{1706507} \times \frac{50}{0.10782} \times 1DF \times \frac{1}{5mL} = 26.4$ ug/L reported as 27 ug/L

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	FINAL (ug/L)
* 1 Fluorobenzene	96	5.354	5.354	(1.000)	1706507	50.0000	
* 2 Chlorobenzene-d5	117	8.040	8.040	(1.000)	1266072	50.0000	
* 3 1,4-Dichlorobenzene-d4	152	10.288	10.288	(1.000)	554138	50.0000	
$ 4 Dibromofluoromethane	113	4.774	4.774	(0.892)	426959	40.8816	8.176
$ 5 1,2-Dichloroethane-d4	65	5.058	5.058	(0.945)	513385	38.5217	7.704
$ 6 Toluene-d8	98	6.727	6.726	(0.837)	1949858	42.2726	8.454
$ 7 Bromofluorobenzene	95	9.152	9.152	(1.138)	748055	47.3577	9.472
8 Dichlorodifluoromethane	85	Compound Not Detected.					
9 Chloromethane	50	Compound Not Detected.					
10 Vinyl Chloride	62	Compound Not Detected.					
11 Bromomethane	94	Compound Not Detected.					
12 Chloroethane	64	Compound Not Detected.					
13 Trichlorofluoromethane	101	Compound Not Detected.					
15 Acrolein	56	Compound Not Detected.					
16 Acetone	43	2.952	2.952	(0.551)	487096	133.327	26.665
17 1,1-Dichloroethene	96	Compound Not Detected.					
18 Freon-113	151	Compound Not Detected.					
19 Iodomethane	142	Compound Not Detected.					
20 Carbon Disulfide	76	3.153	3.153	(0.589)	91246	2.67267	0.5345
21 Methylene Chloride	84	3.366	3.366	(0.629)	107021	8.49018	1.698

TestAmerica Pittsburgh

Cooler Receipt Form

Client: TETRA TECH Project: _____ Quote: 86823

Cooler Rec'd & Opened for Temp. Check on: 9/4/10

Coolers Opened and Unpacked on: 9/4/10 By: JC (Signature)

TestAmerica Pittsburgh Lot Number: C01080421

		Yes	No	NA
1.	Were custody seals on the outside of the cooler?	✓		
	If YES, how many and where? Quantity 1 Location F			
	Were signatures and date correct?	✓		
2.	Were custody papers included inside the cooler?	✓		
3.	Were custody papers properly filled out (ink, signed, match labels)?	✓		
4.	Did you sign the custody papers in the appropriate place?	✓		
5.	Was shippers packing slip attached to this form?	✓		
6.	Were packing materials used?	✓		
	If YES, what type? BUBBLE BAGS			
7.	Were the samples received within the acceptable temperature range?	✓		
8.	Were the samples appropriately preserved?	✓		
9.	Were all bottles sealed in separate plastic bags?	✓		
10.	Did all bottles arrive in good condition (unbroken)?	✓		
11.	Were all bottle labels complete (sample ID, preservatives, etc.)?	✓		
12.	Did all bottle labels and/or tags agree with custody papers?	✓		
13.	Were correct bottles used for tests indicated?	✓		
14.	Were all VOA vials checked for the presence of air bubbles?	✓		
15.	Was a sufficient amount of sample sent in each bottle?	✓		

16. Samples received by: (FEDEX) UPS CLIENT DROP-OFF OTHER DHL US CARGO

Explain any discrepancies: _____

Level 2 Review _____

Was contacted on _____ by _____ to resolve discrepancies.

Rev. 1, 01/20/2010
X:\Forms\Cooler Receipt Form_updated 102010.DOC

TestAmerica Pittsburgh

Cooler Receipt Form

P: Preserved

UP: Unpreserved

Sample ID	TMET PH<2	DMET PH<2	HG PH<2	NUT(1) PH<2	CN PH ≥12	OG TPHC PH<2	PHEN PH<2	SULF PH ≥12	TOC PH<2	TOX PH<2	VOA P/UP	hardness PH<2	Residual CL	
										ALL VIALS				
										PRES W/HCl				

(1) "NUT" could include sample bottles for ammonia, chemical oxygen demand, nitrate/nitrite, TKN, or total phosphorus

Comments: _____

_____

_____

Cooler Number	Temperature*	Thermometer ID
1	2.6	7

*Acceptable Temperature Range: < 0-6 °C

Sample	Lot Number**

**Please use an asterisk if bottle lot number was covered by the label

If samples required preservation in the laboratory, the following lot number(s) was/were used:

Nitric Acid _____ Hydrochloric Acid _____

Sulfuric Acid _____ Sodium Hydroxide _____

X:\Forms\Cooler Receipt Form_updated 102010.DOC
Rev. 1, 01/20/2010

C0I080421

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

testAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client: TetraTech NUS	Project Manager: Mike Martin	Date:	Chain of Custody Number: 154250
Address: 20251 Century Blvd ste 200	Telephone Number (Area Code)/Fax Number: 301 528 3022	Lab Number:	Page 1 of 2
City: German Town / State: MD / Zip Code: 20874	Site Contact: Tony Hammerye	Lab Contact: Veronica Bartot	
Project Name and Location (State): Mike Martin	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: 8260 VOC	8270C SIM	Not analyzed per AM	Special Instructions/ Conditions of Receipt
DHC-PW-VOC-1	9/1/10	1345		X						X			X	X		VOCs by 8260
DHC-SW-VOC-1	"	1355		X						X			X	X		
DHC-PW-VOC-2	"	1544		X						X			X	X		only 1 vial collected
DHC-SW-VOC-2	"	1555		X						X			X	X		
DHC-PW-VOC-4	9/2/10	950		X						X			X	X		
DHC-SW-VOC-4	"	1002		X						X			X	X		
DHC-PW-VOC-5	"	1020		X						X			X	X		only 1 vial collected
DHC-SW-VOC-5	"	1120		X						X			X	X		
DHC-PW-VOC-3	"	1225		X						X			X	X		
DHC-Plenus SW-VOC-3	"	1229		X						X			X	X		
CPC-PW-VOC-1	"	1642		X						X			X	X		only 1 vial collected
CPC-SW-VOC-1	"	1645		X						X			X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other Standard

QC Requirements (Specify)

1. Relinquished By: Rick Samuels	Date: 9/2/10	Time: 1853	1. Received By:	Date: 9/3/10	Time: 1430
2. Relinquished By:	Date: 9/3/10	Time: 1600	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date: 9/4/10	Time: 1000

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

6

(1 - 59)

[redacted]

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☑

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client: Tetra Tech NUS	Project Manager: Mike Martin	Date: 9-3-10	Chain of Custody Number: 114514
Address: 20251 Century Blvd Ste 200	Telephone Number (Area Code)/Fax Number: (301) 528-5552	Lab Number:	Page 2 of 2
City: Germantown; State: MD; Zip Code: 20874	Site Contact: Tony Apanavage; Lab Contact: Veronica Bontat		
Project Name and Location (State): Mike Martin	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): VOCs	Special Instructions/ Conditions of Receipt
DHC-SW-VOC-7	9-3-10	0815		X						2			X	
DHC-SW-VOC-6	9-3-10	0800		X						2			X	
DHC-SW-VOC-DUP	9-3-10	0000		X						2			X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	9-3-10	0822	1. Received By: [signature]	9/3/10	1430
2. Relinquished By: [signature]	9/3/10	1600	2. Received By:		
3. Relinquished By:			3. Received By: [signature]	9/4/10	10 00

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

HOLDTIME

SDG C0I080421

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	DHC-SW-VOC-1	C0I080421002	SUR	09/01/2010	09/15/2010	09/15/2010	14	0	14
OV	UG/L	CPC-PW-VOC-1	C0I080421011	SUR	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	CPC-SW-VOC-1	C0I080421012	NM	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	CPC-SW-VOC-1	C0I080421012	SUR	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-PW-VOC-1	C0I080421001	NM	09/01/2010	09/15/2010	09/15/2010	14	0	14
OV	UG/L	DHC-PW-VOC-1	C0I080421001	SUR	09/01/2010	09/15/2010	09/15/2010	14	0	14
OV	UG/L	DHC-PW-VOC-2	C0I080421003	NM	09/01/2010	09/15/2010	09/15/2010	14	0	14
OV	UG/L	DHC-PW-VOC-2	C0I080421003	SUR	09/01/2010	09/15/2010	09/15/2010	14	0	14
OV	UG/L	DHC-PW-VOC-3	C0I080421009	NM	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-PW-VOC-3	C0I080421009	SUR	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-PW-VOC-4	C0I080421005	NM	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-PW-VOC-4	C0I080421005	SUR	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-PW-VOC-5	C0I080421007	NM	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	CPC-PW-VOC-1	C0I080421011	NM	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-SW-VOC-1	C0I080421002	NM	09/01/2010	09/15/2010	09/15/2010	14	0	14

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	DHC-SW-VOC-DUP	C0I080421015	SUR	09/03/2010	09/15/2010	09/15/2010	12	0	12
OV	UG/L	DHC-SW-VOC-2	C0I080421004	NM	09/01/2010	09/15/2010	09/15/2010	14	0	14
OV	UG/L	DHC-SW-VOC-2	C0I080421004	SUR	09/01/2010	09/15/2010	09/15/2010	14	0	14
OV	UG/L	DHC-SW-VOC-3	C0I080421010	NM	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-SW-VOC-3	C0I080421010	SUR	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-SW-VOC-4	C0I080421006	NM	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-SW-VOC-4	C0I080421006	SUR	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-SW-VOC-5	C0I080421008	NM	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-SW-VOC-5	C0I080421008	SUR	09/02/2010	09/15/2010	09/15/2010	13	0	13
OV	UG/L	DHC-SW-VOC-6	C0I080421014	NM	09/03/2010	09/15/2010	09/15/2010	12	0	12
OV	UG/L	DHC-SW-VOC-6	C0I080421014	SUR	09/03/2010	09/15/2010	09/15/2010	12	0	12
OV	UG/L	DHC-SW-VOC-7	C0I080421013	NM	09/03/2010	09/15/2010	09/15/2010	12	0	12
OV	UG/L	DHC-SW-VOC-7	C0I080421013	SUR	09/03/2010	09/15/2010	09/15/2010	12	0	12
OV	UG/L	DHC-SW-VOC-DUP	C0I080421015	NM	09/03/2010	09/15/2010	09/15/2010	12	0	12
OV	UG/L	DHC-PW-VOC-5	C0I080421007	SUR	09/02/2010	09/15/2010	09/15/2010	13	0	13

SW846 8260B METHOD BLANK SUMMARY

BLANK WORKORDER NO.: L62TT1AA

Lab Name: TestAmerica Laboratories, Inc.

Lab Code: TALPIT

SDG Number:

Lab File ID: UXJ2191.D

Lot Number: C0I080421

Date Analyzed: 09/15/10

Time Analyzed: 09:49

Matrix: WATER

Date Extracted: 09/15/10

GC Column: DB 624 ID: .18

Extraction Method: 5030B

Instrument ID: UX11

Level: (low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	INTRA-LAB QC	L6KTW1AA	UXJ2211.D	09/15/10	17:20
02	LAB MS/MSD	L6KTW1AC S	UXJ2213.D	09/15/10	18:05
03	LAB MS/MSD	L6KTW1AD D	UXJ2214.D	09/15/10	18:27
04	DHC-PW-VOC-1	L6MM81AA	UXJ2194.D	09/15/10	10:56
05	DHC-SW-VOC-1	L6MNA1AA	UXJ2195.D	09/15/10	11:19
06	DHC-PW-VOC-2	L6MNC1AA	UXJ2196.D	09/15/10	11:41
07	DHC-SW-VOC-2	L6MNE1AA	UXJ2197.D	09/15/10	12:04
08	DHC-PW-VOC-4	L6MNF1AA	UXJ2199.D	09/15/10	12:49
09	DHC-SW-VOC-4	L6MNH1AA	UXJ2200.D	09/15/10	13:12
10	DHC-PW-VOC-5	L6MNK1AA	UXJ2201.D	09/15/10	13:34
11	DHC-SW-VOC-5	L6MNL1AA	UXJ2202.D	09/15/10	13:57
12	DHC-PW-VOC-3	L6MNM1AA	UXJ2203.D	09/15/10	14:19
13	DHC-SW-VOC-3	L6MNN1AA	UXJ2204.D	09/15/10	14:42
14	CPC-PW-VOC-1	L6MNP1AA	UXJ2205.D	09/15/10	15:04
15	CPC-SW-VOC-1	L6MNQ1AA	UXJ2215.D	09/15/10	18:50
16	DHC-SW-VOC-7	L6MNT1AA	UXJ2207.D	09/15/10	15:50
17	DHC-SW-VOC-6	L6MNV1AA	UXJ2208.D	09/15/10	16:12
18	DHC-SW-VOC-DUP	L6MNW1AA	UXJ2209.D	09/15/10	16:35
19	CHECK SAMPLE	L62TT1AC C	UXJ2189.D	09/15/10	09:04
20	DUPLICATE CHECK	L62TT1AD L	UXJ2190.D	09/15/10	09:26
21					
22					
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30					

COMMENTS:

FORM IV

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0I080421 **Work Order #...:** L62TT1AA **Matrix.....:** WATER
MB Lot-Sample #: A0I160000-157

Prep Date.....: 09/15/10 **Analysis Time..:** 09:49
Analysis Date..: 09/15/10 **Prep Batch #...:** 0259157 **Final Wgt/Vol..:** 5 mL
Dilution Factor: 1 **Initial Wgt/Vol:** 5 mL **Instrument ID..:** UX11
Analyst ID.....: 043582

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Styrene	ND	1.0	ug/L	SW846 8260B
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
1,2,3-Trichloropropane	ND	1.0	ug/L	SW846 8260B
Vinyl acetate	ND	2.0	ug/L	SW846 8260B
Xylenes (total)	ND	2.0	ug/L	SW846 8260B
Methyl tert-butyl ether	ND	5.0	ug/L	SW846 8260B
1,2-Dibromoethane	ND	1.0	ug/L	SW846 8260B
2-Butanone	ND	5.0	ug/L	SW846 8260B
4-Methyl-2-pentanone	ND	5.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	2.0	ug/L	SW846 8260B
1,2,3-Trimethylbenzene	ND	5.0	ug/L	SW846 8260B
Acetone	ND	5.0	ug/L	SW846 8260B
Bromodichloromethane	ND	1.0	ug/L	SW846 8260B
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	SW846 8260B
Carbon disulfide	ND	1.0	ug/L	SW846 8260B
Dibromochloromethane	ND	1.0	ug/L	SW846 8260B
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	SW846 8260B
Dibromomethane	ND	1.0	ug/L	SW846 8260B
Dichlorodifluoromethane	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
Trichlorofluoromethane	ND	1.0	ug/L	SW846 8260B
2-Hexanone	ND	5.0	ug/L	SW846 8260B
1,4-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,2,4-Trichloro-benzene	ND	1.0	ug/L	SW846 8260B
Bromobenzene	ND	1.0	ug/L	SW846 8260B
Bromochloromethane	ND	1.0	ug/L	SW846 8260B
n-Butylbenzene	ND	1.0	ug/L	SW846 8260B
sec-Butylbenzene	ND	1.0	ug/L	SW846 8260B
tert-Butylbenzene	ND	1.0	ug/L	SW846 8260B
2-Chloroethyl vinyl ether	ND	5.0	ug/L	SW846 8260B
2-Chlorotoluene	ND	1.0	ug/L	SW846 8260B
4-Chlorotoluene	ND	1.0	ug/L	SW846 8260B
1,3-Dichloropropane	ND	1.0	ug/L	SW846 8260B
2,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Hexachlorobutadiene	ND	1.0	ug/L	SW846 8260B
Isopropylbenzene	ND	1.0	ug/L	SW846 8260B

(Continued on next page)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0I080421 **Work Order #...:** L62TT1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
p-Isopropyltoluene	ND	1.0	ug/L	SW846 8260B
tert-Butyl alcohol	ND	20	ug/L	SW846 8260B
Naphthalene	ND	1.0	ug/L	SW846 8260B
n-Propylbenzene	ND	1.0	ug/L	SW846 8260B
1,2,3-Trichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	SW846 8260B
1,2,4-Trimethylbenzene	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
1,2-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,3-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	5.0	ug/L	SW846 8260B
Tert-amyl methyl ether (T	ND	5.0	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
Bromoform	ND	1.0	ug/L	SW846 8260B
Bromomethane	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chlorobenzene	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
Chloromethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	1.0	ug/L	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	78	(73 - 122)
1,2-Dichloroethane-d4	74	(61 - 128)
Toluene-d8	84	(76 - 110)
4-Bromofluorobenzene	90	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LCS

SW846 8260B CHECK SAMPLE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: A0I160000 WO #: L62TT1AC
BATCH: 0259157

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	10.0	10.0	100	63 - 130	
Trichloroethene	10.0	10.1	101	75 - 122	
Benzene	10.0	10.1	101	80 - 116	
Toluene	10.0	10.1	101	74 - 119	
Chlorobenzene	10.0	9.93	99	76 - 117	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

LCSD

SW846 8260B CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: A0I160000 WO #: L62TT1AD

BATCH: 0259157

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	10.0	10.1	101	63 - 130	
Trichloroethene	10.0	10.0	100	75 - 122	
Benzene	10.0	10.0	100	80 - 116	
Toluene	10.0	10.0	100	74 - 119	
Chlorobenzene	10.0	9.84	98	76 - 117	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

SW846 8260B MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Matrix Spike ID: LAB MS/MSD

Lot #: A0I040435 WO #: L6KTW1AC
BATCH: 0259157

Not at sample

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	MS CONCENT. (ug/L)	MS % REC	LIMITS REC	QUAL
1,1-Dichloroethene	400	ND	402	101	62 - 130	
Trichloroethene	400	ND	419	105	62 - 130	
Benzene	400	1200	1780	135*	78 - 118	a
Toluene	400	ND	431	108	70 - 119	
Chlorobenzene	400	ND	426	106	76 - 117	

NOTES(S):

a Spiked analyte recovery is outside stated control limits.

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 5 outside limits

COMMENTS:

FORM III

SW846 8260B MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Matrix Spike ID: LAB MS/MSD

Lot #: A0I040435 WO #: L6KTW1AD
BATCH: 0259157

Not To Sample

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENT. (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	QUAL
1,1-Dichloroethene	400	388	97	3.6	20	62 - 130	
Trichloroethene	400	414	103	1.2	20	62 - 130	
Benzene	400	1740	126*	2.2	20	78 - 118	a
Toluene	400	416	104	3.4	20	70 - 119	
Chlorobenzene	400	412	103	3.3	20	76 - 117	

NOTES(S):

a Spiked analyte recovery is outside stated control limits.

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 1 out of 5 outside limits

COMMENTS:

FORM III

SW846 8260B SURROGATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0I080421

Extraction: XXI25QK01

	CLIENT ID.	SRG01	SRG02	SRG03	SRG04	TOT OUT
01	INTRA-LAB QC	81	78	86	89	00
02	DHC-PW-VOC-1	80	77	84	91	00
03	DHC-SW-VOC-1	80	77	85	91	00
04	DHC-PW-VOC-2	82	77	85	95	00
05	DHC-SW-VOC-2	81	76	84	91	00
06	DHC-PW-VOC-4	81	76	84	94	00
07	DHC-SW-VOC-4	82	77	83	92	00
08	DHC-PW-VOC-5	82	77	85	95	00
09	DHC-SW-VOC-5	80	78	84	92	00
10	DHC-PW-VOC-3	83	79	84	96	00
11	DHC-SW-VOC-3	83	79	83	92	00
12	CPC-PW-VOC-1	83	78	84	92	00
13	CPC-SW-VOC-1	81	78	83	92	00
14	DHC-SW-VOC-7	81	77	84	89	00
15	DHC-SW-VOC-6	82	78	83	91	00
16	DHC-SW-VOC-DUP	81	77	84	89	00
17	METHOD BLK. L62TT1AA	78	74	84	90	00
18	LCS L62TT1AC	82	81	85	98	00
19	LAB MS/MSD D	83	81	86	100	00
20	LCSD L62TT1AD	80	80	85	95	00
21	LAB MS/MSD S	82	83	86	102	00

SURROGATES		QC LIMITS
SRG01	= Dibromofluoromethane	(73-122)
SRG02	= 1,2-Dichloroethane-d4	(61-128)
SRG03	= Toluene-d8	(76-110)
SRG04	= 4-Bromofluorobenzene	(74-116)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: NORTH CANTON Contract:

Lab Code: TACAN Case No.: SAS No.: SDG No.: C0I080421

Lab File ID: BFB439 BFB Injection Date: 08/05/10

Instrument ID: A3UX11 BFB Injection Time: 1204

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.8
75	30.0 - 60.0% of mass 95	47.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.4 (0.4)1
174	50.0 - 100.0% of mass 95	85.7
175	5.0 - 9.0% of mass 174	6.0 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	82.5 (96.2)1
177	5.0 - 9.0% of mass 176	5.1 (6.1)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD040	200NG-A9IC	UXJ1308	08/05/10	1625
02	VSTD020	100NG-A9IC	UXJ1309	08/05/10	1648
03	VSTD010	50NG-A9IC	UXJ1310	08/05/10	1711
04	VSTD005	25NG-A9IC	UXJ1311	08/05/10	1733
05	VSTD002	10NG-A9IC	UXJ1312	08/05/10	1756
06	VSTD001	5NG-A9IC	UXJ1313	08/05/10	1819
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: NORTH CANTON Contract:

Lab Code: TACAN Case No.: SAS No.: SDG No.: C0I080421

Lab File ID: BFB470 BFB Injection Date: 09/13/10

Instrument ID: A3UX11 BFB Injection Time: 1359

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.0
75	30.0 - 60.0% of mass 95	46.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.3 (0.4)1
174	50.0 - 100.0% of mass 95	79.4
175	5.0 - 9.0% of mass 174	5.5 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	75.8 (95.4)1
177	5.0 - 9.0% of mass 176	5.2 (6.9)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD040	200NG-IC	UXJ2152	09/13/10	1507
02	VSTD020	100NG-IC	UXJ2153	09/13/10	1530
03	VSTD010	50NG-IC	UXJ2154	09/13/10	1552
04	VSTD005	25NG-IC	UXJ2155	09/13/10	1615
05	VSTD002	10NG-IC	UXJ2156	09/13/10	1637
06	VSTD001	5NG-IC	UXJ2157	09/13/10	1700
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date : 14-Sep-2010 08:03

Both Ical's are listed regular + RF-9

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 17-JUN-2010 12:26
End Cal Date : 13-SEP-2010 17:00
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux11.i\J00913A.b\8260LLUX11.m
Last Edit : 13-Sep-2010 17:16
Curve Type : Average

Calibration File Names:
Level 1: \\cansvr11\dd\chem\MSV\a3ux11.i\J00805A-IC.b\UXJ1313.D
Level 2: \\cansvr11\dd\chem\MSV\a3ux11.i\J00805A-IC.b\UXJ1312.D
Level 3: \\cansvr11\dd\chem\MSV\a3ux11.i\J00805A-IC.b\UXJ1311.D
Level 4: \\cansvr11\dd\chem\MSV\a3ux11.i\J00805A-IC.b\UXJ1310.D
Level 5: \\cansvr11\dd\chem\MSV\a3ux11.i\J00805A-IC.b\UXJ1309.D
Level 6: \\cansvr11\dd\chem\MSV\a3ux11.i\J00805A-IC.b\UXJ1308.D

	Compound	5.000 Level 1	10.000 Level 2	25.000 Level 3	50.000 Level 4	100.000 Level 5	200.000 Level 6	RRF	% RSD
	8 Dichlorodifluoromethane	0.24293	0.21700	0.23214	0.23377	0.24105	0.22856	0.23258	4.030
	9 Chloromethane	0.45539	0.39865	0.43423	0.41974	0.42872	0.40882	0.42426	4.718
	10 Vinyl Chloride	0.48426	0.41886	0.45228	0.44844	0.45125	0.42758	0.44711	5.105
	11 Bromomethane	0.19563	0.15892	0.19581	0.19113	0.20676	0.20026	0.19142	8.763
	12 Chloroethane	0.27254	0.22277	0.24658	0.23477	0.24125	0.22496	0.24048	7.560
	13 Trichlorofluoromethane	0.35679	0.30087	0.34393	0.32438	0.34490	0.33605	0.33449	5.873
	14 Dichlorofluoromethane	0.34464	0.31928	0.33565	0.35339	0.36362	0.36121	0.34630	4.865
	15 Acrolein	0.05771	0.05568	0.05883	0.05780	0.06026	0.05944	0.05829	2.751
	16 Acetone	0.19646	0.13998	0.11593	0.10782	0.10699	0.10216	0.12822	28.102
	17 1,1-Dichloroethene	0.37980	0.36232	0.36570	0.35934	0.37842	0.36304	0.36810	2.383
	18 Freon-113	0.26152	0.24248	0.25738	0.24688	0.25605	0.24506	0.25156	3.079
	19 Iodomethane	0.43339	0.39372	0.42330	0.40405	0.41844	0.41314	0.41434	3.400
	20 Carbon Disulfide	1.00995	0.95873	0.99311	0.96846	1.03844	1.03311	1.00030	3.291
	21 Methylene Chloride	0.43225	0.38181	0.37150	0.34700	0.34540	0.33801	0.36933	9.513
	22 Acetonitrile	0.04463	0.04603	0.04211	0.03955	0.04321	0.04194	0.04291	5.279 X
	23 Acrylonitrile	0.15351	0.14348	0.14640	0.14238	0.15336	0.15021	0.14822	3.280
	24 Methyl tert-butyl ether	0.90309	0.85482	0.90030	0.89969	0.95882	0.94066	0.90956	3.999
	25 trans-1,2-Dichloroethene	0.39397	0.36822	0.37636	0.36777	0.37719	0.36802	0.37525	2.700
	26 Hexane	0.10874	0.10781	0.11143	0.10727	0.11354	0.10721	0.10933	2.367
	27 Vinyl acetate	0.54024	0.54484	0.58320	0.61107	0.66231	0.68037	0.60367	9.738
	28 1,1-Dichloroethane	0.66327	0.61438	0.62692	0.61528	0.64936	0.63448	0.63395	3.057
	29 tert-Butyl Alcohol	0.02412	0.02242	0.02284	0.02277	0.02448	0.02335	0.02333	3.487
	30 2-Butanone	0.19820	0.18057	0.17146	0.16754	0.17901	0.17466	0.17857	6.016
M	31 1,2-Dichloroethene (total)	0.39736	0.37209	0.38221	0.37531	0.38597	0.37694	0.38164	2.400
	32 cis-1,2-dichloroethene	0.40074	0.37595	0.38805	0.38285	0.39474	0.38587	0.38803	2.259
	33 2,2-Dichloropropane	0.25292	0.24660	0.26141	0.26158	0.27258	0.27202	0.26119	3.936
	34 Bromochloromethane	0.18504	0.16893	0.17679	0.17554	0.18081	0.17437	0.17691	3.132
	35 Chloroform	0.60667	0.56834	0.57429	0.56003	0.58597	0.57411	0.57824	2.821

Report Date : 14-Sep-2010 08:03

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 17-JUN-2010 12:26
End Cal Date : 13-SEP-2010 17:00
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux11.i\J00913A.b\8260LLUX11.m
Last Edit : 13-Sep-2010 17:16
Curve Type : Average

	Compound	5.000 Level 1	10.000 Level 2	25.000 Level 3	50.000 Level 4	100.000 Level 5	200.000 Level 6	RRF	% RSD	
	36 Tetrahydrofuran	0.12942	0.11108	0.10937	0.11110	0.11521	0.11076	0.11449	6.614	
	37 1,1,1-Trichloroethane	0.38387	0.35793	0.37367	0.36964	0.39313	0.38756	0.37764	3.443	
	38 1,1-Dichloropropene	0.54418	0.49544	0.52099	0.50276	0.52479	0.51315	0.51688	3.348	
	39 Carbon Tetrachloride	0.31394	0.30618	0.31629	0.31424	0.33391	0.33669	0.32021	3.815	
	40 1,2-Dichloroethane	0.45170	0.42619	0.43885	0.42396	0.44869	0.43521	0.43743	2.597	
	41 Benzene	1.67869	1.54997	1.57531	1.55505	1.61738	1.58129	1.59295	3.034	
	42 Trichloroethene	0.37614	0.36862	0.37484	0.36272	0.37797	0.36977	0.37168	1.535	
	43 1,2-Dichloropropane	0.39004	0.38443	0.39259	0.38552	0.39836	0.39712	0.39134	1.479	
	44 1,4-Dioxane	0.00301	0.00315	0.00330	0.00301	0.00343	0.00307	0.00316	5.467	<-
	45 Dibromomethane	0.21537	0.19577	0.20387	0.19730	0.20793	0.20548	0.20429	3.523	
	46 Bromodichloromethane	0.37991	0.34799	0.37889	0.38493	0.41620	0.42285	0.38846	7.066	
	47 2-Chloroethyl vinyl ether	0.19037	0.20366	0.22264	0.22572	0.24255	0.24350	0.22141	9.546	
	48 cis-1,3-Dichloropropene	0.47801	0.47010	0.52024	0.53847	0.58921	0.59635	0.53206	10.065	
	49 4-Methyl-2-pentanone	0.30560	0.30616	0.32755	0.32974	0.34885	0.34696	0.32748	5.753	
	50 Toluene	2.35275	2.18822	2.21319	2.18806	2.24605	2.11605	2.21739	3.559	
	51 trans-1,3-Dichloropropene	0.56702	0.56312	0.61445	0.63150	0.68225	0.65544	0.61896	7.690	
	52 Ethyl Methacrylate	0.52356	0.55989	0.62225	0.65331	0.70124	0.66459	0.62081	10.833	
	53 1,1,2-Trichloroethane	0.45517	0.43680	0.42661	0.41883	0.43157	0.39829	0.42788	4.431	
	54 1,3-Dichloropropane	0.80497	0.79941	0.79820	0.78043	0.81313	0.76022	0.79273	2.426	
	55 Tetrachloroethene	0.45081	0.40174	0.40673	0.38804	0.40401	0.37927	0.40510	6.110	
	56 2-Hexanone	0.26434	0.27431	0.28913	0.29649	0.31214	0.29815	0.28909	5.989	
	57 Dibromochloromethane	0.33696	0.33759	0.36861	0.38387	0.40679	0.40251	0.37272	8.228	
	58 1,2-Dibromoethane	0.40553	0.40583	0.41836	0.42398	0.42934	0.41479	0.41631	2.307	
	59 Chlorobenzene	1.45507	1.33844	1.32625	1.31153	1.36584	1.33345	1.35510	3.847	
	60 1,1,1,2-Tetrachloroethane	0.38727	0.38003	0.40359	0.40254	0.42275	0.41977	0.40266	4.224	
	61 Ethylbenzene	0.72517	0.72065	0.73749	0.73103	0.76455	0.74319	0.73701	2.137	
	62 m + p-Xylene	0.92823	0.89619	0.92083	0.91802	0.94489	0.93497	0.92386	1.807	
M	63 Xylenes (total)	0.90318	0.87865	0.90599	0.90360	0.93028	0.92014	0.90697	1.938	
	64 Xylene-o	0.85306	0.84357	0.87629	0.87475	0.90106	0.89048	0.87320	2.494	
	65 Styrene	1.36527	1.32268	1.46184	1.48054	1.56755	1.57200	1.46165	7.000	
	66 Bromoform	0.20163	0.18972	0.21077	0.22642	0.25390	0.26491	0.22456	13.243	
	67 Isopropylbenzene	2.17149	2.08458	2.20810	2.23036	2.32225	2.31165	2.22141	4.016	
	68 1,1,2,2-Tetrachloroethane	1.18106	1.07632	1.15377	1.11219	1.18469	1.13542	1.14057	3.662	
	69 1,4-Dichloro-2-butene	0.27831	0.25231	0.28305	0.28364	0.31312	0.31909	0.28825	8.510	
	70 1,2,3-Trichloropropane	0.35925	0.35597	0.35410	0.34371	0.36055	0.34713	0.35345	1.901	
	71 Bromobenzene	1.16080	1.13909	1.13042	1.09857	1.15419	1.13086	1.13565	1.934	

Report Date : 14-Sep-2010 08:03

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 17-JUN-2010 12:26
End Cal Date : 13-SEP-2010 17:00
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux11.i\J00913A.b\8260LLUX11.m
Last Edit : 13-Sep-2010 17:16
Curve Type : Average

Compound	5.000 Level 1	10.000 Level 2	25.000 Level 3	50.000 Level 4	100.000 Level 5	200.000 Level 6	RRF	% RSD	
72 n-Propylbenzene	1.24935	1.20524	1.28058	1.24003	1.28198	1.26149	1.25311	2.295	
73 2-Chlorotoluene	1.11428	1.05527	1.11184	1.05739	1.10580	1.07836	1.08716	2.493	
74 1,3,5-Trimethylbenzene	3.49582	3.46811	3.71931	3.62182	3.81716	3.80932	3.65526	4.160	
75 4-Chlorotoluene	1.19330	1.13361	1.15896	1.12792	1.16217	1.13506	1.15184	2.149	
76 tert-Butylbenzene	2.98044	2.94639	3.08872	3.07481	3.24773	3.21494	3.09217	3.916	
77 1,2,4-Trimethylbenzene	3.59818	3.50597	3.74682	3.60657	3.82557	3.78633	3.67824	3.424	
78 sec-Butylbenzene	4.45510	4.40645	4.65268	4.51002	4.81919	4.70570	4.59152	3.486	
79 4-Isopropyltoluene	3.42191	3.45404	3.66964	3.53266	3.80250	3.70026	3.59683	4.187	
80 1,3-Dichlorobenzene	2.16525	2.00229	2.06198	1.97112	2.07546	1.99493	2.04517	3.489	
81 1,4-Dichlorobenzene	2.19016	2.06975	2.14298	2.02358	2.13150	2.02696	2.09749	3.235	
82 n-Butylbenzene	2.86131	2.81688	3.10222	3.04580	3.24001	2.93220	2.99974	5.324	
83 1,2-Dichlorobenzene	1.95282	1.79313	1.85940	1.78636	1.85015	1.68216	1.82067	4.971	
84 1,2-Dibromo-3-chloropropane	0.08093	0.08702	0.09322	0.08651	0.09885	0.09120	0.08962	6.925	
85 1,2,4-Trichlorobenzene	0.62856	0.60645	0.62749	0.61702	0.67162	0.65421	0.63423	3.825	
86 Hexachlorobutadiene	0.25897	0.25897	0.25846	0.24048	0.25612	0.24429	0.25288	3.277	
87 Naphthalene	1.30427	1.35045	1.58625	1.66016	1.84145	1.80027	1.59047	14.099	
88 1,2,3-Trichlorobenzene	0.62479	0.60122	0.63357	0.58840	0.65025	0.60909	0.61789	3.666	
89 Ethyl Ether	0.31663	0.28837	0.29648	0.29791	0.30488	0.29903	0.30055	3.162	
90 Ethanol	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
91 3-Chloropropene	0.12500	0.10925	0.13345	0.15212	0.16367	0.17328	0.14279	17.101	
92 Isopropyl Ether	0.32750	0.29971	0.31377	0.31592	0.33681	0.33660	0.32172	4.533	
93 2-Chloro-1,3-butadiene	0.49478	0.46719	0.48253	0.48665	0.52042	0.51048	0.49367	3.922	
94 Propionitrile	0.05136	0.04810	0.04994	0.04861	0.05019	0.04955	0.04963	2.353	X
95 Ethyl Acetate	0.36105	0.32800	0.32186	0.32048	0.33048	0.33421	0.33268	4.458	
96 Methacrylonitrile	0.20099	0.20043	0.20880	0.24018	0.23573	0.23342	0.21993	8.395	
97 Isobutanol	0.01321	0.01311	0.01363	0.01377	0.01349	0.01340	0.01343	1.866	X
98 Cyclohexane	0.72271	0.70447	0.70615	0.69911	0.73279	0.72560	0.71514	1.907	
99 n-Butanol	0.00859	0.00825	0.00949	0.01021	0.01059	0.01098	0.00968	11.380	<- X
100 Methyl Methacrylate	0.27425	0.26531	0.28421	0.29612	0.31593	0.31976	0.29260	7.560	
101 2-Nitropropane	0.05173	0.04554	0.05334	0.05848	0.06563	0.07125	0.05766	16.448	X
102 Chloropicrin	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
103 Cyclohexanone	0.02767	0.02302	0.02267	0.02662	0.02695	0.02785	0.02580	9.052	
104 Pentachloroethane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
105 Benzyl Chloride	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
134 Thiophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
135 Crotononitrile(1st Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-

Report Date : 14-Sep-2010 08:03

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 17-JUN-2010 12:26
End Cal Date : 13-SEP-2010 17:00
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux11.i\J00913A.b\8260LLUX11.m
Last Edit : 13-Sep-2010 17:16
Curve Type : Average

	Compound	5.000 Level 1	10.000 Level 2	25.000 Level 3	50.000 Level 4	100.000 Level 5	200.000 Level 6	RRF	% RSD	
	136 Crotononitrile(2nd Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
M	137 Total Crotononitrile	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	138 Paraldehyde	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	139 3,3,5-Trimethylcyclohexanone	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	140 1-Chlorohexane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	141 1,3,5-Trichlorobenzene	0.71449	0.65787	0.69160	0.66562	0.70893	0.68697	0.68758	3.292	
	143 Methyl Acetate	0.31953	0.29262	0.29411	0.29300	0.30440	0.30211	0.30096	3.446	
	144 Methylcyclohexane	0.69251	0.66943	0.68382	0.65898	0.71037	0.68971	0.68414	2.646	
	145 Dimethoxymethane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	146 2-Methylnaphthalene	0.48922	0.60576	0.72203	0.92804	0.99813	1.00806	0.79187	27.606	X
	147 Tetrahydrothiophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	148 1,4-Dichlorobutane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	149 Ethyl Acrylate	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	150 Vinyl Acetate-86	0.05860	0.05859	0.06354	0.06620	0.07320	0.07573	0.06598	10.977	
	151 1,3-Butadiene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	152 n-Heptane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	155 t-Butyl ethyl ether	0.93099	0.86916	0.94928	0.94330	1.01542	1.02808	0.95604	6.117	
	156 t-Amyl methyl ether	0.82218	0.75193	0.81192	0.82633	0.89718	0.91486	0.83740	7.141	
	157 1,2,3-Trimethylbenzene	3.51565	3.28573	3.61961	3.69654	4.02260	4.06903	3.70153	8.126	
$	4 Dibromofluoromethane	0.31290	0.29967	0.30175	0.29879	0.31423	0.30866	0.30600	2.229	
$	5 1,2-Dichloroethane-d4	0.39338	0.39251	0.38894	0.38454	0.39476	0.38876	0.39048	0.968	
$	6 Toluene-d8	1.82347	1.86396	1.82839	1.79858	1.86221	1.75305	1.82161	2.293	
$	7 Bromofluorobenzene	0.61564	0.61948	0.61904	0.61578	0.64207	0.63088	0.62381	1.691	

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: NORTH CANTON Contract:

Lab Code: TACAN Case No.: SAS No.: SDG No.: C0I080421

Lab File ID: BFB472 BFB Injection Date: 09/15/10

Instrument ID: A3UX11 BFB Injection Time: 0750

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.2
75	30.0 - 60.0% of mass 95	46.8
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	50.0 - 100.0% of mass 95	83.6
175	5.0 - 9.0% of mass 174	5.8 (6.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	79.9 (95.6)1
177	5.0 - 9.0% of mass 176	5.2 (6.6)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	50NG-CC	UXJ2187	09/15/10	0819
02	VSTD010	50NG-A9CC	UXJ2188	09/15/10	0841
03	L62TTCHK	L62TT1AC	UXJ2189	09/15/10	0904
04	L62TTCKDUP	L62TT1AD	UXJ2190	09/15/10	0926
05	L62TTBLK	L62TT1AA	UXJ2191	09/15/10	0949
06	DHC-PW-VOC-1	L6MM81AA	UXJ2194	09/15/10	1056
07	DHC-SW-VOC-1	L6MNA1AA	UXJ2195	09/15/10	1119
08	DHC-PW-VOC-2	L6MNC1AA	UXJ2196	09/15/10	1141
09	DHC-SW-VOC-2	L6MNE1AA	UXJ2197	09/15/10	1204
10	DHC-PW-VOC-4	L6MNF1AA	UXJ2199	09/15/10	1249
11	DHC-SW-VOC-4	L6MNH1AA	UXJ2200	09/15/10	1312
12	DHC-PW-VOC-5	L6MNK1AA	UXJ2201	09/15/10	1334
13	DHC-SW-VOC-5	L6MNL1AA	UXJ2202	09/15/10	1357
14	DHC-PW-VOC-3	L6MNM1AA	UXJ2203	09/15/10	1419
15	DHC-SW-VOC-3	L6MNN1AA	UXJ2204	09/15/10	1442
16	CPC-PW-VOC-1	L6MNP1AA	UXJ2205	09/15/10	1504
17	DHC-SW-VOC-7	L6MNT1AA	UXJ2207	09/15/10	1550
18	DHC-SW-VOC-6	L6MNV1AA	UXJ2208	09/15/10	1612
19	DHC-SW-VOC-D	L6MNW1AA	UXJ2209	09/15/10	1635
20	CPC-SW-VOC-1	L6MNQ1AA	UXJ2215	09/15/10	1850
21					
22					

Data File: \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\UXJ2187.D
Report Date: 15-Sep-2010 09:09

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux11.i Injection Date: 15-SEP-2010 08:19
Lab File ID: UXJ2187.D Init. Cal. Date(s): 17-JUN-2010 13-SEP-2010
Analysis Type: WATER Init. Cal. Times: 12:26 17:00
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\8260LLUX11.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
$ 4 Dibromofluoromethane	0.30600	0.25414	0.25414	0.010	16.94781	50.00000	Averaged	
$ 5 1,2-Dichloroethane-d4	0.39048	0.31012	0.31012	0.010	20.57917	50.00000	Averaged	
$ 6 Toluene-d8	1.82161	1.55330	1.55330	0.010	14.72918	50.00000	Averaged	
$ 7 Bromofluorobenzene	0.62381	0.58857	0.58857	0.010	5.64965	50.00000	Averaged	
8 Dichlorodifluoromethane	0.23258	0.21585	0.21585	0.010	7.19121	50.00000	Averaged	
9 Chloromethane	0.42426	0.44530	0.44530	0.100	-4.96023	50.00000	Averaged	
10 Vinyl Chloride	0.44711	0.45863	0.45863	0.010	-2.57599	20.00000	Averaged	
11 Bromomethane	0.19142	0.19074	0.19074	0.010	0.35699	50.00000	Averaged	
12 Chloroethane	0.24048	0.23911	0.23911	0.010	0.56743	50.00000	Averaged	
13 Trichlorofluoromethane	0.33449	0.33804	0.33804	0.010	-1.06321	50.00000	Averaged	
15 Acrolein	0.05829	0.04987	0.04987	0.010	14.43539	50.00000	Averaged	X
16 Acetone	100	87.48923	0.09672	0.010	12.51077	0.000e+000	Wt Linear	
17 1,1-Dichloroethene	0.36810	0.39360	0.39360	0.010	-6.92731	20.00000	Averaged	
18 Freon-113	0.25156	0.23051	0.23051	0.010	8.36643	50.00000	Averaged	
19 Iodomethane	0.41434	0.40103	0.40103	0.010	3.21190	50.00000	Averaged	
20 Carbon Disulfide	1.00030	1.01582	1.01582	0.010	-1.55185	50.00000	Averaged	
21 Methylene Chloride	0.36933	0.34610	0.34610	0.010	6.28900	50.00000	Averaged	
22 Acetonitrile	0.04291	0.04006	0.04006	0.010	6.63869	50.00000	Averaged	X
23 Acrylonitrile	0.14822	0.14003	0.14003	0.010	5.52959	50.00000	Averaged	
24 Methyl tert-butyl ether	0.90956	0.94507	0.94507	0.010	-3.90421	50.00000	Averaged	
25 trans-1,2-Dichloroethene	0.37525	0.39367	0.39367	0.010	-4.90855	50.00000	Averaged	
26 Hexane	0.10933	0.10184	0.10184	0.010	6.85215	20.00000	Averaged	
27 Vinyl acetate	0.60367	0.55583	0.55583	0.010	7.92488	50.00000	Averaged	
28 1,1-Dichloroethane	0.63395	0.67957	0.67957	0.100	-7.19603	50.00000	Averaged	
29 tert-Butyl Alcohol	0.02333	0.01996	0.01996	0.010	14.44478	50.00000	Averaged	
30 2-Butanone	0.17857	0.15412	0.15412	0.010	13.69339	50.00000	Averaged	
M 31 1,2-Dichloroethene (total)	0.38164	0.40635	0.40635	0.010	-6.47448	50.00000	Averaged	
32 cis-1,2-dichloroethene	0.38803	0.41903	0.41903	0.010	-7.98885	50.00000	Averaged	
33 2,2-Dichloropropane	0.26119	0.22912	0.22912	0.010	12.27906	50.00000	Averaged	
34 Bromochloromethane	0.17691	0.19055	0.19055	0.010	-7.70635	50.00000	Averaged	
35 Chloroform	0.57824	0.61962	0.61962	0.010	-7.15624	20.00000	Averaged	
36 Tetrahydrofuran	0.11449	0.10102	0.10102	0.010	11.76490	50.00000	Averaged	
37 1,1,1-Trichloroethane	0.37764	0.35436	0.35436	0.010	6.16229	50.00000	Averaged	
38 1,1-Dichloropropene	0.51688	0.53559	0.53559	0.010	-3.61832	50.00000	Averaged	
39 Carbon Tetrachloride	0.32021	0.31807	0.31807	0.010	0.66827	50.00000	Averaged	
40 1,2-Dichloroethane	0.43743	0.46239	0.46239	0.010	-5.70496	50.00000	Averaged	
41 Benzene	1.59295	1.76161	1.76161	0.010	-10.58817	50.00000	Averaged	
42 Trichloroethene	0.37168	0.38819	0.38819	0.010	-4.44387	50.00000	Averaged	
43 1,2-Dichloropropane	0.39134	0.41668	0.41668	0.010	-6.47342	20.00000	Averaged	
44 1,4-Dioxane	0.00316	0.00284	0.00284	0.010	10.26639	50.00000	Averaged	<- X
45 Dibromomethane	0.20429	0.21187	0.21187	0.010	-3.71389	50.00000	Averaged	
46 Bromodichloromethane	0.38846	0.44753	0.44753	0.010	-15.20580	50.00000	Averaged	
47 2-Chloroethyl vinyl ether	0.22141	0.22402	0.22402	0.010	-1.17945	50.00000	Averaged	

Data File: \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\UXJ2187.D
Report Date: 15-Sep-2010 09:09

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux11.i Injection Date: 15-SEP-2010 08:19
Lab File ID: UXJ2187.D Init. Cal. Date(s): 17-JUN-2010 13-SEP-2010
Analysis Type: WATER Init. Cal. Times: 12:26 17:00
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\8260LLUX11.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
48 cis-1,3-Dichloropropene	0.53206	0.59086	0.59086	0.010	-11.04998	50.00000	Averaged
49 4-Methyl-2-pentanone	0.32748	0.29790	0.29790	0.010	9.03225	50.00000	Averaged
50 Toluene	2.21739	2.37312	2.37312	0.010	-7.02345	20.00000	Averaged
51 trans-1,3-Dichloropropene	0.61896	0.67832	0.67832	0.010	-9.58936	50.00000	Averaged
52 Ethyl Methacrylate	0.62081	0.64534	0.64534	0.010	-3.95221	50.00000	Averaged
53 1,1,2-Trichloroethane	0.42788	0.44479	0.44479	0.010	-3.95262	50.00000	Averaged
54 1,3-Dichloropropane	0.79273	0.81726	0.81726	0.010	-3.09482	50.00000	Averaged
55 Tetrachloroethene	0.40510	0.42173	0.42173	0.010	-4.10555	50.00000	Averaged
56 2-Hexanone	0.28909	0.26016	0.26016	0.010	10.00941	50.00000	Averaged
57 Dibromochloromethane	0.37272	0.43167	0.43167	0.010	-15.81445	50.00000	Averaged
58 1,2-Dibromoethane	0.41631	0.42763	0.42763	0.010	-2.72117	50.00000	Averaged
59 Chlorobenzene	1.35510	1.42593	1.42593	0.300	-5.22673	50.00000	Averaged
60 1,1,1,2-Tetrachloroethane	0.40266	0.44719	0.44719	0.010	-11.06043	50.00000	Averaged
61 Ethylbenzene	0.73701	0.79908	0.79908	0.010	-8.42172	20.00000	Averaged
62 m + p-Xylene	0.92386	0.99588	0.99588	0.010	-7.79564	50.00000	Averaged
M 63 Xylenes (total)	0.90697	0.97689	0.97689	0.010	-7.70893	50.00000	Averaged
64 Xylene-o	0.87320	0.93891	0.93891	0.010	-7.52544	50.00000	Averaged
65 Styrene	1.46165	1.59037	1.59037	0.010	-8.80661	50.00000	Averaged
66 Bromoform	0.22456	0.24440	0.24440	0.100	-8.83393	50.00000	Averaged
67 Isopropylbenzene	2.22141	2.37854	2.37854	0.010	-7.07360	50.00000	Averaged
68 1,1,2,2-Tetrachloroethane	1.14057	1.12705	1.12705	0.300	1.18612	50.00000	Averaged
69 1,4-Dichloro-2-butene	0.28825	0.28035	0.28035	0.010	2.74237	50.00000	Averaged
70 1,2,3-Trichloropropane	0.35345	0.34450	0.34450	0.010	2.53173	50.00000	Averaged
71 Bromobenzene	1.13565	1.22593	1.22593	0.010	-7.94960	50.00000	Averaged
72 n-Propylbenzene	1.25311	1.35820	1.35820	0.010	-8.38597	50.00000	Averaged
73 2-Chlorotoluene	1.08716	1.17644	1.17644	0.010	-8.21246	50.00000	Averaged
74 1,3,5-Trimethylbenzene	3.65526	4.05832	4.05832	0.010	-11.02702	50.00000	Averaged
75 4-Chlorotoluene	1.15184	1.22331	1.22331	0.010	-6.20537	50.00000	Averaged
76 tert-Butylbenzene	3.09217	3.37717	3.37717	0.010	-9.21692	50.00000	Averaged
77 1,2,4-Trimethylbenzene	3.67824	4.11813	4.11813	0.010	-11.95920	50.00000	Averaged
78 sec-Butylbenzene	4.59152	4.96344	4.96344	0.010	-8.10012	50.00000	Averaged
79 4-Isopropyltoluene	3.59683	3.93212	3.93212	0.010	-9.32179	50.00000	Averaged
80 1,3-Dichlorobenzene	2.04517	2.19219	2.19219	0.010	-7.18875	50.00000	Averaged
81 1,4-Dichlorobenzene	2.09749	2.23833	2.23833	0.010	-6.71449	50.00000	Averaged
82 n-Butylbenzene	2.99974	3.24602	3.24602	0.010	-8.21027	50.00000	Averaged
83 1,2-Dichlorobenzene	1.82067	1.94236	1.94236	0.010	-6.68404	50.00000	Averaged
84 1,2-Dibromo-3-chloropropane	0.08962	0.07902	0.07902	0.010	11.83406	50.00000	Averaged
85 1,2,4-Trichlorobenzene	0.63423	0.69332	0.69332	0.010	-9.31790	50.00000	Averaged
86 Hexachlorobutadiene	0.25288	0.27478	0.27478	0.010	-8.65918	50.00000	Averaged
87 Naphthalene	1.59047	1.67903	1.67903	0.010	-5.56814	50.00000	Averaged
88 1,2,3-Trichlorobenzene	0.61789	0.67163	0.67163	0.010	-8.69862	50.00000	Averaged
98 Cyclohexane	0.71514	0.68834	0.68834	0.010	3.74737	50.00000	Averaged
143 Methyl Acetate	0.30096	0.28765	0.28765	0.010	4.42191	50.00000	Averaged

Data File: \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\UXJ2187.D
Report Date: 15-Sep-2010 09:09

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux11.i Injection Date: 15-SEP-2010 08:19
Lab File ID: UXJ2187.D Init. Cal. Date(s): 17-JUN-2010 13-SEP-2010
Analysis Type: WATER Init. Cal. Times: 12:26 17:00
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\8260LLUX11.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
144 Methylcyclohexane	0.68414	0.68839	0.68839	0.010	-0.62101	50.00000	Averaged
141 1,3,5-Trichlorobenzene	0.68758	0.71475	0.71475	0.010	-3.95227	50.00000	Averaged
150 Vinyl Acetate-86	0.06598	0.06246	0.06246	0.010	5.32701	50.00000	Averaged

Data File: \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\UXJ2188.D
Report Date: 15-Sep-2010 08:57

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux11.i Injection Date: 15-SEP-2010 08:41
Lab File ID: UXJ2188.D Init. Cal. Date(s): 17-JUN-2010 13-SEP-2010
Analysis Type: WATER Init. Cal. Times: 12:26 17:00
Lab Sample ID: 50NG-A9CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux11.i\J00915A.b\8260LLUX11.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
14 Dichlorofluoromethane	0.34630	0.50633	0.50633	0.010	-46.21102	50.00000	Averaged	X
89 Ethyl Ether	0.30055	0.32937	0.32937	0.010	-9.59093	50.00000	Averaged	
91 3-Chloropropene	50.00000	59.38841	0.19374	0.010	-18.77682	0.000e+000	Wt Linear	
92 Isopropyl Ether	0.32172	0.34311	0.34311	0.010	-6.64938	50.00000	Averaged	
93 2-Chloro-1,3-butadiene	0.49367	0.54999	0.54999	0.010	-11.40756	50.00000	Averaged	
94 Propionitrile	0.04963	0.05038	0.05038	0.010	-1.52647	50.00000	Averaged	
95 Ethyl Acetate	0.33268	0.33033	0.33033	0.010	0.70720	50.00000	Averaged	
96 Methacrylonitrile	0.21993	0.22374	0.22374	0.010	-1.73457	50.00000	Averaged	
97 Isobutanol	0.01343	0.01313	0.01313	0.010	2.24189	50.00000	Averaged	X
99 n-Butanol	0.00968	0.01038	0.01038	0.010	-7.16217	50.00000	Averaged	<- X
103 Cyclohexanone	0.02580	0.05581	0.05581	0.010	-116	50.00000	Averaged	<- X
100 Methyl Methacrylate	0.29260	0.29640	0.29640	0.010	-1.29901	50.00000	Averaged	
101 2-Nitropropane	100	96.65077	0.06325	0.010	3.34923	0.000e+000	Wt Linear	
155 t-Butyl ethyl ether	0.95604	1.00872	1.00872	0.010	-5.51054	50.00000	Averaged	
156 t-Amyl methyl ether	0.83740	0.90171	0.90171	0.010	-7.67982	50.00000	Averaged	
157 1,2,3-Trimethylbenzene	3.70153	3.88483	3.88483	0.010	-4.95221	50.00000	Averaged	
146 2-Methylnaphthalene	100	87.14761	0.81461	0.010	12.85239	0.000e+000	Wt Linear	

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: NORTH CANTON Contract:

Lab Code: TACAN Case No.: SAS No.: SDG No.: C0I080421

Lab File ID (Standard): UXJ2187 Date Analyzed: 09/15/10

Instrument ID: A3UX11 Time Analyzed: 0819

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 AREA #	RT	IS2 (CBZ) AREA #	RT	IS3 (DCB) AREA #	RT
	12 HOUR STD	1940790	5.35	1453891	8.04	683553	10.29
	UPPER LIMIT	3881580	5.85	2907782	8.54	1367106	10.79
	LOWER LIMIT	970395	4.85	726946	7.54	341777	9.79
	EPA SAMPLE NO.						
01	L62TTCHK	1807561	5.35	1350358	8.04	658276	10.29
02	L62TTCKDUP	1880278	5.35	1402803	8.04	678301	10.29
03	L62TTBLK	1821940	5.35	1310402	8.04	567385	10.29
04	DHC-PW-VOC-1	1741359	5.35	1285879	8.04	577267	10.29
05	DHC-SW-VOC-1	1725714	5.35	1250170	8.04	545562	10.29
06	DHC-PW-VOC-2	1706507	5.35	1266072	8.04	554138	10.29
07	DHC-SW-VOC-2	1682815	5.35	1234016	8.04	535823	10.29
08	DHC-PW-VOC-4	1731220	5.35	1278327	8.04	572619	10.29
09	DHC-SW-VOC-4	1648666	5.35	1225640	8.04	541374	10.29
10	DHC-PW-VOC-5	1643627	5.35	1211491	8.04	541327	10.29
11	DHC-SW-VOC-5	1628640	5.35	1193005	8.04	525064	10.29
12	DHC-PW-VOC-3	1612697	5.35	1197716	8.04	540895	10.29
13	DHC-SW-VOC-3	1597825	5.35	1192557	8.04	526018	10.29
14	CPC-PW-VOC-1	1583855	5.35	1184434	8.04	538103	10.29
15	DHC-SW-VOC-7	1657925	5.35	1200715	8.04	527524	10.29
16	DHC-SW-VOC-6	1585057	5.35	1153123	8.04	503644	10.29
17	DHC-SW-VOC-D	1575575	5.35	1141613	8.04	485343	10.29
18	CPC-SW-VOC-1	1648922	5.35	1234223	8.04	530180	10.29
19							
20							
21							
22							

IS1 = Fluorobenzene
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DCB) = 1,4-Dichlorobenzene-d4

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: NORTH CANTON Contract:

Lab Code: TACAN Case No.: SAS No.: SDG No.: C0I080421

Lab File ID (Standard): UXJ2187 Date Analyzed: 09/15/10

Instrument ID: A3UX11 Time Analyzed: 0819

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 AREA #	RT	IS2 (CBZ) AREA #	RT	IS3 (DCB) AREA #	RT
	12 HOUR STD	1940790	5.35	1453891	8.04	683553	10.29
	UPPER LIMIT	3881580	5.85	2907782	8.54	1367106	10.79
	LOWER LIMIT	970395	4.85	726946	7.54	341777	9.79
	EPA SAMPLE NO.						
01	L62TTCHK	1807561	5.35	1350358	8.04	658276	10.29
02	L62TTCKDUP	1880278	5.35	1402803	8.04	678301	10.29
03	L62TTBLK	1821940	5.35	1310402	8.04	567385	10.29
04	DHC-PW-VOC-1	1741359	5.35	1285879	8.04	577267	10.29
05	DHC-SW-VOC-1	1725714	5.35	1250170	8.04	545562	10.29
06	DHC-PW-VOC-2	1706507	5.35	1266072	8.04	554138	10.29
07	DHC-SW-VOC-2	1682815	5.35	1234016	8.04	535823	10.29
08	DHC-PW-VOC-4	1731220	5.35	1278327	8.04	572619	10.29
09	DHC-SW-VOC-4	1648666	5.35	1225640	8.04	541374	10.29
10	DHC-PW-VOC-5	1643627	5.35	1211491	8.04	541327	10.29
11	DHC-SW-VOC-5	1628640	5.35	1193005	8.04	525064	10.29
12	DHC-PW-VOC-3	1612697	5.35	1197716	8.04	540895	10.29
13	DHC-SW-VOC-3	1597825	5.35	1192557	8.04	526018	10.29
14	CPC-PW-VOC-1	1583855	5.35	1184434	8.04	538103	10.29
15	DHC-SW-VOC-7	1657925	5.35	1200715	8.04	527524	10.29
16	DHC-SW-VOC-6	1585057	5.35	1153123	8.04	503644	10.29
17	DHC-SW-VOC-D	1575575	5.35	1141613	8.04	485343	10.29
18	CPC-SW-VOC-1	1648922	5.35	1234223	8.04	530180	10.29
19							
20							
21							
22							

IS1 = Fluorobenzene
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DCB) = 1,4-Dichlorobenzene-d4

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **M. MARTIN** **DATE:** **November 2, 2010**

FROM: **MEGAN CARSON** **COPIES:** **DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION-SELECT METALS, pH, HARDNESS, AND DOC**
LOCKHEED MIDDLE RIVER CENTER
SDG C0I020508

SAMPLES: 21/Sediment/Pore Waters/

PW-01 0-6	PW-01 18-30	PW-01 6-18
PW-02 0-6	PW-02 18-30	PW-02 6-18
PW-03 0-6	PW-03 18-30	PW-03 6-18
PW-04 0-6	PW-04 18-30	PW-04 6-18
PW-05 0-6	PW-05 18-30	PW-05 6-18
PW-06 0-6	PW-06 18-30	PW-06 6-18
PW-07 0-6	PW-07 18-30	PW-07 6-18

1/water
Rinsate Blank

Overview

The sample set for Middle River Complex, SDG C0I020508, consists of twenty one (21) sediment pore water samples and one (1) rinsate blank.

All samples were analyzed for select metals including antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc. All samples were also analyzed for pH, hardness, and dissolved organic carbon (DOC). The samples were collected by Tetra Tech NUS on August 22nd, 2010 and analyzed by Test America. Metals analyses were conducted using SW-846 method 6020. Mercury analyses were conducted using SW-846 method 7470A. DOC analyses were conducted using method SM 5310C. Hardness analyses were conducted using method SM 2340B. pH analyses were conducted by using method 9040.

The findings offered in this report are based upon a general review of all available data. The data review was based on data completeness, holding times, initial and continuing calibration verification results, laboratory method / preparation blank results, ICP interference results, laboratory control sample recoveries, matrix spike recoveries, laboratory duplicate results, detection limits and analyte quantitation.

Areas of concern with respect to data quality are listed below.

Major Problems – None.

Minor Problems-

- The following contaminants were detected in blanks at the following maximum concentrations:

Analyte	Maximum Concentration	Action Level
Chromium (1)	0.97 ug/L	4.85 ug/L
Chromium (2)	1.2 ug/L	6.0 ug/L

Antimony [3]	0.35 ug/L	1.75 ug/L
Beryllium [3]	0.06 ug/L	0.3 ug/L
Lead [3]	0.05 ug/L	0.25 ug/L
Nickel [3]	0.20 ug/L	1.0 ug/L
Selenium [3]	0.54 ug/L	2.7 ug/L
Silver [3]	0.18 ug/L	0.9 ug/L
Thallium [3]	0.09 ug/L	0.45 ug/L

(1) Maximum concentration present in a preparation blank affecting samples in preparation batch 0252358.
(2) Maximum concentration present in a preparation blank affecting samples in preparation batch 0252362.
(3) Maximum concentration present in a continuing calibration blank affecting all samples analyzed for select metals

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Sample aliquot and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. Positive results less than the blank action level reported for were qualified "B" as a result of laboratory blank contamination.

- The CRDL standard analyzed on 9/23/10 had a percent recovery > 110% for arsenic, lead, nickel, selenium, silver, and thallium. All samples in the SDG were affected. Positive results <2X CRDL for arsenic, lead and selenium were qualified as estimated (J) due to conflicting directional bias. Nickel and thallium results were not qualified as sample results were already qualified for blank contamination.

- All mercury results were analyzed beyond the 28 day hold time. Non-detect samples results were qualified as biased low (UL).

- Positive results greater than the MDL but less than the RL were qualified as estimated (J).

Notes

The samples were collected as sediments in a core sampling device. The samples were separated into incremental sections at the laboratory and were centrifuged. The laboratory centrifuged the samples and analyzed the water which was displaced from the sediment. The sampling date on the form 1s reflects is date which samples were centrifuged. The sampling date listed on the chain of custody was used to evaluate hold time.

The laboratory indicated that the pore water samples for metals, hardness, pH and DOC were filtered and preserved (metals and DOC) prior to analysis. This item is noted for completeness.

The lab did not include the quality control data for hardness.

Executive Summary

Laboratory Performance: Preparation and calibration blanks resulted in the qualification on several samples. CRDL standard non-compliances for lead, arsenic and selenium resulted in the qualification of sample results. Mercury results were qualified for a hold time non-compliance.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to Region III modifications to the "National Functional Guidelines for Inorganic Data Validation", April 1993.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Megan Carson
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery Noncompliance
F	=	Lab Duplicate Imprecision
G	=	Field Duplicate Imprecision
H	=	Holding Time Exceedance
I	=	ICP Serial Dilution Noncompliance
J	=	GFAA PDS - GFAA MSA's $r < 0.995$
K	=	ICP Interference - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02903	NSAMPLE	PW-01 0-6			PW-01 18-30			PW-01 6-18			PW-02 0-6		
SDG: C0I020508	LAB_ID	C0I020508001			C0I020508003			C0I020508002			C0I020508004		
FRACTION: MF	SAMP_DATE	9/7/2010			9/7/2010			9/7/2010			9/2/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.74	B	A	7.6			3.6			4.6		
ARSENIC		1.2	K	C	7.4			2.7			10.9		
BERYLLIUM		0.057	B	A	0.037	U		0.04	B	A	0.069	B	A
CADMIUM		10			1.4			23			0.13	J	P
CHROMIUM		6.3			18.7			16.1			13.7		
COPPER		4.7			1.4	J	P	8.3			1.3	J	P
LEAD		1.2	J	C	2.2			4.5			1.6	J	C
MERCURY		0.038	UL	H	0.038	UL	H	0.038	UL	H	0.038	UL	H
NICKEL		6.8			2.2			2.9			1.2		
SELENIUM		2.6	B	A	1.3	B	A	2.2	B	A	4.8	J	CP
SILVER		0.036	U		0.041	B	A	0.078	B	A	0.036	U	
THALLIUM		0.15	B	A	0.043	B	A	0.081	B	A	0.033	B	A
ZINC		38.9			8.7			47.5			3.9	J	P

PROJ_NO: 02903	NSAMPLE	PW-02 18-30			PW-02 6-18			PW-03 0-6			PW-03 18-30		
SDG: C0I020508	LAB_ID	C0I020508006			C0I020508005			C0I020508007			C0I020508009		
FRACTION: MF	SAMP_DATE	9/2/2010			9/2/2010			9/7/2010			9/7/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		5.8			13.1			2.2			0.9	B	A
ARSENIC		5			11.3			23.4			9.6		
BERYLLIUM		0.037	U		0.044	B	A	0.037	U		0.037	B	A
CADMIUM		0.11	U		0.14	J	P	0.23	J	P	0.11	U	
CHROMIUM		17.5			14.8			11.9			9.8		
COPPER		0.77	J	P	1.7	J	P	1.2	J	P	4.8		
LEAD		0.25	J	CP	0.63	J	CP	0.54	J	CP	0.35	J	CP
MERCURY		0.038	UL	H	0.038	UL	H	0.038	UL	H	0.038	UL	H
NICKEL		2.2			2.3			0.97	B	A	1.8		
SELENIUM		6.5	J	C	4.9	J	CP	4.9	J	CP	5.1	J	C
SILVER		0.036	U		0.036	U		0.036	U		0.036	U	
THALLIUM		0.019	B	A	0.018	B	A	0.015	U		0.015	U	
ZINC		1.9	J	P	4.7	J	P	4.5	J	P	21.4		

PROJ_NO: 02903	NSAMPLE	PW-03 6-18			PW-04 0-6			PW-04 18-30			PW-04 6-18		
SDG: C0I020508	LAB_ID	C0I020508008			C0I020508010			C0I020508012			C0I020508011		
FRACTION: MF	SAMP_DATE	9/7/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		1.2	B	A	0.47	B	A	0.84	B	A	0.41	B	A
ARSENIC		10.2			6.2			6.3			5.3		
BERYLLIUM		0.037	U		0.037	U		0.043	B	A	0.037	U	
CADMIUM		0.11	U		0.13	J	P	0.11	U		0.11	U	
CHROMIUM		13.7			10			15.5			13.6		
COPPER		1.3	J	P	0.98	J	P	0.82	J	P	0.75	J	P
LEAD		0.26	J	CP	0.1	B	A	0.24	B	A	0.098	B	A
MERCURY		0.038	UL	H	0.038	UL	H	0.038	UL	H	0.038	UL	H
NICKEL		1			1.7			1.4			1.3		
SELENIUM		5.4	J	C	5.1	J	C	6	J	C	5.4	J	C
SILVER		0.036	U		0.036	U		0.036	U		0.036	U	
THALLIUM		0.015	U		0.015	U		0.015	U		0.015	U	
ZINC		3.7	J	P	4.7	J	P	3.2	J	P	2.6	J	P

PROJ_NO: 02903	NSAMPLE	PW-05 0-6			PW-05 18-30			PW-05 6-18			PW-06 0-6		
SDG: C0I020508	LAB_ID	C0I020508013			C0I020508015			C0I020508014			C0I020508016		
FRACTION: MF	SAMP_DATE	9/9/2010			9/9/2010			9/9/2010			9/3/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		1.9	J	P	1	B	A	3.7			2		
ARSENIC		12.6			9.8			9.5			14.8		
BERYLLIUM		0.06	B	A	0.037	U		0.049	B	A	0.048	B	A
CADMIUM		0.11	U		0.11	U		0.11	U		0.11	U	
CHROMIUM		13			9.3			12.5			8.5		
COPPER		1.2	J	P	2.7			0.78	J	P	2.2		
LEAD		1	J	C	0.56	J	CP	0.65	J	CP	0.7	J	CP
MERCURY		0.038	UL	H	0.038	UL	H	0.038	UL	H	0.038	UL	H
NICKEL		1			1.3			0.96	B	A	1.1		
SELENIUM		4.6	J	CP	4.3	J	CP	4.4	J	CP	4.4	J	CP
SILVER		0.036	U		0.071	B	A	0.055	B	A	0.036	U	
THALLIUM		0.015	U		0.015	U		0.015	U		0.015	U	
ZINC		3.8	J	P	4.3	J	P	3.5	J	P	6.5		

PROJ_NO: 02903	NSAMPLE	PW-06 18-30			PW-06 6-18			PW-07 0-6			PW-07 18-30		
SDG: C0I020508	LAB_ID	C0I020508018			C0I020508017			C0I020508019			C0I020508021		
FRACTION: MF	SAMP_DATE	9/3/2010			9/3/2010			9/3/2010			9/3/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.86	B	A	2.3			0.29	B	A	1.5	B	A
ARSENIC		12.1			18.8			6.7			6.4		
BERYLLIUM		0.046	B	A	0.071	B	A	0.037	U		0.049	B	A
CADMIUM		0.11	U		0.11	U		0.11	U		0.11	U	
CHROMIUM		14.6			7.8			10.3			13.6		
COPPER		2.1			2			1.1	J	P	1.6	J	P
LEAD		0.33	J	CP	0.48	J	CP	0.21	B	A	0.19	B	A
MERCURY		0.038	UL	H	0.038	UL	H	0.038	UL	H	0.038	UL	H
NICKEL		4.4			1.5			0.7	B	A	1.1		
SELENIUM		5	J	C	5.2	J	C	4.9	J	CP	5.7	J	C
SILVER		0.036	U		0.036	U		0.036	U		0.036	U	
THALLIUM		0.015	U		0.015	U		0.015	U		0.039	B	A
ZINC		2.9	J	P	4.3	J	P	2.4	J	P	2.4	J	P

PROJ_NO: 02903	NSAMPLE	PW-07 6-18			Rinsate Blank		
SDG: C0I020508	LAB_ID	C0I020508020			C0I020508022		
FRACTION: MF	SAMP_DATE	9/3/2010			9/8/2010		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.34	B	A	0.12	J	P
ARSENIC		3.4			0.29	U	
BERYLLIUM		0.037	U		0.037	U	
CADMIUM		0.11	U		0.11	U	
CHROMIUM		13.4			5.9		
COPPER		0.81	J	P	1.5	J	P
LEAD		0.27	J	CP	0.072	J	P
MERCURY		0.038	UL	H	0.038	UL	H
NICKEL		0.59	B	A	0.23	J	P
SELENIUM		5.8	J	C	0.42	U	
SILVER		0.036	U		0.036	U	
THALLIUM		0.015	U		0.021	J	P
ZINC		1.7	J	P	3.4	J	P

PROJ_NO: 02903	NSAMPLE	PW-01 0-6						PW-01 18-30					
SDG: C0I020508	LAB_ID	C0I020508001						C0I020508003					
FRACTION: MISC	SAMP_DATE	9/7/2010						9/7/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		12.5						10.7					
HARDNESS		540						260					
PH					7.5						7.7		

PROJ_NO: 02903	NSAMPLE	PW-01 6-18						PW-02 0-6					
SDG: C0I020508	LAB_ID	C0I020508002						C0I020508004					
FRACTION: MISC	SAMP_DATE	9/7/2010						9/2/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		13.1						9.6					
HARDNESS		328						715					
PH					7.8						8.1		

PROJ_NO: 02903	NSAMPLE	PW-02 18-30						PW-02 6-18					
SDG: C0I020508	LAB_ID	C0I020508006						C0I020508005					
FRACTION: MISC	SAMP_DATE	9/2/2010						9/2/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		11.4						8.6					
HARDNESS		880						788					
PH					7.8						8.1		

PROJ_NO: 02903	NSAMPLE	PW-03 0-6						PW-03 18-30					
SDG: C0I020508	LAB_ID	C0I020508007						C0I020508009					
FRACTION: MISC	SAMP_DATE	9/7/2010						9/7/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		8.3						14.9					
HARDNESS		619						578					
PH					7.8						7.2		

PROJ_NO: 02903	NSAMPLE	PW-03 6-18						PW-04 0-6					
SDG: C0I020508	LAB_ID	C0I020508008						C0I020508010					
FRACTION: MISC	SAMP_DATE	9/7/2010						9/8/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		10.5						12.2					
HARDNESS		627						724					
PH					7.4						7.3		

PROJ_NO: 02903	NSAMPLE	PW-04 18-30						PW-04 6-18					
SDG: C0I020508	LAB_ID	C0I020508012						C0I020508011					
FRACTION: MISC	SAMP_DATE	9/8/2010						9/8/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		20.9						15.8					
HARDNESS		747						767					
PH					7.1						7.1		

PROJ_NO: 02903	NSAMPLE	PW-05 0-6						PW-05 18-30					
SDG: C0I020508	LAB_ID	C0I020508013						C0I020508015					
FRACTION: MISC	SAMP_DATE	9/9/2010						9/9/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		8.3						11.4					
HARDNESS		579						441					
PH					7.8						7.2		

PROJ_NO: 02903	NSAMPLE	PW-05 6-18						PW-06 0-6					
SDG: C0I020508	LAB_ID	C0I020508014						C0I020508016					
FRACTION: MISC	SAMP_DATE	9/9/2010						9/3/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		9.4						6.2					
HARDNESS		524						643					
PH					7.6						8.1		

PROJ_NO: 02903	NSAMPLE	PW-06 18-30						PW-06 6-18					
SDG: C0I020508	LAB_ID	C0I020508018						C0I020508017					
FRACTION: MISC	SAMP_DATE	9/3/2010						9/3/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		11.2						8.5					
HARDNESS		617						610					
PH					7.7						7.9		

PROJ_NO: 02903	NSAMPLE	PW-07 0-6						PW-07 18-30					
SDG: C0I020508	LAB_ID	C0I020508019						C0I020508021					
FRACTION: MISC	SAMP_DATE	9/3/2010						9/3/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		14.3						11.5					
HARDNESS		669						724					
PH					7.8						7.7		

PROJ_NO: 02903	NSAMPLE	PW-07 6-18						Rinsate Blank					
SDG: C0I020508	LAB_ID	C0I020508020						C0I020508022					
FRACTION: MISC	SAMP_DATE	9/3/2010						9/8/2010					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	MG/L			S.U.			MG/L			S.U.		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		9.7						0.79	J	P			
HARDNESS		686						0.11	J	P			
PH					7.7						5.1		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Tetra Tech NUS, Inc

Client Sample ID: PW-01 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-001 **Matrix.....:** WATER
Date Sampled...: 09/07/10 **Date Received..:** 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GC31AE
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**1.2**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AF**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	**0.057 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AG**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	**10.0**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AH**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**6.3 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AJ**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**4.7**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AK**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**6.8**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AL**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**1.2**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AM**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**0.74 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AN**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: PW-01 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-001 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**2.6 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AP**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	**0.15 B,J**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AQ**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**38.9**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GC31AR**
		Dilution Factor: 1		Analysis Time..: 14:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6GC31AU
		Dilution Factor: 1		Analysis Time..: 07:54	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-01 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-003 Matrix.....: WATER
Date Sampled...: 09/07/10 Date Received..: 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	0.041 B	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AE
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	7.4	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AF
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AG
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	1.4	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AH
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	18.7 J	2.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AJ
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	1.4 B	2.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AK
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	2.2	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AL
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	2.2	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AM
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	7.6	2.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AN
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-01 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-003 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	1.3 B	5.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AP
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	0.043 B,J	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AQ
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	8.7	5.0	ug/L	SW846 6020	09/09-09/23/10	L6GDH1AR
		Dilution Factor: 1		Analysis Time..: 14:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6GDH1AU
		Dilution Factor: 1		Analysis Time..: 07:58	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-01 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-002 Matrix.....: WATER
Date Sampled...: 09/07/10 Date Received..: 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	0.078 B	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AF
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	2.7	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AG
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	0.040 B	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AH
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	23.0	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AJ
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	16.1 J	2.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AK
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	8.3	2.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AL
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	2.9	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AM
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	4.5	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AN
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	3.6	2.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AP
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-01 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-002 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	2.2 B	5.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AQ
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	0.081 B,J	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AR
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	47.5	5.0	ug/L	SW846 6020	09/09-09/23/10	L6GDG1AT
		Dilution Factor: 1		Analysis Time..: 14:48	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6GDG1AV
		Dilution Factor: 1		Analysis Time..: 07:56	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-02 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-004 Matrix.....: WATER
Date Sampled...: 09/02/10 Date Received..: 09/02/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GFH1AD
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**10.9**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AE**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	**0.069 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AF**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	**0.13 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AG**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**13.7 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AH**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**1.3 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AJ**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**1.2**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AK**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**1.6**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AL**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**4.6**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AM**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-02 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-004 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**4.8 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AN**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	**0.033 B,J**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AP**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**3.9 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFH1AQ**
		Dilution Factor: 1		Analysis Time..: 15:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6GFH1AT
		Dilution Factor: 1		Analysis Time..: 08:00	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-02 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-006 Matrix.....: WATER
Date Sampled...: 09/02/10 Date Received..: 09/02/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GFK1AD
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**5.0**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFK1AE**
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GFK1AF
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GFK1AG
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**17.5 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFK1AH**
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**0.77 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFK1AJ**
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**2.2**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFK1AK**
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.25 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFK1AL**
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**5.8**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFK1AM**
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-02 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-006 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	6.5	5.0	ug/L	SW846 6020	09/09-09/23/10	L6GFK1AN
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	0.019 B,J	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GFK1AP
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	1.9 B	5.0	ug/L	SW846 6020	09/09-09/23/10	L6GFK1AQ
		Dilution Factor: 1		Analysis Time..: 15:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6GFK1AT
		Dilution Factor: 1		Analysis Time..: 08:03	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-02 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-005 Matrix.....: WATER
Date Sampled...: 09/02/10 Date Received..: 09/02/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GFJ1AD
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**11.3**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFJ1AE**
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	**0.044 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFJ1AF**
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	**0.14 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFJ1AG**
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**14.8 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFJ1AH**
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**1.7 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFJ1AJ**
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**2.3**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFJ1AK**
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.63 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFJ1AL**
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**13.1**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6GFJ1AM**
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-02 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-005 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	4.9 B	5.0	ug/L	SW846 6020	09/09-09/23/10	L6GFJ1AN
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	0.018 B,J	1.0	ug/L	SW846 6020	09/09-09/23/10	L6GFJ1AP
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	4.7 B	5.0	ug/L	SW846 6020	09/09-09/23/10	L6GFJ1AQ
		Dilution Factor: 1		Analysis Time..: 15:15	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6GFJ1AT
		Dilution Factor: 1		Analysis Time..: 08:01	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-03 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-007 Matrix.....: WATER
Date Sampled...: 09/07/10 Date Received..: 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6G831AE
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**23.4**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G831AF**
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6G831AG
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	**0.23 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G831AH**
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**11.9 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G831AJ**
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**1.2 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G831AK**
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**0.97 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G831AL**
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.54 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G831AM**
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**2.2**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G831AN**
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-03 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-007 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**4.9 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G831AP**
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6G831AQ
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**4.5 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G831AR**
		Dilution Factor: 1		Analysis Time..: 16:25	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6G831AU
		Dilution Factor: 1		Analysis Time..: 08:05	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-03 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-009 Matrix.....: WATER
Date Sampled...: 09/07/10 Date Received..: 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6G851AE
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**9.6**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G851AF**
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	**0.037 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G851AG**
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6G851AH
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**9.8 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G851AJ**
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**4.8**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G851AK**
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**1.8**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G851AL**
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.35 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G851AM**
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**0.90 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G851AN**
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-03 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-009 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**5.1**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G851AP**
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6G851AQ
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**21.4**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G851AR**
		Dilution Factor: 1		Analysis Time..: 16:34	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6G851AU
		Dilution Factor: 1		Analysis Time..: 08:11	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-03 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-008 **Matrix.....:** WATER
Date Sampled...: 09/07/10 **Date Received..:** 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6G841AE
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**10.2**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G841AF**
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6G841AG
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6G841AH
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**13.7 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G841AJ**
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**1.3 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G841AK**
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**1.0**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G841AL**
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.26 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G841AM**
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**1.2 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G841AN**
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-03 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-008 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**5.4**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G841AP**
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6G841AQ
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**3.7 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6G841AR**
		Dilution Factor: 1		Analysis Time..: 16:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6G841AU
		Dilution Factor: 1		Analysis Time..: 08:10	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-04 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-010 Matrix.....: WATER
Date Sampled...: 09/08/10 Date Received..: 09/08/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HF51AF
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**6.2**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF51AG**
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HF51AH
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	**0.13 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF51AJ**
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**10 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF51AK**
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**0.98 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF51AL**
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**1.7**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF51AM**
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.10 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF51AN**
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**0.47 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF51AP**
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-04 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-010 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	5.1	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF51AQ**
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HF51AR
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**4.7 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF51AT**
		Dilution Factor: 1		Analysis Time..: 15:24	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HF51AV
		Dilution Factor: 1		Analysis Time..: 08:13	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-04 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-012 Matrix.....: WATER
Date Sampled...: 09/08/10 Date Received..: 09/08/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGD1AE
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**6.3**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGD1AF**
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	**0.043 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGD1AG**
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGD1AH
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**15.5 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGD1AJ**
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**0.82 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGD1AK**
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**1.4**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGD1AL**
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.24 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGD1AM**
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**0.84 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGD1AN**
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-04 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-012 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**6.0**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGD1AP**
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGD1AQ
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**3.2 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGD1AR**
		Dilution Factor: 1		Analysis Time..: 15:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HGD1AU
		Dilution Factor: 1		Analysis Time..: 08:16	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-04 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-011 Matrix.....: WATER
Date Sampled...: 09/08/10 Date Received..: 09/08/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HF81AE
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**5.3**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF81AF**
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HF81AG
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HF81AH
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**13.6 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF81AJ**
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**0.75 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF81AK**
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**1.3**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF81AL**
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.098 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF81AM**
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**0.41 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF81AN**
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-04 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-011 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**5.4**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF81AP**
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HF81AQ
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**2.6 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HF81AR**
		Dilution Factor: 1		Analysis Time..: 15:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HF81AU
		Dilution Factor: 1		Analysis Time..: 08:15	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-05 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-013 **Matrix.....:** WATER
Date Sampled...: 09/09/10 **Date Received..:** 09/09/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGE1AE
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**12.6**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGE1AF**
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	**0.060 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGE1AG**
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGE1AH
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**13.0 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGE1AJ**
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**1.2 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGE1AK**
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**1.0**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGE1AL**
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**1.0**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGE1AM**
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**1.9 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGE1AN**
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-05 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-013 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**4.6 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGE1AP**
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGE1AQ
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**3.8 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGE1AR**
		Dilution Factor: 1		Analysis Time..: 15:37	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HGE1AU
		Dilution Factor: 1		Analysis Time..: 08:18	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-05 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-015 Matrix.....: WATER
Date Sampled...: 09/09/10 Date Received..: 09/09/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	0.071 B	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGH1AE
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	9.8	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGH1AF
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGH1AG
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGH1AH
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	9.3 J	2.0	ug/L	SW846 6020	09/09-09/23/10	L6HGH1AJ
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	2.7	2.0	ug/L	SW846 6020	09/09-09/23/10	L6HGH1AK
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	1.3	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGH1AL
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	0.56 B	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGH1AM
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	1.0 B	2.0	ug/L	SW846 6020	09/09-09/23/10	L6HGH1AN
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-05 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-015 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**4.3 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGH1AP**
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGH1AQ
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**4.3 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGH1AR**
		Dilution Factor: 1		Analysis Time..: 15:45	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HGH1AU
		Dilution Factor: 1		Analysis Time..: 08:21	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-05 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-014 Matrix.....: WATER
Date Sampled...: 09/09/10 Date Received..: 09/09/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	0.055 B	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGF1AE
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	9.5	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGF1AF
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	0.049 B	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGF1AG
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGF1AH
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	12.5 J	2.0	ug/L	SW846 6020	09/09-09/23/10	L6HGF1AJ
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	0.78 B	2.0	ug/L	SW846 6020	09/09-09/23/10	L6HGF1AK
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	0.96 B	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGF1AL
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	0.65 B	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGF1AM
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	3.7	2.0	ug/L	SW846 6020	09/09-09/23/10	L6HGF1AN
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-05 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-014 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**4.4 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGF1AP**
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGF1AQ
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**3.5 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGF1AR**
		Dilution Factor: 1		Analysis Time..: 15:41	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HGF1AU
		Dilution Factor: 1		Analysis Time..: 08:20	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-06 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-016 Matrix.....: WATER
Date Sampled...: 09/03/10 Date Received..: 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGJ1AC
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**14.8**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGJ1AD**
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	**0.048 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGJ1AE**
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGJ1AF
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**8.5 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGJ1AG**
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**2.2**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGJ1AH**
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**1.1**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGJ1AJ**
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.70 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGJ1AK**
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**2.0**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGJ1AL**
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-06 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-016 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**4.4 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGJ1AM**
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGJ1AN
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**6.5**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGJ1AP**
		Dilution Factor: 1		Analysis Time..: 15:49	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HGJ1AR
		Dilution Factor: 1		Analysis Time..: 08:23	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-06 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-018 Matrix.....: WATER
Date Sampled...: 09/03/10 Date Received..: 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGN1AC
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**12.1**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGN1AD**
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	**0.046 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGN1AE**
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGN1AF
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**14.6 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGN1AG**
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**2.1**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGN1AH**
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**4.4**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGN1AJ**
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.33 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGN1AK**
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**0.86 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGN1AL**
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-06 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-018 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**5.0**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGN1AM**
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGN1AN
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**2.9 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGN1AP**
		Dilution Factor: 1		Analysis Time..: 16:12	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HGN1AR
		Dilution Factor: 1		Analysis Time..: 08:30	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-06 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-017 Matrix.....: WATER
Date Sampled...: 09/03/10 Date Received..: 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGL1AC
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**18.8**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGL1AD**
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	**0.071 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGL1AE**
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGL1AF
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**7.8 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGL1AG**
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**2.0**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGL1AH**
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**1.5**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGL1AJ**
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.48 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGL1AK**
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**2.3**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGL1AL**
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-06 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-017 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**5.2**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGL1AM**
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGL1AN
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**4.3 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGL1AP**
		Dilution Factor: 1		Analysis Time..: 16:08	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HGL1AR
		Dilution Factor: 1		Analysis Time..: 08:25	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: PW-07 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-019 **Matrix.....:** WATER
Date Sampled...: 09/03/10 **Date Received..:** 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGV1AC
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**6.7**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGV1AD**
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGV1AE
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGV1AF
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**10.3 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGV1AG**
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**1.1 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGV1AH**
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**0.70 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGV1AJ**
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.21 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGV1AK**
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**0.29 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGV1AL**
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-07 0-6"

DISSOLVED Metals

Lot-Sample #...: C0I020508-019 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	**4.9 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGV1AM**
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGV1AN
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**2.4 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGV1AP**
		Dilution Factor: 1		Analysis Time..: 16:17	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HGV1AR
		Dilution Factor: 1		Analysis Time..: 08:32	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-07 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-021 Matrix.....: WATER
Date Sampled...: 09/03/10 Date Received..: 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252362						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HG31AC
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**6.4**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HG31AD**
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	**0.049 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HG31AE**
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HG31AF
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**13.6 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HG31AG**
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**1.6 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HG31AH**
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**1.1**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HG31AJ**
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.19 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HG31AK**
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**1.5 B,E**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HG31AL**
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-07 18-30"

DISSOLVED Metals

Lot-Sample #...: C0I020508-021 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	5.7	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HG31AM**
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	0.039 B	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HG31AN**
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	2.4 B	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HG31AP**
		Dilution Factor: 1		Analysis Time..: 17:11	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271011						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HG31AR
		Dilution Factor: 1		Analysis Time..: 08:40	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

E Matrix interference.

Tetra Tech NUS, Inc

Client Sample ID: PW-07 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-020 **Matrix.....:** WATER
Date Sampled...: 09/03/10 **Date Received..:** 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252358						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGX1AC
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	**3.4**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGX1AD**
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGX1AE
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGX1AF
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**13.4 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGX1AG**
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**0.81 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGX1AH**
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**0.59 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGX1AJ**
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.27 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGX1AK**
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**0.34 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6HGX1AL**
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

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Tetra Tech NUS, Inc

Client Sample ID: PW-07 6-18"

DISSOLVED Metals

Lot-Sample #...: C0I020508-020 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	5.8	5.0	ug/L	SW846 6020	09/09-09/23/10	L6HGX1AM
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6HGX1AN
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	1.7 B	5.0	ug/L	SW846 6020	09/09-09/23/10	L6HGX1AP
		Dilution Factor: 1		Analysis Time..: 16:21	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271010						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6HGX1AR
		Dilution Factor: 1		Analysis Time..: 08:33	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: Rinsate Blank

DISSOLVED Metals

Lot-Sample #...: C0I020508-022 **Matrix.....:** WATER
Date Sampled...: 09/08/10 **Date Received..:** 09/08/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0252362						
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6M4H1AE
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.036	
Arsenic	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6M4H1AF
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.29	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6M4H1AG
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.037	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6M4H1AH
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.11	
Chromium	**5.9 J**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6M4H1AJ**
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.54	
Copper	**1.5 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6M4H1AK**
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.24	
Nickel	**0.23 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6M4H1AL**
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.17	
Lead	**0.072 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6M4H1AM**
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	
Antimony	**0.12 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6M4H1AN**
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.019	

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: Rinsate Blank

DISSOLVED Metals

Lot-Sample #...: C0I020508-022 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	ND	5.0	ug/L	SW846 6020	09/09-09/23/10	L6M4H1AP
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.42	
Thallium	**0.021 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6M4H1AQ**
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.015	
Zinc	**3.4 B**	**5.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6M4H1AR**
		Dilution Factor: 1		Analysis Time..: 17:20	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....: 0.96	
Prep Batch #...: 0271011						
Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L6M4H1AU
		Dilution Factor: 1		Analysis Time..: 08:42	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....:	MDL.....: 0.038	

NOTE(S):

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-01 0-6"

TOTAL Metals

Lot-Sample #...: C0I020508-001 **Matrix.....:** WATER
Date Sampled...: 09/07/10 **Date Received..:** 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**540**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6GC31AD**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-01 18-30"

TOTAL Metals

Lot-Sample #...: C0I020508-003 Matrix.....: WATER
Date Sampled...: 09/07/10 Date Received..: 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	260	0.67	mg/L	SM18 2340B	09/09-09/23/10	L6GDH1AD
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-01 6-18"

TOTAL Metals

Lot-Sample #...: C0I020508-002 Matrix.....: WATER
Date Sampled...: 09/07/10 Date Received..: 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	328	0.67	mg/L	SM18 2340B	09/09-09/23/10	L6GDG1AE
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-02 0-6"

TOTAL Metals

Lot-Sample #...: C0I020508-004 **Matrix.....:** WATER
Date Sampled...: 09/02/10 **Date Received..:** 09/02/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	715	0.67	mg/L	SM18 2340B	09/09-09/23/10	L6GFH1AC
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-02 18-30"

TOTAL Metals

Lot-Sample #...: C0I020508-006 **Matrix.....:** WATER
Date Sampled...: 09/02/10 **Date Received..:** 09/02/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**880**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6GFK1AC**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-02 6-18"

TOTAL Metals

Lot-Sample #...: C0I020508-005 Matrix.....: WATER
Date Sampled...: 09/02/10 Date Received..: 09/02/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	788	0.67	mg/L	SM18 2340B	09/09-09/23/10	L6GFJ1AC
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-03 0-6"

TOTAL Metals

Lot-Sample #...: C0I020508-007 **Matrix.....:** WATER
Date Sampled...: 09/07/10 **Date Received..:** 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**619**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6G831AD**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-03 18-30"

TOTAL Metals

Lot-Sample #...: C0I020508-009 Matrix.....: WATER
Date Sampled...: 09/07/10 Date Received..: 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	578	0.67	mg/L	SM18 2340B	09/09-09/23/10	L6G851AD
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-03 6-18"

TOTAL Metals

Lot-Sample #...: C0I020508-008 Matrix.....: WATER
Date Sampled...: 09/07/10 Date Received..: 09/07/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	627	0.67	mg/L	SM18 2340B	09/09-09/23/10	L6G841AD
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-04 0-6"

TOTAL Metals

Lot-Sample #...: C0I020508-010 Matrix.....: WATER
Date Sampled...: 09/08/10 Date Received..: 09/08/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	724	0.67	mg/L	SM18 2340B	09/09-09/23/10	L6HF51AE
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-04 18-30"

TOTAL Metals

Lot-Sample #...: C0I020508-012 **Matrix.....:** WATER
Date Sampled...: 09/08/10 **Date Received..:** 09/08/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**747**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6HGD1AD**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-04 6-18"

TOTAL Metals

Lot-Sample #...: C0I020508-011 Matrix.....: WATER
Date Sampled...: 09/08/10 Date Received..: 09/08/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	767	0.67	mg/L	SM18 2340B	09/09-09/23/10	L6HF81AD
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-05 0-6"

TOTAL Metals

Lot-Sample #...: C0I020508-013 **Matrix.....:** WATER
Date Sampled...: 09/09/10 **Date Received..:** 09/09/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**579**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6HGE1AD**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-05 18-30"

TOTAL Metals

Lot-Sample #...: C0I020508-015 **Matrix.....:** WATER
Date Sampled...: 09/09/10 **Date Received..:** 09/09/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**441**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6HGH1AD**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-05 6-18"

TOTAL Metals

Lot-Sample #...: C0I020508-014 **Matrix.....:** WATER
Date Sampled...: 09/09/10 **Date Received..:** 09/09/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**524**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6HGF1AD**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-06 0-6"

TOTAL Metals

Lot-Sample #...: C0I020508-016 **Matrix.....:** WATER
Date Sampled...: 09/03/10 **Date Received..:** 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**643**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6HGJ1AA**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-06 18-30"

TOTAL Metals

Lot-Sample #...: C0I020508-018 Matrix.....: WATER
Date Sampled...: 09/03/10 Date Received..: 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	617	0.67	mg/L	SM18 2340B	09/09-09/23/10	L6HGN1AA
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-06 6-18"

TOTAL Metals

Lot-Sample #...: C0I020508-017 **Matrix.....:** WATER
Date Sampled...: 09/03/10 **Date Received..:** 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**610**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6HGL1AA**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-07 0-6"

TOTAL Metals

Lot-Sample #...: C0I020508-019 **Matrix.....:** WATER
Date Sampled...: 09/03/10 **Date Received..:** 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**669**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6HGV1AA**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-07 18-30"

TOTAL Metals

Lot-Sample #...: C0I020508-021 **Matrix.....:** WATER
Date Sampled...: 09/03/10 **Date Received..:** 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**724**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6HG31AA**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: PW-07 6-18"

TOTAL Metals

Lot-Sample #...: C0I020508-020 **Matrix.....:** WATER
Date Sampled...: 09/03/10 **Date Received..:** 09/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**686**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6HGX1AA**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

Tetra Tech NUS, Inc

Client Sample ID: Rinsate Blank

TOTAL Metals

Lot-Sample #...: C0I020508-022 **Matrix.....:** WATER
Date Sampled...: 09/08/10 **Date Received..:** 09/08/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0267204						
Hardness	**0.11 B**	**0.67**	**mg/L**	**SM18 2340B**	**09/09-09/23/10**	**L6M4H1AD**
		Dilution Factor: 1		Analysis Time..: 00:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....:	MDL.....:	

NOTE(S):

B Estimated result. Result is less than RL.

Tetra Tech Middle River, MD

pH

Lab Name: TESTAMERICA PITTSBURGH
Client Name: Tetra Tech NUS, Inc
Matrix: WATER

Method: SW846 9040
Lot Number: C0I020508

pH Aqueous

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
PW-01 0-6"	C0I020508 001	L6GC31AV	7.5	--	0.0	0.10	1	9/8/2010 - 9/8/2010 08:40	0251066
PW-01 6-18"	C0I020508 002	L6GDG1A	7.8	--	0.0	0.10	1	9/8/2010 - 9/8/2010 08:42	0251066
PW-01 18-30"	C0I020508 003	L6GDH1AV	7.7	--	0.0	0.10	1	9/8/2010 - 9/8/2010 08:44	0251066
PW-02 0-6"	C0I020508 004	L6GFH1AU	8.1	--	0.0	0.10	1	9/3/2010 - 9/3/2010 17:08	0246280
PW-02 6-18"	C0I020508 005	L6GFJ1AU	8.1	--	0.0	0.10	1	9/3/2010 - 9/3/2010 17:10	0246280
PW-02 18-30"	C0I020508 006	L6GFK1AU	7.8	--	0.0	0.10	1	9/3/2010 - 9/3/2010 17:12	0246280
PW-03 0-6"	C0I020508 007	L6G831AV	7.8	--	0.0	0.10	1	9/8/2010 - 9/8/2010 08:46	0251066
PW-03 6-18"	C0I020508 008	L6G841AV	7.4	--	0.0	0.10	1	9/8/2010 - 9/8/2010 08:50	0251066
PW-03 18-30"	C0I020508 009	L6G851AV	7.2	--	0.0	0.10	1	9/8/2010 - 9/8/2010 08:52	0251066
PW-04 0-6"	C0I020508 010	L6HF51AW	7.3	--	0.0	0.10	1	9/8/2010 - 9/8/2010 14:12	0251244
PW-04 6-18"	C0I020508 011	L6HF81AV	7.1	--	0.0	0.10	1	9/8/2010 - 9/8/2010 14:15	0251244
PW-04 18-30"	C0I020508 012	L6HGD1AV	7.1	--	0.0	0.10	1	9/8/2010 - 9/8/2010 14:17	0251244
PW-05 0-6"	C0I020508 013	L6HGE1AV	7.8	--	0.0	0.10	1	9/9/2010 - 9/9/2010 15:14	0252323
PW-05 6-18"	C0I020508 014	L6HGF1AV	7.6	--	0.0	0.10	1	9/9/2010 - 9/9/2010 15:16	0252323
PW-05 18-30"	C0I020508 015	L6HGH1AV	7.2	--	0.0	0.10	1	9/9/2010 - 9/9/2010 15:18	0252323
PW-06 0-6"	C0I020508 016	L6HGJ1AT	8.1	--	0.0	0.10	1	9/3/2010 - 9/3/2010 17:14	0246280
PW-06 6-18"	C0I020508 017	L6HGL1AT	7.9	--	0.0	0.10	1	9/3/2010 - 9/3/2010 17:16	0246280
PW-06 18-30"	C0I020508 018	L6HGN1AT	7.7	--	0.0	0.10	1	9/3/2010 - 9/3/2010 17:18	0246280

Tetra Tech Middle River, MD

pH

Lab Name: TESTAMERICA PITTSBURGH
Client Name: Tetra Tech NUS, Inc
Matrix: WATER

Method: SW846 9040
Lot Number: C0I020508

PW-07 0-6"	C0I020508	019	L6HGV1AT	7.8	--	0.0	0.10	1	9/3/2010 17:20	- 9/3/2010	0246280
PW-07 6-18"	C0I020508	020	L6HGX1AT	7.7	--	0.0	0.10	1	9/3/2010 17:22	- 9/3/2010	0246280
PW-07 18-30"	C0I020508	021	L6HG31AT	7.7	--	0.0	0.10	1	9/3/2010 17:26	- 9/3/2010	0246280
Rinsate Blank	C0I020508	022	L6M4H1AV	5.1	--	0.0	0.10	1	9/8/2010 14:32	- 9/8/2010	0251252

Tetra Tech Middle River, MD

Dissolved Organic Carbon

Lab Name: TESTAMERICA PITTSBURGH **Method:** SM20 5310C

Client Name: Tetra Tech NUS, Inc **Lot Number:** C0I020508

Matrix: WATER

NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
PW-01 0-6"	C0I020508 001	L6GC31AT	12.5	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-01 6-18"	C0I020508 002	L6GDG1AU	13.1	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-01 18-30"	C0I020508 003	L6GDH1AT	10.7	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-02 0-6"	C0I020508 004	L6GFH1AR	9.6	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-02 6-18"	C0I020508 005	L6GFJ1AR	8.6	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-02 18-30"	C0I020508 006	L6GFK1AR	11.4	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-03 0-6"	C0I020508 007	L6G831AT	8.3	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-03 6-18"	C0I020508 008	L6G841AT	10.5	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-03 18-30"	C0I020508 009	L6G851AT	14.9	mg/L	0.14	1.0	1	9/29/2010 - 9/29/2010 00:00	0272055
PW-04 0-6"	C0I020508 010	L6HF51AU	12.2	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-04 6-18"	C0I020508 011	L6HF81AT	15.8	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-04 18-30"	C0I020508 012	L6HGD1AT	20.9	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-05 0-6"	C0I020508 013	L6HGE1AT	8.3	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-05 6-18"	C0I020508 014	L6HGF1AT	9.4	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-05 18-30"	C0I020508 015	L6HGH1AT	11.4	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-06 0-6"	C0I020508 016	L6HGJ1AQ	6.2	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-06 6-18"	C0I020508 017	L6HGL1AQ	8.5	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048
PW-06 18-30"	C0I020508 018	L6HGN1AQ	11.2	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010 00:00	0270048

Tetra Tech Middle River, MD

Dissolved Organic Carbon

Lab Name: TESTAMERICA PITTSBURGH **Method:** SM20 5310C

Client Name: Tetra Tech NUS, Inc **Lot Number:** C0I020508

Matrix: WATER

PW-07 0-6"	C0I020508	019	L6HGV1AQ	14.3	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010	00:00	0270048
PW-07 6-18"	C0I020508	020	L6HGX1AQ	9.7	mg/L	0.14	1.0	1	9/28/2010 - 9/28/2010	00:00	0270048
PW-07 18-30"	C0I020508	021	L6HG31AQ	11.5	mg/L	0.14	1.0	1	9/27/2010 - 9/27/2010	00:00	0270194
Rinsate Blank	C0I020508	022	L6M4H1AT	0.79 B	mg/L	0.14	1.0	1	9/27/2010 - 9/27/2010	00:00	0270194

APPENDIX C

SUPPORT DOCUMENTATION

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0I020508

Sample Receiving:
TestAmerica's Pittsburgh laboratory received samples on August 24, 2010. The coolers were received within the proper temperature range.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

GC/MS Volatiles:
TestAmerica's North Canton laboratory performed the VOA analysis. All data is included in the package.

Due to the concentration of target compounds detected, PW-01 Composite was analyzed at a dilution.

The method blank had compounds detected below the reporting limit but above the MDL. The result was flagged with a "J" qualifier. Any sample associated with this blank that had the same compounds detected had the result flagged with a "B" qualifier.

GC/MS Semivolatiles:
Due to the concentration of target compounds detected and/or matrix, all samples were analyzed at a dilution.

Sample PW-05 18-30" had nitrobenzene-d5 surrogate recover below the control limit. The sample was analyzed at a dilution.

The RPD between the LCS and LCSD recovered above the control limit for 4-nitrophenol.

All non-CCC compounds that have >15% RSD were evaluated to see if a better curve could be drawn using a quadratic curve. All compounds <30% RSD will use an average response factor curve if no visible improvement is accomplished using a quadratic curve. A quadratic curve will be used for a compound where it is determined to be the "best-fit" evaluation.

The continuing calibrations had the %D > 25% but were within expected performance range for these compounds.

PCBs:
There were no problems associated with the analysis.

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0I020508

Metals:
The serial dilution percent difference was outside the control limits for antimony in sample PW-07 18-30".

The method blanks had analytes detected at concentrations between the MDL and the reporting limit. The results were flagged with a "B" qualifier. Any sample associated with a method blank that had the same analyte detected had the result flagged with a "J" qualifier.

General Chemistry:
pH is a field parameter. Laboratory pH analysis was completed at the request of the client.

METHODS SUMMARY

C0I020508

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Aqueous	SW846 9040	SW846 9040
Dissolved Organic Carbon 5310C	SM20 5310C	
ICP-MS (6020)	SW846 6020	SW846 3005A
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A	SW846 7470A
PCBs by SW-846 8082	SW846 8082	SW846 3510C
Semivolatile Organics GCMS BNA 8270C	SW846 8270C	
Total Hardness	SM18 2340B	
Volatile Organics by GC/MS	SW846 8260B	SW846 5030B

References:

SM18 "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992.

SM20 "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER", 20TH EDITION."

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes☐ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
TETRA Tech	Mike MARTIN	8/22/10	154232

Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page
20251 Century Blvd Suite 200	301-528-3022 301-528-3000		1 of 1

City	State	Zip Code	Site Contact	Lab Contact
Germantown	MD	20874	Tony Apanavage	

Project Name and Location (State): MCR Sed. Sampling

Carrier/Waybill Number:

Contract/Purchase Order/Quote No.:

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	2 cores	PPmetals	PAHs	PCBs	~~[illegible]~~	DOC	Hardness	PH	Special Instructions/ Conditions of Receipt
PW-01	8/22/10	0818			X		X						X	X				X	X	X	See Table 1-1
PW-02	↓	0917			↓		↓						X	X				X	X	X	Avg. 9.20
PW-03		1007											X	X	X	X		X	X	X	
PW-04		1344											X	X	X	X		X	X	X	
PW-05		1401											X	X	X	X		X	X	X	
PW-06		1247											X	X				X	X	X	
PW-07	8/22/10	1315			X		X						X	X				X	X	X	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other Standard

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	8/23/10	1530	1. Received By: [signature]	8/23/10	1530
2. Relinquished By: [signature]	8/23/10	1630	2. Received By:		
3. Relinquished By:			3. Received By: [signature]	8/24/10	1015

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

SAMPLE SUMMARY

C0I020508

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L6GC3	001	PW-01 0-6"	09/07/10	08:18
L6GDG	002	PW-01 6-18"	09/07/10	08:18
L6GDH	003	PW-01 18-30"	09/07/10	08:18
L6GFH	004	PW-02 0-6"	09/02/10	09:17
L6GFJ	005	PW-02 6-18"	09/02/10	09:17
L6GFK	006	PW-02 18-30"	09/02/10	09:17
L6G83	007	PW-03 0-6"	09/07/10	
L6G84	008	PW-03 6-18"	09/07/10	
L6G85	009	PW-03 18-30"	09/07/10	
L6HF5	010	PW-04 0-6"	09/08/10	
L6HF8	011	PW-04 6-18"	09/08/10	
L6HGD	012	PW-04 18-30"	09/08/10	
L6HGE	013	PW-05 0-6"	09/09/10	
L6HGF	014	PW-05 6-18"	09/09/10	
L6HGH	015	PW-05 18-30"	09/09/10	
L6HGJ	016	PW-06 0-6"	09/03/10	
L6HGL	017	PW-06 6-18"	09/03/10	
L6HGN	018	PW-06 18-30"	09/03/10	
L6HGV	019	PW-07 0-6"	09/03/10	
L6HGX	020	PW-07 6-18"	09/03/10	
L6HG3	021	PW-07 18-30"	09/03/10	
L6M4H	022	Rinsate Blank	09/08/10	
L6NL7	023	PW-01 Composite	09/08/10	16:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

TestAmerica Pittsburgh

Cooler Receipt Form

Client: Tetra Tech NUS Project: _____ Quote: 86823

Cooler Rec'd & Opened for Temp. Check on: 8/24/10

Coolers Opened and Unpacked on: 8/25/10 By: PRF (Signature)

TestAmerica Pittsburgh Lot Number: COH250419

		Yes	No	NA
1.	Were custody seals on the outside of the cooler?	/		
	If YES, how many and where? Quantity 1 Location front			
	Were signatures and date correct?	/		
2.	Were custody papers included inside the cooler?	/		
3.	Were custody papers properly filled out (ink, signed, match labels)?	/		
4.	Did you sign the custody papers in the appropriate place?	/		
5.	Was shippers packing slip attached to this form?	/		
6.	Were packing materials used?	/		
	If YES, what type? Bubble Wrap			
7.	Were the samples received within the acceptable temperature range?	/		
8.	Were the samples appropriately preserved?			/
9.	Were all bottles sealed in separate plastic bags?		/	
10.	Did all bottles arrive in good condition (unbroken)?	/		
11.	Were all bottle labels complete (sample ID, preservatives, etc.)?	/		
12.	Did all bottle labels and/or tags agree with custody papers?	/		
13.	Were correct bottles used for tests indicated?	/		
14.	Were all VOA vials checked for the presence of air bubbles?			/
15.	Was a sufficient amount of sample sent in each bottle?	/		

16. Samples received by: (FEDEX) UPS CLIENT DROP-OFF OTHER DHL US CARGO

Explain any discrepancies: _____

Level 2 Review _____

Was contacted on _____ by _____ to resolve discrepancies.

Rev. 1, 01/20/2010
X:\Forms\Cooler Receipt Form_updated 102010.DOC

Cooler Receipt Form

TestAmerica Pittsburgh

P: Preserved

UP: Unpreserved

Sample ID	TMET PH<2	DMET PH<2	HG PH<2	NUT(1) PH<2	CN PH ≥12	OG TPHC PH<2	PHEN PH<2	SULF PH ≥12	TOC PH<2	TOX PH<2	VOA P/UP	Bronze PH<2			

(1) "NUT" could include sample bottles for ammonia, chemical oxygen demand, nitrate/nitrite, TKN, or total phosphorus

Comments: _____

Cooler Number	Temperature*	Thermometer ID
1	4.6°	9
2	4.1°	4
3	3.8°	9

Sample	Lot Number**

* Acceptable Temperature Range: 4°C ± 2°C

**Please use an asterisk if bottle lot number was covered by the label

If samples required preservation in the laboratory, the following lot number(s) was/were used:

Nitric Acid _____ Hydrochloric Acid _____

Sulfuric Acid _____ Sodium Hydroxide _____

From: Origin ID: MTNA (410) 869-0085
Ken Ives
STL BALTIMORE
5710 Executive Drive
Suite 106
Baltimore, MD 21228

J102014080890225

Ship Date: 23AUG10
ActWgt: 140.0 LB
CAD: 1030460/INET3060

Delivery Address Bar Code

SHIP TO: (412) 963-7058 BILL RECIPIENT
Test America Pittsburgh
Test America Pittsburgh
301 ALPHA DR
RIDC PARK
PITTSBURGH, PA 15238

Ref # TetraTech Seditments
Invoice #
PO #
Dept #

3 of 3

MPS# 0263 7989 7617 2570

Mstr# 7989 7617 2433 0201

TUE - 24 AUG A2
STANDARD OVERNIGHT

15238
PA-US
PIT

NA AGCA

508G4/33D8/8A24

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic valueof the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

From: Origin ID: MTNA (410) 869-0085
Ken Ives
STL BALTIMORE
5710 Executive Drive
Suite 106
Baltimore, MD 21228

FedEx Express

Ship Date: 23AUG10
ActWgt: 140.0 LB
CAD: 1030460/INET3060

Delivery Address Bar Code

Ref # TetraTech Seditments
Invoice #
PO #
Dept #

SHIP TO: (412) 963-7058 BILL RECIPIENT
Test America Pittsburgh
Test America Pittsburgh
301 ALPHA DR
RIDC PARK
PITTSBURGH, PA 15238

2 of 3
MPS# 0263 7989 7617 2514
Mstr# 7989 7617 2433 0201

TUE - 24 AUG A2
STANDARD OVERNIGHT

15238
PA-US
PIT

NA AGCA

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From: Origin ID: MTNA (410) 869-0085
Ken Ives
STL BALTIMORE
5710 Executive Drive
Suite 106
Baltimore, MD 21228

FedEx Express

Ship Date: 23AUG10
ActWgt: 140.0 LB
CAD: 1030460/INET3060

Delivery Address Bar Code

Ref # TetraTech Seditments
Invoice #
PO #
Dept #

SHIP TO: (412) 963-7058 BILL RECIPIENT
Test America Pittsburgh
Test America Pittsburgh
301 ALPHA DR
RIDC PARK
PITTSBURGH, PA 15238

1 of 3

TRK# 0201 7989 7617 2433

TUE - 24 AUG A2
STANDARD OVERNIGHT

MASTER

15238
PA-US
PIT

NA AGCA

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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HOLDTIME

SDG C0I020508

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
MF	UG/L	PW-06 6-18	C0I020508017	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
MF	UG/L	PW-04 6-18	C0I020508011	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
MF	UG/L	PW-04 6-18	C0I020508011	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
MF	UG/L	PW-05 0-6	C0I020508013	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
MF	UG/L	PW-05 0-6	C0I020508013	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
MF	UG/L	PW-05 18-30	C0I020508015	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
MF	UG/L	PW-05 18-30	C0I020508015	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
MF	UG/L	PW-05 6-18	C0I020508014	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
MF	UG/L	PW-05 6-18	C0I020508014	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
MF	UG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
MF	UG/L	PW-06 18-30	C0I020508018	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
MF	UG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
MF	UG/L	PW-06 6-18	C0I020508017	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
MF	UG/L	PW-07 0-6	C0I020508019	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
MF	UG/L	PW-07 0-6	C0I020508019	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
MF	UG/L	PW-07 18-30	C0I020508021	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
MF	UG/L	PW-07 18-30	C0I020508021	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
MF	UG/L	PW-07 6-18	C0I020508020	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
MF	UG/L	PW-07 6-18	C0I020508020	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
MF	UG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
MF	UG/L	PW-06 0-6	C0I020508016	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
MF	UG/L	PW-02 6-18	C0I020508005	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
MF	UG/L	PW-01 0-6	C0I020508001	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-01 0-6	C0I020508001	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-01 18-30	C0I020508003	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-01 18-30	C0I020508003	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-01 6-18	C0I020508002	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-01 6-18	C0I020508002	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-02 0-6	C0I020508004	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
MF	UG/L	PW-02 0-6	C0I020508004	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
MF	UG/L	PW-04 18-30	C0I020508012	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
MF	UG/L	PW-02 18-30	C0I020508006	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
MF	UG/L	PW-04 18-30	C0I020508012	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
MF	UG/L	PW-02 6-18	C0I020508005	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
MF	UG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-03 18-30	C0I020508009	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-03 18-30	C0I020508009	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
MF	UG/L	PW-06 18-30	C0I020508018	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
MF	UG/L	PW-02 18-30	C0I020508006	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
MF	UG/L	PW-06 0-6	C0I020508016	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
DOC	MG/L	PW-06 0-6	C0I020508016	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
DOC	MG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/27/2010	09/27/2010	19	0	19
DOC	MG/L	PW-01 0-6	C0I020508001	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
DOC	MG/L	PW-07 0-6	C0I020508019	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
DOC	MG/L	PW-07 6-18	C0I020508020	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
DOC	MG/L	PW-06 18-30	C0I020508018	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
DOC	MG/L	PW-07 18-30	C0I020508021	NM	09/03/2010	09/27/2010	09/27/2010	24	0	24

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
DOC	MG/L	PW-05 6-18	C0I020508014	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
DOC	MG/L	PW-05 18-30	C0I020508015	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
DOC	MG/L	PW-05 0-6	C0I020508013	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
DOC	MG/L	PW-02 0-6	C0I020508004	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
DOC	MG/L	PW-01 18-30	C0I020508003	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
DOC	MG/L	PW-06 6-18	C0I020508017	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
DOC	MG/L	PW-01 6-18	C0I020508002	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
DOC	MG/L	PW-04 6-18	C0I020508011	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
DOC	MG/L	PW-02 18-30	C0I020508006	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
DOC	MG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
DOC	MG/L	PW-04 18-30	C0I020508012	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
DOC	MG/L	PW-03 18-30	C0I020508009	NM	09/07/2010	09/29/2010	09/29/2010	22	0	22
DOC	MG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
DOC	MG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
DOC	MG/L	PW-02 6-18	C0I020508005	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
HARD	MG/L	PW-02 0-6	C0I020508004	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
HARD	MG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
HARD	MG/L	PW-03 18-30	C0I020508009	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
HARD	MG/L	PW-06 6-18	C0I020508017	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
HARD	MG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
HARD	MG/L	PW-01 6-18	C0I020508002	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
HARD	MG/L	PW-02 18-30	C0I020508006	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
HARD	MG/L	PW-01 18-30	C0I020508003	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
HARD	MG/L	PW-01 0-6	C0I020508001	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
HARD	MG/L	PW-02 6-18	C0I020508005	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
HARD	MG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
HARD	MG/L	PW-04 18-30	C0I020508012	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
HARD	MG/L	PW-04 6-18	C0I020508011	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
HARD	MG/L	PW-05 0-6	C0I020508013	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
HARD	MG/L	PW-05 18-30	C0I020508015	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
HARD	MG/L	PW-05 6-18	C0I020508014	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
HARD	MG/L	PW-06 0-6	C0I020508016	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
HARD	MG/L	PW-06 18-30	C0I020508018	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
HARD	MG/L	PW-07 6-18	C0I020508020	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
HARD	MG/L	PW-07 18-30	C0I020508021	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
HARD	MG/L	PW-07 0-6	C0I020508019	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
HARD	MG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
PH	--	PW-04 18-30	C0I020508012	NM	09/08/2010	09/08/2010	09/08/2010	0	0	0
PH	--	PW-01 0-6	C0I020508001	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
PH	--	PW-01 18-30	C0I020508003	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
PH	--	PW-01 6-18	C0I020508002	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
PH	--	PW-02 0-6	C0I020508004	NM	09/02/2010	09/03/2010	09/03/2010	1	0	1
PH	--	PW-02 18-30	C0I020508006	NM	09/02/2010	09/03/2010	09/03/2010	1	0	1
PH	--	PW-02 6-18	C0I020508005	NM	09/02/2010	09/03/2010	09/03/2010	1	0	1
PH	--	PW-03 0-6	C0I020508007	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
PH	--	PW-03 18-30	C0I020508009	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
PH	--	PW-05 0-6	C0I020508013	NM	09/09/2010	09/09/2010	09/09/2010	0	0	0
PH	--	PW-04 0-6	C0I020508010	NM	09/08/2010	09/08/2010	09/08/2010	0	0	0
PH	--	Rinsate Blank	C0I020508022	NM	09/08/2010	09/08/2010	09/08/2010	0	0	0
PH	--	PW-04 6-18	C0I020508011	NM	09/08/2010	09/08/2010	09/08/2010	0	0	0
PH	--	PW-05 18-30	C0I020508015	NM	09/09/2010	09/09/2010	09/09/2010	0	0	0
PH	--	PW-05 6-18	C0I020508014	NM	09/09/2010	09/09/2010	09/09/2010	0	0	0
PH	--	PW-06 0-6	C0I020508016	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0
PH	--	PW-06 18-30	C0I020508018	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
PH	--	PW-06 6-18	C0I020508017	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0
PH	--	PW-07 0-6	C0I020508019	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0
PH	--	PW-07 18-30	C0I020508021	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0
PH	--	PW-07 6-18	C0I020508020	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0
PH	--	PW-03 6-18	C0I020508008	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
OV	UG/L	PW-01 Composite	C0I020508023	NM	09/08/2010	09/13/2010	09/13/2010	5	0	5
OV	UG/L	PW-01 Composite	C0I020508023	SUR	09/08/2010	09/13/2010	09/13/2010	5	0	5
SIM	UG/L	PW-04 0-6	C0I020508010	SUR	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	PW-04 18-30	C0I020508012	SUR	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	PW-03 0-6	C0I020508007	SUR	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	PW-03 18-30	C0I020508009	SUR	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	Rinsate Blank	C0I020508022	SUR	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	PW-03 6-18	C0I020508008	SUR	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	PW-05 18-30	C0I020508015	SUR	09/09/2010	09/13/2010	09/14/2010	4	1	5

C0I020508

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes☐ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client: TETRA Tech	Project Manager: Mike MARTIN	Date: 8/22/10	Chain of Custody Number: 154232
Address: 20251 Century Blvd Suite 200	Telephone Number (Area Code)/Fax Number: 301-528-3022 301-528-3000	Lab Number:	Page 1 of 1
City: Germantown State: MD Zip Code: 20874	Site Contact: Tony Apanavage	Lab Contact:	
Project Name and Location (State): MCR Sed. Sampling	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Matrix: Air, Aqueous, Sed., Soil

Containers & Preservatives: Unpres., H2SO4, HNO3, HCl, NaOH, ZnAc/NaOH

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	2 coolers	PPMetals	PAHs	PCBs	~~[illegible]~~	DOC	Hardness	PH	VOCs	Special Instructions/ Conditions of Receipt
PW-01	8/22/10	0818			X		X						X	X				X	X	X		See Table 1-1
PW-02	↓	0917			↓		↓						X	X				X	X	X		Avg. 9.20
PW-03		1007											X	X	X	X		X	X	X		
PW-04		1344											X	X	X	X		X	X	X		
PW-05		1401											X	X	X	X		X	X	X		
PW-06		1247											X	X				X	X	X		
PW-07	8/22/10	1315			X		X						X	X				X	X	X		
PW-01 Composite																						
Rinsate Blank																						

* See Sample Summary for Lab

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other Standard

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	8/23/10	1530	1. Received By: [signature]	8/23/10	1530
2. Relinquished By: [signature]	8/23/10	1630	2. Received By:		
3. Relinquished By:			3. Received By: [signature]	8/24/10	1015

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

SAMPLE SUMMARY

C0I020508

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L6GC3	001	PW-01 0-6"	09/07/10	08:18
L6GDG	002	PW-01 6-18"	09/07/10	08:18
L6GDH	003	PW-01 18-30"	09/07/10	08:18
L6GFH	004	PW-02 0-6"	09/02/10	09:17
L6GFJ	005	PW-02 6-18"	09/02/10	09:17
L6GFK	006	PW-02 18-30"	09/02/10	09:17
L6G83	007	PW-03 0-6"	09/07/10	
L6G84	008	PW-03 6-18"	09/07/10	
L6G85	009	PW-03 18-30"	09/07/10	
L6HF5	010	PW-04 0-6"	09/08/10	
L6HF8	011	PW-04 6-18"	09/08/10	
L6HGD	012	PW-04 18-30"	09/08/10	
L6HGE	013	PW-05 0-6"	09/09/10	
L6HGF	014	PW-05 6-18"	09/09/10	
L6HGH	015	PW-05 18-30"	09/09/10	
L6HGJ	016	PW-06 0-6"	09/03/10	
L6HGL	017	PW-06 6-18"	09/03/10	
L6HGN	018	PW-06 18-30"	09/03/10	
L6HGV	019	PW-07 0-6"	09/03/10	
L6HGX	020	PW-07 6-18"	09/03/10	
L6HG3	021	PW-07 18-30"	09/03/10	
L6M4H	022	Rinsate Blank	09/08/10	
L6NL7	023	PW-01 Composite	09/08/10	16:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Tetra Tech Middle River, MD

Dissolved Organic Carbon

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	SM20 5310C
Client Name:	Tetra Tech NUS, Inc	**Report ID:**	C0I020508
Matrix:	WATER	**Date/Time Received:**	9/7/2010 10:15:00AM

Client Sample ID	Sample Number	Workorder	Result	Units	Reporting Limit	Prep Date-Analysis Date/Time	QC Batch	RPD / Limit (%)
BLK - C0I270000048B	048 MB	L7JL91AA	ND	mg/L	1.0	9/28/2010 - 9/28/2010 00:00	0270048	
BLK - C0I270000194B	194 MB	L7JME1AA	ND	mg/L	1.0	9/27/2010 - 9/27/2010 00:00	0270194	
BLK - C0I290000055B	055 MB	L7MNL1AA	ND	mg/L	1.0	9/29/2010 - 9/29/2010 00:00	0272055	

Tetra Tech Middle River, MD

Dissolved Organic Carbon

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	SM20 5310C
Client Name:	Tetra Tech NUS, Inc	**Lot Number:**	C0I270000
Matrix:	WATER	**Date/Time Received:**	9/7/2010 10:15:00AM

Client Sample ID	QC Sample Type	Workorder	Recovery (%)	Control Limits (%)	Prep Date - Analysis Date/Time	QC Batch	RPD / Limit (%)
CHECK SAMPLE	LCS	L7JL91AC	95	80 - 120	9/28/2010 - 9/28/2010 00:00	0270048	1.1 / 20
CHECK SAMPLE	LCS	L7JME1AC	93	80 - 120	9/27/2010 - 9/27/2010 00:00	0270194	0.23 / 20
CHECK SAMPLE	LCS	L7MNL1AC	96	80 - 120	9/29/2010 - 9/29/2010 00:00	0272055	0.27 / 20
DUPLICATE CHECK	LCSD	L7JL91AD	94	80 - 120	9/28/2010 - 9/28/2010 00:00	0270048	1.1 / 20
DUPLICATE CHECK	LCSD	L7JME1AD	93	80 - 120	9/27/2010 - 9/27/2010 00:00	0270194	0.23 / 20
DUPLICATE CHECK	LCSD	L7MNL1AD	96	80 - 120	9/29/2010 - 9/29/2010 00:00	0272055	0.27 / 20

Tetra Tech Middle River, MD

pH

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	SM20 9040
Client Name:	Tetra Tech NUS, Inc	**Report ID:**	C0I020508
Matrix:	WATER	**Date/Time Received:**	9/2/2010 10:00:00AM

Client Sample ID	Sample Number	Workorder	Result	Units	Reporting Limit	Prep Date-Analysis Date/Time	QC Batch	RPD / Limit (%)
INTRA-LAB QC	001 DUP	L6GXR1CC	7.8	--		9/3/2010 - 9/3/2010 17:30	0246280	0.0 / 2.0
INTRA-LAB QC	004 DUP	L6M0N1AC	7.6	--		9/9/2010 - 9/9/2010 15:22	0252323	0.0 / 2.0

Tetra Tech Middle River, MD

pH

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	SM20 9040
Client Name:	Tetra Tech NUS, Inc	**Lot Number:**	C0I090000
Matrix:	WATER	**Date/Time Received:**	9/8/2010 9:30:00AM

Client Sample ID	QC Sample Type	Workorder	Recovery (%)	Control Limits (%)	Prep Date - Analysis Date/Time	QC Batch	RPD / Limit (%)
CHECK SAMPLE	LCS	L6QGP1AA	101	99 - 101	9/9/2010 - 9/9/2010 15:12	0252323	
CHECK SAMPLE	LCS	L6JF31AA	100	99 - 101	9/3/2010 - 9/3/2010 17:02	0246280	

Tetra Tech Middle River, MD

pH

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	SW846 9040
Client Name:	Tetra Tech NUS, Inc	**Lot Number:**	C0I080000
Matrix:	WATER	**Date/Time Received:**	9/7/2010 10:15:00AM

Client Sample ID	QC Sample Type	Workorder	Recovery (%)	Control Limits (%)	Prep Date - Analysis Date/Time	QC Batch	RPD / Limit (%)
CHECK SAMPLE	LCS	L6MF91AA	100	99 - 101	9/8/2010 - 9/8/2010 08:36	0251066	0.0 / 2.0
CHECK SAMPLE	LCS	L6M411AA	100	99 - 101	9/8/2010 - 9/8/2010 14:07	0251244	0.14 / 2.0
CHECK SAMPLE	LCS	L6M6R1AA	100	99 - 101	9/8/2010 - 9/8/2010 14:27	0251252	0.0 / 2.0
DUPLICATE CHECK	LCSD	L6MF91AC	100	99 - 101	9/8/2010 - 9/8/2010 08:38	0251066	0.0 / 2.0
DUPLICATE CHECK	LCSD	L6M411AC	100	99 - 101	9/8/2010 - 9/8/2010 14:09	0251244	0.14 / 2.0
DUPLICATE CHECK	LCSD	L6M6R1AC	100	99 - 101	9/8/2010 - 9/8/2010 14:29	0251252	0.0 / 2.0

Test America Pittsburgh
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METHOD DETECTION LIMITS

Client: TETRA TECH

SDG No.: C0I020508

Analyte	Mass	MDL ug/L	CROL ug/L
ICPMS	MDL Date:	6/6/2009	
Antimony	121	0.019	2
Arsenic	75	0.29	1
Beryllium	9	0.037	1
Cadmium	111	0.114	1
Chromium	52	0.54	2
Copper	65	0.24	2
Lead	208	0.019	1
Nickel	60	0.2	1
Selenium	82	0.42	5
Silver	107	0.04	1
Thallium	205	0.015	1
Zinc	66	0.96	5

TestAmerica Pittsburgh

Metals Data Reporting Form

Instrument Detection Limits

Instrument: CVAA **Units:** ppb

Element	Wavelength	Reporting Limit	MDL	Date of MDL
Mercury	253.700	0.2	0.038	3/23/2009

Test America Pittsburgh

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LINEAR RANGES

Client: TETRA TECH **SDG No.:** C0I020508

Contract: **Lab Code:** STL Pitt **Case No.:** **SAS No.:**

Instrument ID: ICPMS **Date:** 8/8/2010

Analyte	LDR ug/L
Antimony	20000
Arsenic	4500
Beryllium	9000
Cadmium	13500
Chromium	13500
Copper	20000
Lead	20000
Nickel	13500
Selenium	4500
Silver	2500
Thallium	13500
Zinc	20000

TestAmerica Pittsburgh

Metals Data Reporting Form

Linear Dynamic Ranges

Instrument: CVAA **Units:** ppb

Element	Wavelength /Mass	Linear Range	Date of Linear Range
Mercury	253.70	10	6/28/2010

Test America Pittsburgh

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ICP-MS Tune

Lab Name: Test America Pittsburgh Contract:

Lab Code: STL Pitt Case No.: NRAS No.: SDG NO.: C0I020508

ICP-MS Instrument ID: ICPMS Date: 9/23/2010

Element - Mass	Avg. Measured Mass (amu)	Avg. Peak Width at 5% Peak Height (amu)	%RSD
Be_9	9.06218	0.71000	0.8000
Mg_24	23.935041	0.61000	0.2030
Mg_25	24.93583	0.59000	2.0520
Mg_26	25.91259	0.59000	2.0950
Co_59	58.903189	0.69000	0.2150
In_113	112.934404	0.69000	2.3470
In_115	114.93387	0.73000	0.9730
Ce_140	139.955441	0.73000	0.4120
Pb_206	206.004457	0.65000	0.8120
Pb_207	207.005876	0.65000	0.6430
Pb_208	208.006639	0.65000	0.8660

Comments:

METHOD BLANK REPORT

DISSOLVED Metals

Client Lot #...: C0I020508 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: C0I090000-358 **Prep Batch #...:** 0252358						
Antimony	ND	2.0	ug/L	SW846 6020	09/09-09/23/10	L6QWF1AK
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	
Arsenic	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWF1AC
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWF1AD
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWF1AE
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	
Chromium	**0.97 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6QWF1AF**
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	
Copper	ND	2.0	ug/L	SW846 6020	09/09-09/23/10	L6QWF1AG
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	
Lead	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWF1AJ
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	
Nickel	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWF1AH
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	
Selenium	ND	5.0	ug/L	SW846 6020	09/09-09/23/10	L6QWF1AL
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWF1AA
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	
Thallium	**0.027 B**	**1.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6QWF1AM**
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	

(Continued on next page)

METHOD BLANK REPORT

DISSOLVED Metals

Client Lot #...: C0I020508 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Zinc	ND	5.0	ug/L	SW846 6020	09/09-09/23/10	L6QWF1AN
		Dilution Factor: 1				
		Analysis Time..: 14:22		Analyst ID.....: 400149	Instrument ID..: ICP	

MB Lot-Sample #: C0I090000-362 **Prep Batch #...:** 0252362

Antimony	ND	2.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AK
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	
Arsenic	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AC
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	
Beryllium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AD
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	
Cadmium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AE
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	
Chromium	**1.2 B**	**2.0**	**ug/L**	**SW846 6020**	**09/09-09/23/10**	**L6QWT1AF**
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	
Copper	ND	2.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AG
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	
Lead	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AJ
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	
Nickel	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AH
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	
Selenium	ND	5.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AL
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	
Silver	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AA
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	

(Continued on next page)

METHOD BLANK REPORT

DISSOLVED Metals

Client Lot #...: C0I020508 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Thallium	ND	1.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AM
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	
Zinc	ND	5.0	ug/L	SW846 6020	09/09-09/23/10	L6QWT1AN
		Dilution Factor: 1				
		Analysis Time..: 16:41		Analyst ID.....: 400149	Instrument ID..: ICP	

MB Lot-Sample #: C0I280000-010 **Prep Batch #...:** 0271010

Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L7KK81AA
		Dilution Factor: 1				
		Analysis Time..: 07:49		Analyst ID.....: 031043	Instrument ID..: HGH	

MB Lot-Sample #: C0I280000-011 **Prep Batch #...:** 0271011

Mercury	ND	0.20	ug/L	SW846 7470A	09/28/10	L7KLA1AA
		Dilution Factor: 1				
		Analysis Time..: 08:35		Analyst ID.....: 031043	Instrument ID..: HGH	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

DISSOLVED Metals

Lot-Sample #...: C0I020508 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Antimony	95	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	95	(80 - 120)	0.33	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Arsenic	91	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	91	(80 - 120)	0.33	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Beryllium	95	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	96	(80 - 120)	0.98	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Cadmium	98	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	99	(80 - 120)	1.6	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Chromium	97	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	100	(80 - 120)	2.9	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Copper	94	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	95	(80 - 120)	0.16	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Lead	101	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	103	(80 - 120)	1.6	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Nickel	92	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	92	(80 - 120)	0.06	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

DISSOLVED Metals

Lot-Sample #...: C0I020508 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Selenium	106	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	104	(80 - 120)	1.4	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Silver	99	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	100	(80 - 120)	1.4	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Thallium	99	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	101	(80 - 120)	2.1	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Zinc	93	(80 - 120)			SW846 6020	09/09-09/23/10	0252358
	94	(80 - 120)	1.2	(0-20)	SW846 6020	09/09-09/23/10	0252358
		Dilution Factor: 1			Analysis Time..: 14:27	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Antimony	93	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	92	(80 - 120)	1.2	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Arsenic	88	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	86	(80 - 120)	2.5	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Beryllium	93	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	94	(80 - 120)	1.1	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Cadmium	96	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	94	(80 - 120)	2.0	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

DISSOLVED Metals

Lot-Sample #...: C0I020508 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Chromium	96	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	96	(80 - 120)	0.26	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Copper	92	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	92	(80 - 120)	0.17	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Lead	100	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	99	(80 - 120)	0.50	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Nickel	90	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	89	(80 - 120)	0.66	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Selenium	106	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	100	(80 - 120)	6.5	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Silver	96	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	96	(80 - 120)	0.54	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Thallium	96	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	96	(80 - 120)	0.14	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					
Zinc	90	(80 - 120)			SW846 6020	09/09-09/23/10	0252362
	90	(80 - 120)	0.93	(0-20)	SW846 6020	09/09-09/23/10	0252362
		Dilution Factor: 1			Analysis Time..: 16:45	Analyst ID.....: 400149	
		Instrument ID..: ICP					

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

DISSOLVED Metals

Lot-Sample #...: C0I020508 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Mercury	92	(80 - 120)			SW846 7470A	09/28/10	0271010
	94	(80 - 120)	1.7	(0-20)	SW846 7470A	09/28/10	0271010
		Dilution Factor: 1			Analysis Time..: 07:51	Analyst ID.....: 031043	
		Instrument ID..: HGH					
Mercury	92	(80 - 120)			SW846 7470A	09/28/10	0271011
	94	(80 - 120)	2.2	(0-20)	SW846 7470A	09/28/10	0271011
		Dilution Factor: 1			Analysis Time..: 08:37	Analyst ID.....: 031043	
		Instrument ID..: HGH					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Dilution Corrected Concentrations

STD1 MET4769-10 INT STD 9/23/2010 12:17:48 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%

STD2X MET4724-10 9/23/2010 12:22:36 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		92.256%	95.080%	92.624%	88.699%	91.066%	93.249%	93.377%	103.296%

STD3X MET4725-10 9/23/2010 12:26:51 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		96.087%	97.568%	98.001%	98.033%	98.781%	99.761%	99.505%	94.158%

ICV1 MET4728-10 9/23/2010 12:31:07 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		95.657%	97.504%	96.744%	94.086%	95.959%	97.613%	98.525%	108.819%

ICB1 9/23/2010 12:38:16 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		102.317%	104.219%	104.094%	104.848%	104.774%	104.341%	104.356%	94.720%

CRI MET4729-10 9/23/2010 12:42:35 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		100.105%	102.022%	100.594%	112.338%	101.277%	100.867%	100.908%	99.831%

ICSA MET4730-10 9/23/2010 12:46:53 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		88.944%	94.077%	93.503%	88.027%	90.558%	96.182%	96.496%	109.836%

ICSAB MET4731-10 9/23/2010 12:51:12 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		88.592%	95.095%	94.539%	89.114%	92.467%	96.948%	97.935%	93.895%

CCV1-1 MET4727-10 9/23/2010 12:58:21 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		93.898%	96.300%	99.696%	96.457%	94.610%	100.852%	101.107%	104.263%

CCB1 9/23/2010 1:02:38 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		103.119%	111.884%	113.102%	106.924%	107.804%	107.306%	107.707%	110.532%

L64N6B 9/23/2010 1:06:56 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		105.040%	107.326%	107.124%	106.495%	106.814%	106.890%	106.718%	115.221%

L64N6C 9/23/2010 1:14:41 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		97.966%	96.597%	96.574%	92.243%	93.736%	100.529%	100.689%	100.462%

L62RXB 9/23/2010 1:18:55 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		98.668%	98.637%	100.029%	99.038%	99.640%	102.671%	102.720%	108.432%

L62RXC 9/23/2010 1:23:10 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		99.933%	97.135%	97.029%	95.378%	95.550%	100.198%	100.020%	106.012%

L6TR2 9/23/2010 1:27:25 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		96.499%	95.782%	94.713%	90.378%	92.006%	98.691%	98.607%	99.884%

L6TR3 9/23/2010 1:31:40 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		98.206%	94.697%	94.516%	93.279%	93.145%	98.542%	98.607%	104.458%

L6TR8 9/23/2010 1:35:56 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		94.352%	92.864%	92.046%	88.121%	89.196%	96.333%	96.483%	98.521%

L6TTA 9/23/2010 1:40:12 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		93.308%	90.833%	90.518%	86.449%	87.946%	94.763%	95.107%	96.992%

L6TTAP5 9/23/2010 1:44:29 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		94.907%	91.661%	91.767%	90.422%	90.401%	95.793%	95.300%	99.397%

L6TTAS 9/23/2010 1:48:46 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		91.252%	89.666%	88.066%	84.606%	86.030%	93.218%	93.342%	96.009%

CCV1-2 9/23/2010 1:55:54 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		93.349%	88.375%	88.748%	80.728%	84.590%	90.661%	91.030%	91.539%

CCB2 9/23/2010 2:03:04 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		100.873%	97.560%	96.514%	96.709%	97.060%	97.990%	97.607%	100.935%

L6TTAD 9/23/2010 2:07:23 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		92.389%	89.695%	87.986%	84.444%	85.510%	92.354%	92.199%	94.812%

L6TTE 9/23/2010 2:11:38 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		92.123%	89.186%	87.324%	83.817%	84.715%	91.500%	91.700%	93.761%

L6TTF 9/23/2010 2:15:53 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		91.095%	87.035%	85.349%	82.706%	83.809%	90.804%	90.891%	92.798%

L6QWFBF 9/23/2010 2:22:59 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		95.271%	102.520%	94.933%	90.347%	90.617%	93.601%	93.724%	103.042%

L6QWFCF 9/23/2010 2:27:15 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		92.960%	88.339%	87.168%	86.372%	85.789%	91.946%	92.092%	99.595%

L6QWFLF 9/23/2010 2:31:30 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		91.657%	85.648%	85.196%	84.523%	84.411%	91.164%	91.242%	98.084%

L6GC3F 9/23/2010 2:40:05 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		82.758%	82.616%	80.750%	76.089%	78.395%	87.199%	87.819%	87.931%

L6GC3P5F 9/23/2010 2:44:21 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		91.301%	86.897%	86.319%	84.373%	85.437%	91.257%	91.082%	90.603%

L6GDGF 9/23/2010 2:48:38 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		85.826%	83.065%	81.365%	77.436%	79.257%	86.971%	87.209%	88.150%

L6GDHF 9/23/2010 2:52:54 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		84.962%	81.341%	80.014%	76.624%	78.137%	86.595%	86.787%	88.296%

CCV1-3 9/23/2010 3:00:03 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		88.574%	85.869%	86.419%	78.848%	82.383%	88.972%	88.979%	89.580%

CCB3 9/23/2010 3:07:14 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		101.584%	95.937%	94.428%	94.965%	94.644%	95.781%	95.633%	98.422%

L6GFHF 9/23/2010 3:11:32 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		83.143%	84.387%	81.702%	75.799%	78.670%	87.082%	87.281%	85.089%

L6GFJF 9/23/2010 3:15:50 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		85.128%	85.156%	82.657%	76.549%	79.227%	88.771%	88.315%	85.927%

L6GFKF 9/23/2010 3:20:08 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		82.431%	82.395%	80.139%	74.134%	77.305%	86.982%	86.912%	84.200%

L6HF5F 9/23/2010 3:24:24 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		83.561%	82.600%	80.693%	75.457%	78.376%	87.128%	86.737%	85.152%

L6HF8F 9/23/2010 3:28:39 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		81.124%	81.505%	79.653%	74.353%	76.914%	85.535%	85.389%	83.705%

L6HGDF 9/23/2010 3:32:54 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		81.525%	82.171%	81.085%	75.241%	78.071%	86.324%	86.267%	85.286%

L6HGEF 9/23/2010 3:37:10 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		84.517%	83.700%	82.866%	76.657%	79.111%	87.169%	87.376%	86.550%

L6HGFF 9/23/2010 3:41:26 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		83.446%	82.185%	81.169%	75.501%	77.972%	85.882%	85.768%	85.621%

L6HGHF 9/23/2010 3:45:43 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		86.085%	82.336%	80.565%	75.254%	77.262%	83.979%	83.995%	83.950%

L6HGJF 9/23/2010 3:49:59 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		85.113%	82.774%	81.369%	75.348%	77.655%	85.044%	85.182%	83.876%

CCV1-4 9/23/2010 3:57:08 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		91.129%	88.348%	89.174%	79.619%	82.560%	87.413%	87.223%	91.089%

CCB4 9/23/2010 4:04:18 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		100.018%	96.431%	95.027%	94.155%	93.283%	92.006%	91.884%	96.505%

L6HGLF 9/23/2010 4:08:37 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		84.634%	83.822%	82.444%	75.181%	77.973%	83.628%	83.909%	82.719%

L6HGNF 9/23/2010 4:12:54 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		82.129%	82.252%	81.007%	74.542%	76.737%	84.057%	83.973%	82.953%

L6HGVF 9/23/2010 4:17:12 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		85.980%	82.948%	80.836%	74.832%	76.917%	83.345%	82.846%	82.454%

L6HGXF 9/23/2010 4:21:30 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		84.190%	81.940%	79.772%	73.891%	76.148%	82.437%	81.877%	81.508%

L6G83F 9/23/2010 4:25:48 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		84.524%	82.045%	80.542%	74.450%	76.968%	83.033%	82.715%	82.238%

L6G84F 9/23/2010 4:30:04 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		82.993%	80.838%	78.993%	73.277%	75.334%	81.810%	81.249%	80.908%

L6G85F 9/23/2010 4:34:19 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		84.321%	81.289%	78.673%	72.802%	75.188%	80.057%	80.034%	80.002%

L6QWTBF 9/23/2010 4:41:27 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		95.382%	100.666%	96.578%	86.588%	85.466%	85.404%	85.280%	94.449%

L6QWTCF 9/23/2010 4:45:42 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		93.467%	86.892%	85.208%	83.767%	82.499%	85.459%	84.876%	92.642%

L6QWTLF 9/23/2010 4:49:58 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		94.357%	85.531%	84.278%	82.753%	81.473%	84.612%	84.253%	91.706%

CCV1-5 9/23/2010 4:57:06 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		88.007%	84.886%	81.932%	73.638%	78.337%	81.643%	81.624%	85.916%

CCB5 9/23/2010 5:04:17 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		96.542%	92.840%	89.757%	88.946%	87.771%	85.849%	85.597%	90.348%

L6HG3F 9/23/2010 5:11:27 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		84.330%	82.440%	79.036%	72.434%	74.390%	79.437%	79.057%	78.471%

L6HG3P5F 9/23/2010 5:15:44 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		91.675%	88.511%	86.476%	82.332%	83.213%	86.194%	85.902%	88.580%

L6M4HF 9/23/2010 5:20:01 PM

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		94.353%	85.590%	83.678%	82.278%	81.157%	83.378%	83.115%	90.422%

CRI-2 9/23/2010 5:27:55 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		92.261%	88.014%	85.227%	84.560%	84.146%	84.029%	83.625%	87.851%

CCV1-6 9/23/2010 5:32:12 PM QC Status: PASS (Initial: FAIL)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		84.944%	84.282%	80.776%	73.947%	77.302%	82.463%	82.795%	85.544%

CCB6 9/23/2010 5:39:22 PM QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	45Sc	89Y	103Rh	115In	159Tb	165Ho	209Bi
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
x		95.588%	91.627%	89.762%	88.737%	88.308%	86.213%	86.361%	91.612%

Test America Pittsburgh

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH **SDG No.:** C0I020508

Initial Calibration Source: Inorganic Ventures **Instrument:** ICPMS

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV1			**ICV1 MET4728-10**						
	Antimony	83.19	80.0	104.0	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Arsenic	81.69	80.0	102.1	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Beryllium	78.83	80.0	98.5	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Cadmium	81.29	80.0	101.6	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Chromium	81.35	80.0	101.7	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Copper	82.49	80.0	103.1	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Lead	80.13	80.0	100.2	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Nickel	81.43	80.0	101.8	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Selenium	83.64	80.0	104.6	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Silver	81.25	80.0	101.6	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Thallium	83.02	80.0	103.8	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
	Zinc	83.63	80.0	104.5	90.0 - 110.0	MS	9/23/2010	12:31	M00923A, gen
CCV1			**CCV1-1 MET4727-10**						
	Antimony	96.78	100.0	96.8	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Arsenic	96.84	100.0	96.8	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Beryllium	97.26	100.0	97.3	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Cadmium	99.32	100.0	99.3	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Chromium	101.10	100.0	101.1	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Copper	98.89	100.0	98.9	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Lead	102.97	100.0	103.0	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Nickel	98.70	100.0	98.7	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Selenium	97.86	100.0	97.9	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Silver	98.13	100.0	98.1	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Thallium	102.77	100.0	102.8	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen
	Zinc	100.47	100.0	100.5	90.0 - 110.0	MS	9/23/2010	12:58	M00923A, gen

Test America Pittsburgh
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH **SDG No.:** C0I020508

Initial Calibration Source: Inorganic Ventures **Instrument:** ICPMS

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV2			**CCV1-2**						
	Antimony	95.87	100.0	95.9	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Arsenic	96.33	100.0	96.3	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Beryllium	96.30	100.0	96.3	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Cadmium	101.53	100.0	101.5	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Chromium	99.97	100.0	100.0	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Copper	97.51	100.0	97.5	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Lead	107.03	100.0	107.0	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Nickel	96.82	100.0	96.8	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Selenium	99.28	100.0	99.3	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Silver	102.30	100.0	102.3	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Thallium	105.63	100.0	105.6	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
	Zinc	99.83	100.0	99.8	90.0 - 110.0	MS	9/23/2010	13:55	M00923A, gen
CCV3			**CCV1-3**						
	Antimony	95.78	100.0	95.8	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Arsenic	97.04	100.0	97.0	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Beryllium	99.16	100.0	99.2	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Cadmium	101.53	100.0	101.5	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Chromium	100.51	100.0	100.5	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Copper	97.07	100.0	97.1	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Lead	106.33	100.0	106.3	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Nickel	97.46	100.0	97.5	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Selenium	99.70	100.0	99.7	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Silver	102.90	100.0	102.9	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Thallium	105.20	100.0	105.2	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen
	Zinc	98.76	100.0	98.8	90.0 - 110.0	MS	9/23/2010	15:00	M00923A, gen

Test America Pittsburgh

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH **SDG No.:** C0I020508

Initial Calibration Source: Inorganic Ventures **Instrument:** ICPMS

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV4			**CCV1-4**						
	Antimony	94.07	100.0	94.1	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Arsenic	93.66	100.0	93.7	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Beryllium	97.61	100.0	97.6	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Cadmium	99.05	100.0	99.0	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Chromium	96.85	100.0	96.8	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Copper	96.28	100.0	96.3	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Lead	100.87	100.0	100.9	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Nickel	95.04	100.0	95.0	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Selenium	95.07	100.0	95.1	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Silver	100.75	100.0	100.8	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Thallium	100.50	100.0	100.5	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
	Zinc	97.07	100.0	97.1	90.0 - 110.0	MS	9/23/2010	15:57	M00923A, gen
CCV5			**CCV1-5**						
	Antimony	92.30	100.0	92.3	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Arsenic	95.16	100.0	95.2	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Beryllium	97.13	100.0	97.1	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Cadmium	97.45	100.0	97.4	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Chromium	95.57	100.0	95.6	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Copper	94.02	100.0	94.0	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Lead	99.42	100.0	99.4	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Nickel	92.65	100.0	92.6	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Selenium	98.91	100.0	98.9	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Silver	101.17	100.0	101.2	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Thallium	99.02	100.0	99.0	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen
	Zinc	96.35	100.0	96.4	90.0 - 110.0	MS	9/23/2010	16:57	M00923A, gen

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH **SDG No.:** C0I020508

Initial Calibration Source: Inorganic Ventures **Instrument:** ICPMS

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV6			**CCV1-6**						
	Antimony	92.83	100.0	92.8	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Arsenic	95.00	100.0	95.0	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Beryllium	95.64	100.0	95.6	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Cadmium	97.17	100.0	97.2	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Chromium	94.24	100.0	94.2	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Copper	93.25	100.0	93.2	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Lead	98.71	100.0	98.7	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Nickel	93.78	100.0	93.8	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Selenium	98.88	100.0	98.9	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Silver	99.85	100.0	99.8	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Thallium	98.89	100.0	98.9	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen
	Zinc	95.12	100.0	95.1	90.0 - 110.0	MS	9/23/2010	17:32	M00923A, gen

Test America Pittsburgh
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CRDL STANDARD FOR AA & ICP

Client: TETRA TECH **SDG No.:** C0I020508

ICPMS Standard Source: Inorganic Ventures

Instrument: ICPMS

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL1		**CRI MET4729-10**							
	Antimony	1.89	2.0	94.5	50 - 150	MS	9/23/2010	12:42	M00923A,
	Arsenic	1.16	1.0	116.0	50 - 150	MS	9/23/2010	12:42	M00923A,
	Beryllium	1.04	1.0	104.0	50 - 150	MS	9/23/2010	12:42	M00923A,
	Cadmium	1.00	1.0	100.0	50 - 150	MS	9/23/2010	12:42	M00923A,
	Chromium	2.00	2.0	100.0	50 - 150	MS	9/23/2010	12:42	M00923A,
	Copper	2.00	2.0	100.0	50 - 150	MS	9/23/2010	12:42	M00923A,
	Lead	1.12	1.0	112.0	50 - 150	MS	9/23/2010	12:42	M00923A,
	Nickel	1.13	1.0	113.0	50 - 150	MS	9/23/2010	12:42	M00923A,
	Selenium	5.62	5.0	112.4	50 - 150	MS	9/23/2010	12:42	M00923A,
	Silver	1.33	1.0	133.0	50 - 150	MS	9/23/2010	12:42	M00923A,
	Thallium	1.15	1.0	115.0	50 - 150	MS	9/23/2010	12:42	M00923A,
	Zinc	5.15	5.0	103.0	50 - 150	MS	9/23/2010	12:42	M00923A,

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: TETRA TECH **SDG No.:** C0I020508

Instrument: ICPMS

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	MDL	CRQL	M	Analysis Date	Analysis Time	Run
ICB1			**ICB1**							
	Antimony	0.02	+/-2.00	U	0.02	2.00	MS	9/23/2010	12:38	M00923A, ge
	Arsenic	0.02	+/-1.00	U	0.29	1.00	MS	9/23/2010	12:38	M00923A, ge
	Beryllium	0.04	+/-1.00	J	0.04	1.00	MS	9/23/2010	12:38	M00923A, ge
	Cadmium	0.01	+/-1.00	U	0.11	1.00	MS	9/23/2010	12:38	M00923A, ge
	Chromium	-0.02	+/-2.00	U	0.54	2.00	MS	9/23/2010	12:38	M00923A, ge
	Copper	0.00	+/-2.00	U	0.24	2.00	MS	9/23/2010	12:38	M00923A, ge
	Lead	-0.02	+/-1.00	U	0.02	1.00	MS	9/23/2010	12:38	M00923A, ge
	Nickel	-0.02	+/-1.00	U	0.17	1.00	MS	9/23/2010	12:38	M00923A, ge
	Selenium	0.00	+/-5.00	U	0.42	5.00	MS	9/23/2010	12:38	M00923A, ge
	Silver	0.18	+/-1.00	J	0.04	1.00	MS	9/23/2010	12:38	M00923A, ge
	Thallium	0.00	+/-1.00	U	0.02	1.00	MS	9/23/2010	12:38	M00923A, ge
	Zinc	-0.24	+/-5.00	U	0.96	5.00	MS	9/23/2010	12:38	M00923A, ge
CCB1			**CCB1**							
	Antimony	0.86	+/-2.00	J	0.02	2.00	MS	9/23/2010	13:02	M00923A, ge
	Arsenic	0.03	+/-1.00	U	0.29	1.00	MS	9/23/2010	13:02	M00923A, ge
	Beryllium	0.03	+/-1.00	U	0.04	1.00	MS	9/23/2010	13:02	M00923A, ge
	Cadmium	0.06	+/-1.00	U	0.11	1.00	MS	9/23/2010	13:02	M00923A, ge
	Chromium	0.00	+/-2.00	U	0.54	2.00	MS	9/23/2010	13:02	M00923A, ge
	Copper	-0.06	+/-2.00	U	0.24	2.00	MS	9/23/2010	13:02	M00923A, ge
	Lead	0.00	+/-1.00	U	0.02	1.00	MS	9/23/2010	13:02	M00923A, ge
	Nickel	-0.04	+/-1.00	U	0.17	1.00	MS	9/23/2010	13:02	M00923A, ge
	Selenium	0.11	+/-5.00	U	0.42	5.00	MS	9/23/2010	13:02	M00923A, ge
	Silver	0.06	+/-1.00	J	0.04	1.00	MS	9/23/2010	13:02	M00923A, ge
	Thallium	0.04	+/-1.00	J	0.02	1.00	MS	9/23/2010	13:02	M00923A, ge
	Zinc	-0.28	+/-5.00	U	0.96	5.00	MS	9/23/2010	13:02	M00923A, ge

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: TETRA TECH **SDG No.:** C0I020508

Instrument: ICPMS

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	MDL	CRQL	M	Analysis Date	Analysis Time	Run
CCB2			CCB2							
	Antimony	0.27	+/-2.00	J	0.02	2.00	MS	9/23/2010	14:03	M00923A, ge
	Arsenic	-0.06	+/-1.00	U	0.29	1.00	MS	9/23/2010	14:03	M00923A, ge
	Beryllium	0.04	+/-1.00	U	0.04	1.00	MS	9/23/2010	14:03	M00923A, ge
	Cadmium	0.06	+/-1.00	U	0.11	1.00	MS	9/23/2010	14:03	M00923A, ge
	Chromium	0.43	+/-2.00	U	0.54	2.00	MS	9/23/2010	14:03	M00923A, ge
	Copper	-0.05	+/-2.00	U	0.24	2.00	MS	9/23/2010	14:03	M00923A, ge
	Lead	0.03	+/-1.00	J	0.02	1.00	MS	9/23/2010	14:03	M00923A, ge
	Nickel	0.01	+/-1.00	U	0.17	1.00	MS	9/23/2010	14:03	M00923A, ge
	Selenium	0.30	+/-5.00	U	0.42	5.00	MS	9/23/2010	14:03	M00923A, ge
	Silver	0.01	+/-1.00	U	0.04	1.00	MS	9/23/2010	14:03	M00923A, ge
	Thallium	0.06	+/-1.00	J	0.02	1.00	MS	9/23/2010	14:03	M00923A, ge
	Zinc	-0.20	+/-5.00	U	0.96	5.00	MS	9/23/2010	14:03	M00923A, ge
CCB3			CCB3							
	Antimony	0.26	+/-2.00	J	0.02	2.00	MS	9/23/2010	15:07	M00923A, ge
	Arsenic	-0.04	+/-1.00	U	0.29	1.00	MS	9/23/2010	15:07	M00923A, ge
	Beryllium	0.06	+/-1.00	J	0.04	1.00	MS	9/23/2010	15:07	M00923A, ge
	Cadmium	0.01	+/-1.00	U	0.11	1.00	MS	9/23/2010	15:07	M00923A, ge
	Chromium	0.44	+/-2.00	U	0.54	2.00	MS	9/23/2010	15:07	M00923A, ge
	Copper	-0.04	+/-2.00	U	0.24	2.00	MS	9/23/2010	15:07	M00923A, ge
	Lead	0.04	+/-1.00	J	0.02	1.00	MS	9/23/2010	15:07	M00923A, ge
	Nickel	-0.04	+/-1.00	U	0.17	1.00	MS	9/23/2010	15:07	M00923A, ge
	Selenium	0.27	+/-5.00	U	0.42	5.00	MS	9/23/2010	15:07	M00923A, ge
	Silver	-0.01	+/-1.00	U	0.04	1.00	MS	9/23/2010	15:07	M00923A, ge
	Thallium	0.06	+/-1.00	J	0.02	1.00	MS	9/23/2010	15:07	M00923A, ge
	Zinc	-0.25	+/-5.00	U	0.96	5.00	MS	9/23/2010	15:07	M00923A, ge

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: TETRA TECH **SDG No.:** C0I020508

Instrument: ICPMS

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	MDL	CRQL	M	Analysis Date	Analysis Time	Run
CCB4			CCB4							
	Antimony	0.28	+/-2.00	J	0.02	2.00	MS	9/23/2010	16:04	M00923A, ge
	Arsenic	0.19	+/-1.00	U	0.29	1.00	MS	9/23/2010	16:04	M00923A, ge
	Beryllium	0.02	+/-1.00	U	0.04	1.00	MS	9/23/2010	16:04	M00923A, ge
	Cadmium	0.01	+/-1.00	U	0.11	1.00	MS	9/23/2010	16:04	M00923A, ge
	Chromium	0.66	+/-2.00	J	0.54	2.00	MS	9/23/2010	16:04	M00923A, ge
	Copper	0.03	+/-2.00	U	0.24	2.00	MS	9/23/2010	16:04	M00923A, ge
	Lead	0.04	+/-1.00	J	0.02	1.00	MS	9/23/2010	16:04	M00923A, ge
	Nickel	0.01	+/-1.00	U	0.17	1.00	MS	9/23/2010	16:04	M00923A, ge
	Selenium	0.54	+/-5.00	J	0.42	5.00	MS	9/23/2010	16:04	M00923A, ge
	Silver	-0.01	+/-1.00	U	0.04	1.00	MS	9/23/2010	16:04	M00923A, ge
	Thallium	0.03	+/-1.00	J	0.02	1.00	MS	9/23/2010	16:04	M00923A, ge
	Zinc	-0.19	+/-5.00	U	0.96	5.00	MS	9/23/2010	16:04	M00923A, ge
CCB5			CCB5							
	Antimony	0.35	+/-2.00	J	0.02	2.00	MS	9/23/2010	17:04	M00923A, ge
	Arsenic	0.14	+/-1.00	U	0.29	1.00	MS	9/23/2010	17:04	M00923A, ge
	Beryllium	0.02	+/-1.00	U	0.04	1.00	MS	9/23/2010	17:04	M00923A, ge
	Cadmium	0.00	+/-1.00	U	0.11	1.00	MS	9/23/2010	17:04	M00923A, ge
	Chromium	0.69	+/-2.00	J	0.54	2.00	MS	9/23/2010	17:04	M00923A, ge
	Copper	-0.01	+/-2.00	U	0.24	2.00	MS	9/23/2010	17:04	M00923A, ge
	Lead	0.03	+/-1.00	J	0.02	1.00	MS	9/23/2010	17:04	M00923A, ge
	Nickel	0.10	+/-1.00	U	0.17	1.00	MS	9/23/2010	17:04	M00923A, ge
	Selenium	0.36	+/-5.00	U	0.42	5.00	MS	9/23/2010	17:04	M00923A, ge
	Silver	0.01	+/-1.00	U	0.04	1.00	MS	9/23/2010	17:04	M00923A, ge
	Thallium	0.09	+/-1.00	J	0.02	1.00	MS	9/23/2010	17:04	M00923A, ge
	Zinc	-0.21	+/-5.00	U	0.96	5.00	MS	9/23/2010	17:04	M00923A, ge

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: TETRA TECH

SDG No.: C0I020508

Instrument: ICPMS

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	MDL	CRQL	M	Analysis Date	Analysis Time	Run
CCB6			CCB6							
	Antimony	0.32	+/-2.00	J	0.02	2.00	MS	9/23/2010	17:39	M00923A, ge
	Arsenic	0.28	+/-1.00	U	0.29	1.00	MS	9/23/2010	17:39	M00923A, ge
	Beryllium	0.02	+/-1.00	U	0.04	1.00	MS	9/23/2010	17:39	M00923A, ge
	Cadmium	0.02	+/-1.00	U	0.11	1.00	MS	9/23/2010	17:39	M00923A, ge
	Chromium	0.57	+/-2.00	J	0.54	2.00	MS	9/23/2010	17:39	M00923A, ge
	Copper	-0.02	+/-2.00	U	0.24	2.00	MS	9/23/2010	17:39	M00923A, ge
	Lead	0.05	+/-1.00	J	0.02	1.00	MS	9/23/2010	17:39	M00923A, ge
	Nickel	0.20	+/-1.00	J	0.17	1.00	MS	9/23/2010	17:39	M00923A, ge
	Selenium	0.27	+/-5.00	U	0.42	5.00	MS	9/23/2010	17:39	M00923A, ge
	Silver	0.01	+/-1.00	U	0.04	1.00	MS	9/23/2010	17:39	M00923A, ge
	Thallium	0.04	+/-1.00	J	0.02	1.00	MS	9/23/2010	17:39	M00923A, ge
	Zinc	-0.17	+/-5.00	U	0.96	5.00	MS	9/23/2010	17:39	M00923A, ge

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INTERFERENCE CHECK SAMPLE

Client: TETRA TECH **SDG No.:** C0I020508

ICS Source: Inorganic Ventures **Instrument ID:** ICPMS

Sample ID Analyte	WL/Mass	Result ug/L	Qual	True Value ug/L	% Recovery	Acceptance Window	Analysis Date	Analysis Time	Run Number
ICSA MET4730-10									
Antimony	121Sb	0				-6.0 - 6.0	9/23/2010	12:46	M00923A, g
Arsenic	75As	0				-3.0 - 3.0	9/23/2010	12:46	M00923A, g
Beryllium	9Be	0				-3.0 - 3.0	9/23/2010	12:46	M00923A, g
Cadmium	111Cd	1				-3.0 - 3.0	9/23/2010	12:46	M00923A, g
Chromium	52Cr	0				-6.0 - 6.0	9/23/2010	12:46	M00923A, g
Copper	65Cu	2				-6.0 - 6.0	9/23/2010	12:46	M00923A, g
Lead	208Pb	0				-3.0 - 3.0	9/23/2010	12:46	M00923A, g
Nickel	60Ni	1				-3.0 - 3.0	9/23/2010	12:46	M00923A, g
Selenium	82Se	0				-15.0 - 15.0	9/23/2010	12:46	M00923A, g
Silver	107Ag	2				-3.0 - 3.0	9/23/2010	12:46	M00923A, g
Thallium	205Tl	0				-3.0 - 3.0	9/23/2010	12:46	M00923A, g
Zinc	66Zn	4				-15.0 - 15.0	9/23/2010	12:46	M00923A, g
ICSAB MET4731-10									
Antimony	121Sb	20.21		20	101.0	80 - 120%	9/23/2010	12:51	M00923A, g
Arsenic	75As	20.36		20	101.8	80 - 120%	9/23/2010	12:51	M00923A, g
Beryllium	9Be	19.86		20	99.3	80 - 120%	9/23/2010	12:51	M00923A, g
Cadmium	111Cd	20.23		20	101.2	80 - 120%	9/23/2010	12:51	M00923A, g
Chromium	52Cr	19.11		20	95.6	80 - 120%	9/23/2010	12:51	M00923A, g
Copper	65Cu	21.12		20	105.6	80 - 120%	9/23/2010	12:51	M00923A, g
Lead	208Pb	22.26		20	111.3	80 - 120%	9/23/2010	12:51	M00923A, g
Nickel	60Ni	20.05		20	100.2	80 - 120%	9/23/2010	12:51	M00923A, g
Selenium	82Se	50.07		50	100.1	80 - 120%	9/23/2010	12:51	M00923A, g
Silver	107Ag	21.64		20	108.2	80 - 120%	9/23/2010	12:51	M00923A, g
Thallium	205Tl	21.56		20	107.8	80 - 120%	9/23/2010	12:51	M00923A, g
Zinc	66Zn	24.61		25	98.4	80 - 120%	9/23/2010	12:51	M00923A, g

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SERIAL DILUTION SAMPLE SUMMARY

Client: TETRA TECH **SDG No.:** C0I020508

Sample ID: L6GC3F **Serial Dilution ID:** PW-01 0-6"LF **Client ID:** PW-01 0-6"LF

Batch Number: **Prep Date:** **Matrix:** WATER

Initial Wt/Vol: 50.00 **Final Vol:** 50.0

% Solids: 0.0 **Instrument:** ICPMS

Analyte	Init Dil	Initial Result ug/L	C	Init Date/Time	SD Dil	Serial Result ug/L	C	SD Date/Time	% Diff	Qual	SD Limits
Antimony	1	0.745	J	9/23/2010 14:40	5	0.745	J	9/23/2010 14:44	0.0		10.00 %
Arsenic	1	1.225		9/23/2010 14:40	5	1.454	U	9/23/2010 14:44	100.0		10.00 %
Beryllium	1	0.057	J	9/23/2010 14:40	5	0.184	U	9/23/2010 14:44	100.0		10.00 %
Cadmium	1	10.000		9/23/2010 14:40	5	9.855		9/23/2010 14:44	1.4		10.00 %
Chromium	1	6.273		9/23/2010 14:40	5	9.585	J	9/23/2010 14:44	52.8		10.00 %
Copper	1	4.658		9/23/2010 14:40	5	4.130	J	9/23/2010 14:44	11.3		10.00 %
Lead	1	1.167		9/23/2010 14:40	5	1.145	J	9/23/2010 14:44	1.9		10.00 %
Nickel	1	6.820		9/23/2010 14:40	5	7.380		9/23/2010 14:44	8.2		10.00 %
Selenium	1	2.589	J	9/23/2010 14:40	5	3.410	J	9/23/2010 14:44	31.7		10.00 %
Silver	1	0.036	U	9/23/2010 14:40	5	0.181	U	9/23/2010 14:44			10.00 %
Thallium	1	0.148	J	9/23/2010 14:40	5	0.400	J	9/23/2010 14:44	170.3		10.00 %
Zinc	1	38.890		9/23/2010 14:40	5	95.300		9/23/2010 14:44	145.1		10.00 %

All <50x MDL

Test America Pittsburgh

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SERIAL DILUTION SAMPLE SUMMARY

Client: TETRA TECH **SDG No.:** C0I020508

Sample ID: L6HG3F **Serial Dilution ID:** PW-07 18-30"LF **Client ID:** PW-07 18-30"LF

Batch Number: **Prep Date:** **Matrix:** WATER

Initial Wt/Vol: 50.00 **Final Vol:** 50.0

% Solids: 0.0 **Instrument:** ICPMS

Analyte	Init Dil	Initial Result ug/L	C	Init Date/Time	SD Dil	Serial Result ug/L	C	SD Date/Time	% Diff	Qual	SD Limits
Antimony	1	1.474	J	9/23/2010 17:11	5	0.955	J	9/23/2010 17:15	35.2	E	10.00 %
Arsenic	1	6.416		9/23/2010 17:11	5	4.105	J	9/23/2010 17:15	36.0		10.00 %
Beryllium	1	0.049	J	9/23/2010 17:11	5	0.184	U	9/23/2010 17:15	100.0		10.00 %
Cadmium	1	0.114	U	9/23/2010 17:11	5	0.572	U	9/23/2010 17:15			10.00 %
Chromium	1	13.650		9/23/2010 17:11	5	18.255		9/23/2010 17:15	33.7		10.00 %
Copper	1	1.610	J	9/23/2010 17:11	5	1.700	J	9/23/2010 17:15	5.6		10.00 %
Lead	1	0.188	J	9/23/2010 17:11	5	0.096	U	9/23/2010 17:15	100.0		10.00 %
Nickel	1	1.078		9/23/2010 17:11	5	1.180	J	9/23/2010 17:15	9.5		10.00 %
Selenium	1	5.706		9/23/2010 17:11	5	5.505	J	9/23/2010 17:15	3.5		10.00 %
Silver	1	0.036	U	9/23/2010 17:11	5	0.181	U	9/23/2010 17:15			10.00 %
Thallium	1	0.039	J	9/23/2010 17:11	5	0.076	U	9/23/2010 17:15	100.0		10.00 %
Zinc	1	2.427	J	9/23/2010 17:11	5	4.805	U	9/23/2010 17:15	100.0		10.00 %

TestAmerica Pittsburgh

Metals Data Reporting Form

Initial Calibration Verification Standar

Instrument: CVAA **Units:** ug/L

Chart Number: G00928A.PRN **Acceptable Range:** 90% - 110%

Standard Source: Ultra **Standard ID:** MET4985-10

Element	WL/ Mass	True Conc	ICV6-1 9/28/2010 7:41 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	2.5	2.40	**96.0**								

5.11.0 *Form 2A Equivalent*

TestAmerica Pittsburgh

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA **Units:** ug/L

Chart Number: G00928A.PRN **Acceptable Range:** 90% - 110%

Standard Source: Inorganic Ventures **Standard ID:** MET4987-10

Element	WL/ Mass	True Conc	CCV6-1 9/28/2010 7:45 AM Found	% Rec	CCV6-2 9/28/2010 8:06 AM Found	% Rec	CCV6-3 9/28/2010 8:26 AM Found	% Rec	CCV6-4 9/28/2010 8:47 AM Found	% Rec	Found	% Rec
Mercury	253.7	5.0	4.91	**98.2**	4.93	**98.6**	4.78	**95.6**	4.73	**94.6**		

TestAmerica Pittsburgh

Metals Data Reporting Form

Contract Required Detection Limit Standard

Instrument: CVAA **Units:** ug/L

Chart Number: G00928A.PRN **Acceptable Range:** 50% - 150%

Standard Source: Ultra **Standard ID:** MET4986-10

Element	WL/ Mass	True Conc	CRA/RLV 9/28/2010 7:44 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	0.2	0.18	**91.5**								

5.11.0 *Form 2B Equivalent*

TestAmerica Pittsburgh

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: G00928A.PRN

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	ICB1 9/28/2010 7:42 AM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	0.2	0.0	U								

5.11.0

U Result is less than the IDL

B Result is between IDL and RL

Form 3 Equivalent

TestAmerica Pittsburgh

Metals Data Reporting Form

Continuing Calibration Blank Result

Instrument: CVAA **Units:** ug/L

Chart Number: G00928A.PRN

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB1 9/28/2010 7:47 AM Found	Q	CCB2 9/28/2010 8:08 AM Found	Q	CCB3 9/28/2010 8:28 AM Found	Q	CCB4 9/28/2010 8:49 AM Found	Q	Found	Q
Mercury	253.7	0.2	0.0	U	0.0	U	0.0	U	0.0	U		

5.11.0

U Result is less than the IDL

B Result is between IDL and RL

Form 3 Equivalent

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. MARTIN**	**DATE:**	**NOVEMBER 2, 2010**
FROM:	**A. COGNETTI**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- VOC/PAH/PCB**
MIDDLE RIVER CENTER
FULL REVIEW
SAMPLE DELIVERY GROUP (SDG) - C0I020508

SAMPLES: 1/Pore Water/VOC

PW-01 Composite

10/Pore Water/PAH/PCB

PW-03 0-6"	PW-03 18-30"	PW-03 6-18"	PW-04 0-6"	PW-04 18-30"
PW-04 6-18"	PW-05 0-6"	PW-05 18-30"	PW-05 6-18"	Rinsate Blank

Overview

The sample set for Middle River Center, SDG C0I020508, consists of one (1) pore water environmental sample analyzed for volatile organic compounds (VOC). Ten (10) environmental pore water samples were analyzed for polycyclic aromatic hydrocarbons (PAH), plus 1,4-dioxane, and polychlorinated biphenyls (PCBs). There are no field duplicate pairs contained within this SDG.

The samples were collected on August 22, 2010 and analyzed by Test America. VOC analysis followed SW-846 Method 8260B, PAH Method 8270C, and PCBs Method 8082 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, initial and continuing calibration results, laboratory method blank results, surrogate spike recoveries, internal standard recoveries, matrix spike/ matrix spike duplicate recoveries, laboratory control standard recoveries, detection limits, compound quantitation and compound identification. Areas of concern with respect to data quality are listed below.

Major

- The initial calibration relative response factor (RRF) for tert-butyl alcohol on August 3, 2010 and continuing calibration on September 13, 2010 @ 11:23 on instrument A3UX16 was less than the 0.05 quality control limit. The nondetected tert-butyl alcohol result in sample PW-01 Composite was qualified as rejected (UR).

Minor

- The continuing calibration percent difference (%D) for bromomethane was greater than the 50% quality control limit on September 13, 2010 @ 11:23. The nondetected bromomethane result in sample PW-01 Composite was qualified as estimated (UJ).

- The continuing calibration %D for acetone was greater than the 25% quality control limit on September 13, 2010 @ 11:23. The positive acetone result in sample PW-01 Composite was qualified as estimated (J).

- The sampling date on the chain of custody (COC) does not match the sampling date on the form 1s. The samples were collected as sediments. The laboratory centrifuged the samples and analyzed the supernatant. The sampling date on the form 1s reflects the date samples were centrifuged. The samples were extracted outside of hold time for PAHs and PCBs. The VOC analysis took place outside of hold time. All sample positive and nondetected PAH and PCB results were qualified as estimated (J) and (UJ), respectively. VOC results were qualified as biased low (L) and (UL) because they were analyzed 22 days after collection.

Notes

The samples included in this SDG represent core samples collected on August 22, 2010. The core samples were separated into three incremental sections and centrifuged. Pore water from each section was analyzed by the laboratory for the fraction marked on the COC record.

The rinsate blank contained phenanthrene in the PAH fraction. No action was taken on the detection of this compound in the rinsate blank.

The percent recovery (%R) of surrogate nitrobenzene-d5 in sample PW-05 18-30" was less than the lower quality control limit but greater than 10%. No action was taken on this single surrogate %R noncompliance.

The laboratory did not calculate a relative percent difference (RPD) between columns for positive PCB sample results. The data reviewer calculated the RPDs and all of the RPDs were within acceptable criterion. A table listing the RPD for positive PCB detections is located in Appendix C.

VOC fraction analysis was not listed on the COC. The rinse blank was also not written on the COC. This item is noted for completeness.

The VOC method blank contained hexachlorobutadiene and 1,2,3-trichlorobenzene. No action was required because both analytes were non-detected in the environmental sample.

Executive Summary

Laboratory Performance: RRF for tert-butyl alcohol was less than the quality control limit resulting in the rejection of data. The continuing calibration %Ds for bromomethane and acetone exceeded quality control limits resulting in the qualification of data. All samples were qualified in every fraction due to hold time exceedances.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to Region III modifications to U.S. EPA National Functional Guidelines for Organic Data Validation (Sept. 1994). The text of this report has been formulated to address only those problem areas affecting data quality.

Ann Cognetti

Tetra Tech NUS
Ann Cognetti
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

Appendix A

Qualified Analytical Results

PROJ_NO: 02903	NSAMPLE	PW-01 Composite
SDG: C0I020508	LAB_ID	C0I020508023
FRACTION: OV	SAMP_DATE	9/8/2010
MEDIA: WATER	QC_TYPE	NM
	UNITS	UG/L
	PCT_SOLIDS	0.0
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE	0.46	UL	H
1,1,1-TRICHLOROETHANE	0.44	UL	H
1,1,2,2-TETRACHLOROETHANE	0.36	UL	H
1,1,2-TRICHLOROTRIFLUOROETHANE	0.56	UL	H
1,1-DICHLOROETHANE	0.3	UL	H
1,1-DICHLOROETHENE	0.38	UL	H
1,1-DICHLOROPROPENE	0.26	UL	H
1,2,3-TRICHLOROBENZENE	0.34	UL	H
1,2,3-TRICHLOROPROPANE	0.86	UL	H
1,2,3-TRIMETHYLBENZENE	0.012	UL	H
1,2,4-TRICHLOROBENZENE	0.3	UL	H
1,2,4-TRIMETHYLBENZENE	0.24	UL	H
1,2-DIBROMO-3-CHLOROPROPANE	1.3	UL	H
1,2-DIBROMOETHANE	0.48	UL	H
1,2-DICHLOROBENZENE	0.26	UL	H
1,2-DICHLOROETHANE	0.44	UL	H
1,2-DICHLOROPROPANE	0.36	UL	H
1,3-DICHLOROBENZENE	0.28	UL	H
1,3-DICHLOROPROPANE	0.32	UL	H
1,4-DICHLOROBENZENE	0.26	UL	H
2,2-DICHLOROPROPANE	0.26	UL	H
2-BUTANONE	7.1	J	HP
2-CHLOROETHYL VINYL ETHER	2	UL	H
2-CHLOROTOLUENE	0.22	UL	H
2-HEXANONE	0.82	UL	H
4-CHLOROTOLUENE	0.36	UL	H
4-ISOPROPYLTOLUENE	0.24	UL	H
4-METHYL-2-PENTANONE	0.64	UL	H
ACETONE	46	J	CH
BENZENE	0.26	UL	H
BROMOBENZENE	0.26	UL	H
BROMOCHLOROMETHANE	0.58	UL	H
BROMODICHLOROMETHANE	0.3	UL	H
BROMOFORM	1.3	UL	H
BROMOMETHANE	0.82	UJ	CH
CARBON DISULFIDE	0.26	UL	H

PROJ_NO: 02903	NSAMPLE	PW-01 Composite
SDG: C0I020508	LAB_ID	C0I020508023
FRACTION: OV	SAMP_DATE	9/8/2010
MEDIA: WATER	QC_TYPE	NM
	UNITS	UG/L
	PCT_SOLIDS	0.0
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
CARBON TETRACHLORIDE	0.26	UL	H
CHLOROBENZENE	0.3	UL	H
CHLORODIBROMOMETHANE	0.36	UL	H
CHLOROETHANE	0.58	UL	H
CHLOROFORM	0.32	UL	H
CHLOROMETHANE	0.6	UL	H
CIS-1,2-DICHLOROETHENE	0.34	UL	H
CIS-1,3-DICHLOROPROPENE	0.28	UL	H
DIBROMOMETHANE	0.56	UL	H
DICHLORODIFLUOROMETHANE	0.62	UL	H
DIISOPROPYL ETHER	3	UL	H
ETHYL TERT-BUTYL ETHER	0.22	UL	H
ETHYLBENZENE	0.34	UL	H
HEXACHLOROBUTADIENE	0.6	UL	H
ISOPROPYLBENZENE	0.26	UL	H
M+P-XYLENES	0.48	UL	H
METHYL TERT-BUTYL ETHER	0.34	UL	H
METHYLENE CHLORIDE	6.7	L	H
NAPHTHALENE	0.48	UL	H
N-BUTYLBENZENE	0.24	UL	H
N-PROPYLBENZENE	0.28	UL	H
O-XYLENE	0.28	UL	H
SEC-BUTYLBENZENE	0.26	UL	H
STYRENE	0.22	UL	H
TERT-AMYL METHYL ETHER	0.13	UL	H
TERT-BUTYLBENZENE	0.26	UL	H
TERTIARY-BUTYL ALCOHOL	7.8	UR	C
TETRACHLOROETHENE	0.58	UL	H
TOLUENE	0.26	UL	H
TOTAL XYLENES	0.56	UL	H
TRANS-1,2-DICHLOROETHENE	0.38	UL	H
TRANS-1,3-DICHLOROPROPENE	0.38	UL	H
TRICHLOROETHENE	0.34	UL	H
TRICHLOROFLUOROMETHANE	0.42	UL	H
VINYL ACETATE	0.38	UL	H
VINYL CHLORIDE	0.44	UL	H

PROJ_NO: 02903 SDG: C0I020508 FRACTION: PAH MEDIA: WATER	NSAMPLE	PW-03 0-6			PW-03 18-30			PW-03 6-18			PW-04 0-6		
	LAB_ID	C0I020508007			C0I020508009			C0I020508008			C0I020508010		
	SAMP_DATE	9/7/2010			9/7/2010			9/7/2010			9/8/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		0.36	UJ	H	0.36	UJ	H	0.36	UJ	H	0.36	UJ	H
ACENAPHTHENE		0.11	J	HP	0.12	J	HP	0.036	UJ	H	0.036	UJ	H
ACENAPHTHYLENE		0.038	UJ	H	0.038	UJ	H	0.038	UJ	H	0.038	UJ	H
ANTHRACENE		0.052	J	HP	0.041	J	HP	0.038	UJ	H	0.038	UJ	H
BENZO(A)ANTHRACENE		0.037	UJ	H	0.037	UJ	H	0.037	UJ	H	0.037	UJ	H
BENZO(A)PYRENE		0.034	UJ	H	0.034	UJ	H	0.034	UJ	H	0.034	UJ	H
BENZO(B)FLUORANTHENE		0.039	UJ	H	0.039	UJ	H	0.039	UJ	H	0.039	UJ	H
BENZO(G,H,I)PERYLENE		0.038	UJ	H	0.038	UJ	H	0.038	UJ	H	0.038	UJ	H
BENZO(K)FLUORANTHENE		0.14	UJ	H	0.14	UJ	H	0.14	UJ	H	0.14	UJ	H
CHRYSENE		0.035	UJ	H	0.035	UJ	H	0.035	UJ	H	0.035	UJ	H
DIBENZO(A,H)ANTHRACENE		0.039	UJ	H	0.039	UJ	H	0.039	UJ	H	0.039	UJ	H
FLUORANTHENE		0.91	J	H	0.84	J	H	0.85	J	H	0.04	UJ	H
FLUORENE		0.054	UJ	H	0.12	J	HP	0.11	J	HP	0.13	J	HP
INDENO(1,2,3-CD)PYRENE		0.05	UJ	H	0.05	UJ	H	0.05	UJ	H	0.05	UJ	H
NAPHTHALENE		0.035	UJ	H	0.035	UJ	H	0.035	UJ	H	0.074	J	HP
PHENANTHRENE		0.55	J	H	0.39	J	HP	0.34	J	HP	0.44	J	HP
PYRENE		0.16	J	HP	0.1	J	HP	0.039	UJ	H	0.039	UJ	H

PROJ_NO: 02903 SDG: C0I020508 FRACTION: PAH MEDIA: WATER	NSAMPLE	PW-04 18-30			PW-04 6-18			PW-05 0-6			PW-05 18-30		
	LAB_ID	C0I020508012			C0I020508011			C0I020508013			C0I020508015		
	SAMP_DATE	9/8/2010			9/8/2010			9/9/2010			9/9/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		0.36	UJ	H	0.36	UJ	H	0.36	UJ	H	0.36	UJ	H
ACENAPHTHENE		0.11	J	HP	0.11	J	HP	0.17	J	HP	0.093	J	HP
ACENAPHTHYLENE		0.038	UJ	H	0.038	UJ	H	0.038	UJ	H	0.038	UJ	H
ANTHRACENE		0.038	J	HP	0.038	UJ	H	0.038	UJ	H	0.038	UJ	H
BENZO(A)ANTHRACENE		0.037	UJ	H	0.037	UJ	H	0.037	UJ	H	0.037	UJ	H
BENZO(A)PYRENE		0.034	UJ	H	0.034	UJ	H	0.034	UJ	H	0.034	UJ	H
BENZO(B)FLUORANTHENE		0.039	UJ	H	0.039	UJ	H	0.039	UJ	H	0.039	UJ	H
BENZO(G,H,I)PERYLENE		0.038	UJ	H	0.038	UJ	H	0.038	UJ	H	0.038	UJ	H
BENZO(K)FLUORANTHENE		0.14	UJ	H	0.14	UJ	H	0.14	UJ	H	0.14	UJ	H
CHRYSENE		0.035	UJ	H	0.035	UJ	H	0.035	UJ	H	0.035	UJ	H
DIBENZO(A,H)ANTHRACENE		0.039	UJ	H	0.039	UJ	H	0.039	UJ	H	0.039	UJ	H
FLUORANTHENE		0.91	J	H	0.04	UJ	H	0.97	J	H	0.04	UJ	H
FLUORENE		0.054	UJ	H	0.16	J	HP	0.054	UJ	H	0.054	UJ	H
INDENO(1,2,3-CD)PYRENE		0.05	UJ	H	0.05	UJ	H	0.05	UJ	H	0.05	UJ	H
NAPHTHALENE		0.035	UJ	H	0.035	UJ	H	0.035	UJ	H	0.035	UJ	H
PHENANTHRENE		0.43	J	HP	0.61	J	H	0.47	J	HP	0.58	J	H
PYRENE		0.2	J	HP	0.039	UJ	H	0.27	J	HP	0.039	UJ	H

PROJ_NO: 02903 SDG: C0I020508 FRACTION: PAH MEDIA: WATER	NSAMPLE	PW-05 6-18			Rinsate Blank		
	LAB_ID	C0I020508014			C0I020508022		
	SAMP_DATE	9/9/2010			9/8/2010		
	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		0.36	UJ	H	0.36	UJ	H
ACENAPHTHENE		0.44	J	HP	0.036	UJ	H
ACENAPHTHYLENE		0.038	UJ	H	0.038	UJ	H
ANTHRACENE		0.17	J	HP	0.038	UJ	H
BENZO(A)ANTHRACENE		0.48	J	HP	0.037	UJ	H
BENZO(A)PYRENE		0.23	J	HP	0.034	UJ	H
BENZO(B)FLUORANTHENE		2.6	J	H	0.039	UJ	H
BENZO(G,H,I)PERYLENE		0.82	J	H	0.038	UJ	H
BENZO(K)FLUORANTHENE		0.98	J	H	0.14	UJ	H
CHRYSENE		0.39	J	HP	0.035	UJ	H
DIBENZO(A,H)ANTHRACENE		0.039	UJ	H	0.039	UJ	H
FLUORANTHENE		2.1	J	H	0.04	UJ	H
FLUORENE		0.24	J	HP	0.054	UJ	H
INDENO(1,2,3-CD)PYRENE		0.98	J	H	0.05	UJ	H
NAPHTHALENE		0.035	UJ	H	0.035	UJ	H
PHENANTHRENE		0.8	J	H	0.41	J	HP
PYRENE		1.4	J	H	0.039	UJ	H

PROJ_NO: 02903	NSAMPLE	PW-03 0-6			PW-03 18-30			PW-03 6-18			PW-04 0-6		
SDG: C0I020508	LAB_ID	C0I020508007			C0I020508009			C0I020508008			C0I020508010		
FRACTION: PEST/PCB	SAMP_DATE	9/7/2010			9/7/2010			9/7/2010			9/8/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016		0.1	UJ	H	0.1	UJ	H	0.1	UJ	H	0.1	UJ	H
AROCLOR-1221		0.1	UJ	H	0.1	UJ	H	0.1	UJ	H	0.1	UJ	H
AROCLOR-1232		0.12	UJ	H	0.12	UJ	H	0.12	UJ	H	0.12	UJ	H
AROCLOR-1242		0.074	UJ	H	0.074	UJ	H	0.074	UJ	H	0.074	UJ	H
AROCLOR-1248		0.091	UJ	H	0.091	UJ	H	0.091	UJ	H	0.091	UJ	H
AROCLOR-1254		0.092	UJ	H	0.092	UJ	H	0.092	UJ	H	0.092	UJ	H
AROCLOR-1260		0.49	J	H	0.054	UJ	H	0.13	J	HP	0.18	J	HP

PROJ_NO: 02903 SDG: C0I020508 FRACTION: PEST/PCB MEDIA: WATER	NSAMPLE	PW-04 18-30			PW-04 6-18			PW-05 0-6			PW-05 18-30		
	LAB_ID	C0I020508012			C0I020508011			C0I020508013			C0I020508015		
	SAMP_DATE	9/8/2010			9/8/2010			9/9/2010			9/9/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016		0.1	UJ	H	0.1	UJ	H	0.1	UJ	H	0.1	UJ	H
AROCLOR-1221		0.1	UJ	H	0.1	UJ	H	0.1	UJ	H	0.1	UJ	H
AROCLOR-1232		0.12	UJ	H	0.12	UJ	H	0.12	UJ	H	0.12	UJ	H
AROCLOR-1242		0.074	UJ	H	0.074	UJ	H	0.074	UJ	H	0.074	UJ	H
AROCLOR-1248		0.091	UJ	H	0.091	UJ	H	0.091	UJ	H	0.091	UJ	H
AROCLOR-1254		0.092	UJ	H	0.092	UJ	H	0.092	UJ	H	0.092	UJ	H
AROCLOR-1260		0.054	UJ	H	0.1	J	HP	0.61	J	H	0.054	UJ	H

PROJ_NO: 02903 SDG: C0I020508 FRACTION: PEST/PCB MEDIA: WATER	NSAMPLE	PW-05 6-18			Rinsate Blank		
	LAB_ID	C0I020508014			C0I020508022		
	SAMP_DATE	9/9/2010			9/8/2010		
	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016		0.1	UJ	H	0.1	UJ	H
AROCLOR-1221		0.1	UJ	H	0.1	UJ	H
AROCLOR-1232		0.12	UJ	H	0.12	UJ	H
AROCLOR-1242		0.074	UJ	H	0.074	UJ	H
AROCLOR-1248		0.091	UJ	H	0.091	UJ	H
AROCLOR-1254		0.092	UJ	H	0.092	UJ	H
AROCLOR-1260		0.55	J	H	0.054	UJ	H

Appendix B

Results as Reported by the Laboratory

Tetra Tech NUS, Inc

Client Sample ID: PW-01 Composite

GC/MS Volatiles

Lot-Sample #...:	C0I020508-023	**Work Order #...:**	L6NL71AA	**Matrix.....:**	WATER
Date Sampled...:	09/08/10	**Date Received..:**	09/08/10	**MS Run #.....:**	0257050
Prep Date.....:	09/13/10	**Analysis Date..:**	09/13/10		
Prep Batch #...:	0257090	**Analysis Time..:**	20:03		
Dilution Factor:	2	**Initial Wgt/Vol:**	5 mL	**Final Wgt/Vol..:**	5 mL
Analyst ID.....:	001644	**Instrument ID..:**	UX16		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**46**	**10**	**ug/L**	**2.2**
Bromobenzene	ND	2.0	ug/L	0.26
Bromochloromethane	ND	2.0	ug/L	0.58
Bromodichloromethane	ND	2.0	ug/L	0.30
2-Butanone	**7.1 J**	**10**	**ug/L**	**1.1**
n-Butylbenzene	ND	2.0	ug/L	0.24
sec-Butylbenzene	ND	2.0	ug/L	0.26
tert-Butylbenzene	ND	2.0	ug/L	0.26
Carbon disulfide	ND	2.0	ug/L	0.26
Dibromochloromethane	ND	2.0	ug/L	0.36
1,2-Dibromo-3-chloro-propane	ND	4.0	ug/L	1.3
2-Chloroethyl vinyl ether	ND	10	ug/L	2.0
2-Chlorotoluene	ND	2.0	ug/L	0.22
4-Chlorotoluene	ND	2.0	ug/L	0.36
1,2-Dibromoethane	ND	2.0	ug/L	0.48
Dibromomethane	ND	2.0	ug/L	0.56
1,2-Dichlorobenzene	ND	2.0	ug/L	0.26
1,3-Dichlorobenzene	ND	2.0	ug/L	0.28
1,4-Dichlorobenzene	ND	2.0	ug/L	0.26
Dichlorodifluoromethane	ND	2.0	ug/L	0.62
cis-1,2-Dichloroethene	ND	2.0	ug/L	0.34
trans-1,2-Dichloroethene	ND	2.0	ug/L	0.38
1,3-Dichloropropane	ND	2.0	ug/L	0.32
2,2-Dichloropropane	ND	2.0	ug/L	0.26
1,1-Dichloropropene	ND	2.0	ug/L	0.26
Trichlorofluoromethane	ND	2.0	ug/L	0.42
Hexachlorobutadiene	ND	2.0	ug/L	0.60
2-Hexanone	ND	10	ug/L	0.82
Isopropylbenzene	ND	2.0	ug/L	0.26
p-Isopropyltoluene	ND	2.0	ug/L	0.24
tert-Butyl alcohol	ND	40	ug/L	7.8
4-Methyl-2-pentanone	ND	10	ug/L	0.64
Naphthalene	ND	2.0	ug/L	0.48
n-Propylbenzene	ND	2.0	ug/L	0.28
Styrene	ND	2.0	ug/L	0.22
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	0.46

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: PW-01 Composite

GC/MS Volatiles

Lot-Sample #...: C0I020508-023 **Work Order #...:** L6NL71AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2,3-Trichlorobenzene	ND	2.0	ug/L	0.34
1,2,4-Trichloro-benzene	ND	2.0	ug/L	0.30
1,2,3-Trichloropropane	ND	2.0	ug/L	0.86
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ug/L	0.56
1,2,4-Trimethylbenzene	ND	2.0	ug/L	0.24
Vinyl acetate	ND	4.0	ug/L	0.38
o-Xylene	ND	2.0	ug/L	0.28
Xylenes (total)	ND	4.0	ug/L	0.56
Methyl tert-butyl ether	ND	10	ug/L	0.34
m-Xylene & p-Xylene	ND	4.0	ug/L	0.48
1,2,3-Trimethylbenzene	ND	10	ug/L	0.012
Diisopropyl Ether (DIPE)	ND	10	ug/L	3.0
Ethyl-t-Butyl Ether (ETBE)	ND	10	ug/L	0.22
Tert-amyl methyl ether (TAME)	ND	10	ug/L	0.13
Benzene	ND	2.0	ug/L	0.26
Bromoform	ND	2.0	ug/L	1.3
Bromomethane	ND	2.0	ug/L	0.82
Carbon tetrachloride	ND	2.0	ug/L	0.26
Chlorobenzene	ND	2.0	ug/L	0.30
Chloroethane	ND	2.0	ug/L	0.58
Chloroform	ND	2.0	ug/L	0.32
Chloromethane	ND	2.0	ug/L	0.60
1,1-Dichloroethane	ND	2.0	ug/L	0.30
1,2-Dichloroethane	ND	2.0	ug/L	0.44
1,1-Dichloroethene	ND	2.0	ug/L	0.38
1,2-Dichloropropane	ND	2.0	ug/L	0.36
cis-1,3-Dichloropropene	ND	2.0	ug/L	0.28
trans-1,3-Dichloropropene	ND	2.0	ug/L	0.38
Ethylbenzene	ND	2.0	ug/L	0.34
Methylene chloride	**6.7**	**2.0**	**ug/L**	**0.66**
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	0.36
Tetrachloroethene	ND	2.0	ug/L	0.58
Toluene	ND	2.0	ug/L	0.26
1,1,1-Trichloroethane	ND	2.0	ug/L	0.44
Trichloroethene	ND	2.0	ug/L	0.34
Vinyl chloride	ND	2.0	ug/L	0.44

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	106	(73 - 122)
1,2-Dichloroethane-d4	97	(61 - 128)
Toluene-d8	106	(76 - 110)
4-Bromofluorobenzene	98	(74 - 116)

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: PW-01 Composite

GC/MS Volatiles

Lot-Sample #...: C0I020508-023 Work Order #...: L6NL71AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-03 0-6"

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-007	Work Order #...:	L6G831AC	Matrix.....:	WATER
Date Sampled...:	09/07/10	Date Received..:	09/07/10	MS Run #.....:	
Prep Date.....:	09/13/10	Analysis Date..:	09/14/10		
Prep Batch #...:	0256315	Analysis Time..:	17:38		
Dilution Factor:	2.5	Initial Wgt/Vol:	200 mL	Final Wgt/Vol..:	0.5 mL
Analyst ID.....:	045183	Instrument ID..:	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	ND	0.50	ug/L	0.035
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	**0.11 J**	**0.50**	**ug/L**	**0.036**
Fluorene	ND	0.50	ug/L	0.054
Phenanthrene	**0.55**	**0.50**	**ug/L**	**0.11**
Anthracene	**0.052 J**	**0.50**	**ug/L**	**0.038**
Fluoranthene	**0.91**	**0.50**	**ug/L**	**0.040**
Pyrene	**0.16 J**	**0.50**	**ug/L**	**0.039**
Benzo(a)anthracene	ND	0.50	ug/L	0.037
Chrysene	ND	0.50	ug/L	0.035
Benzo(b)fluoranthene	ND	0.50	ug/L	0.039
Benzo(k)fluoranthene	ND	0.50	ug/L	0.14
Benzo(a)pyrene	ND	0.50	ug/L	0.034
Indeno(1,2,3-cd)pyrene	ND	0.50	ug/L	0.050
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	ND	0.50	ug/L	0.038

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	64	(23 - 112)
Terphenyl-d14	47	(10 - 132)
2-Fluorobiphenyl	64	(19 - 107)
2-Fluorophenol	46	(10 - 111)
Phenol-d5	38	(15 - 112)
2,4,6-Tribromophenol	55	(16 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-03 18-30"

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-009	**Work Order #...:**	L6G851AC	**Matrix.....:**	WATER
Date Sampled...:	09/07/10	**Date Received..:**	09/07/10	**MS Run #.....:**	
Prep Date.....:	09/13/10	**Analysis Date..:**	09/14/10		
Prep Batch #...:	0256315	**Analysis Time..:**	18:18		
Dilution Factor:	2.5	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	0.5 mL
Analyst ID.....:	045183	**Instrument ID..:**	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	ND	0.50	ug/L	0.035
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	**0.12 J**	**0.50**	**ug/L**	**0.036**
Fluorene	**0.12 J**	**0.50**	**ug/L**	**0.054**
Phenanthrene	**0.39 J**	**0.50**	**ug/L**	**0.11**
Anthracene	**0.041 J**	**0.50**	**ug/L**	**0.038**
Fluoranthene	**0.84**	**0.50**	**ug/L**	**0.040**
Pyrene	**0.10 J**	**0.50**	**ug/L**	**0.039**
Benzo(a)anthracene	ND	0.50	ug/L	0.037
Chrysene	ND	0.50	ug/L	0.035
Benzo(b)fluoranthene	ND	0.50	ug/L	0.039
Benzo(k)fluoranthene	ND	0.50	ug/L	0.14
Benzo(a)pyrene	ND	0.50	ug/L	0.034
Indeno(1,2,3-cd)pyrene	ND	0.50	ug/L	0.050
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	ND	0.50	ug/L	0.038

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	84	(23 - 112)
Terphenyl-d14	55	(10 - 132)
2-Fluorobiphenyl	82	(19 - 107)
2-Fluorophenol	82	(10 - 111)
Phenol-d5	73	(15 - 112)
2,4,6-Tribromophenol	71	(16 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-03 6-18"

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-008	**Work Order #...:**	L6G841AC	**Matrix.....:**	WATER
Date Sampled...:	09/07/10	**Date Received..:**	09/07/10	**MS Run #.....:**	
Prep Date.....:	09/13/10	**Analysis Date..:**	09/14/10		
Prep Batch #...:	0256315	**Analysis Time..:**	17:58		
Dilution Factor:	2.5	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	0.5 mL
Analyst ID.....:	045183	**Instrument ID..:**	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	ND	0.50	ug/L	0.035
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	ND	0.50	ug/L	0.036
Fluorene	**0.11 J**	**0.50**	**ug/L**	**0.054**
Phenanthrene	**0.34 J**	**0.50**	**ug/L**	**0.11**
Anthracene	ND	0.50	ug/L	0.038
Fluoranthene	**0.85**	**0.50**	**ug/L**	**0.040**
Pyrene	ND	0.50	ug/L	0.039
Benzo(a)anthracene	ND	0.50	ug/L	0.037
Chrysene	ND	0.50	ug/L	0.035
Benzo(b)fluoranthene	ND	0.50	ug/L	0.039
Benzo(k)fluoranthene	ND	0.50	ug/L	0.14
Benzo(a)pyrene	ND	0.50	ug/L	0.034
Indeno(1,2,3-cd)pyrene	ND	0.50	ug/L	0.050
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	ND	0.50	ug/L	0.038

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	80	(23 - 112)
Terphenyl-d14	58	(10 - 132)
2-Fluorobiphenyl	82	(19 - 107)
2-Fluorophenol	79	(10 - 111)
Phenol-d5	70	(15 - 112)
2,4,6-Tribromophenol	75	(16 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-04 0-6"

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-010	**Work Order #...:**	L6HF51AD	**Matrix.....:**	WATER
Date Sampled...:	09/08/10	**Date Received..:**	09/08/10	**MS Run #.....:**	
Prep Date.....:	09/13/10	**Analysis Date..:**	09/14/10		
Prep Batch #...:	0256315	**Analysis Time..:**	18:38		
Dilution Factor:	2.5	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	0.5 mL
Analyst ID.....:	045183	**Instrument ID..:**	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	**0.074 J**	**0.50**	**ug/L**	**0.035**
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	ND	0.50	ug/L	0.036
Fluorene	**0.13 J**	**0.50**	**ug/L**	**0.054**
Phenanthrene	**0.44 J**	**0.50**	**ug/L**	**0.11**
Anthracene	ND	0.50	ug/L	0.038
Fluoranthene	ND	0.50	ug/L	0.040
Pyrene	ND	0.50	ug/L	0.039
Benzo(a)anthracene	ND	0.50	ug/L	0.037
Chrysene	ND	0.50	ug/L	0.035
Benzo(b)fluoranthene	ND	0.50	ug/L	0.039
Benzo(k)fluoranthene	ND	0.50	ug/L	0.14
Benzo(a)pyrene	ND	0.50	ug/L	0.034
Indeno(1,2,3-cd)pyrene	ND	0.50	ug/L	0.050
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	ND	0.50	ug/L	0.038

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	83	(23 - 112)
Terphenyl-d14	69	(10 - 132)
2-Fluorobiphenyl	82	(19 - 107)
2-Fluorophenol	81	(10 - 111)
Phenol-d5	73	(15 - 112)
2,4,6-Tribromophenol	73	(16 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-04 18-30"

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-012	Work Order #...:	L6HGD1AC	Matrix.....:	WATER
Date Sampled...:	09/08/10	Date Received..:	09/08/10	MS Run #.....:	
Prep Date.....:	09/13/10	Analysis Date..:	09/14/10		
Prep Batch #...:	0256315	Analysis Time..:	19:18		
Dilution Factor:	2.5	Initial Wgt/Vol:	200 mL	Final Wgt/Vol..:	0.5 mL
Analyst ID.....:	045183	Instrument ID..:	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	ND	0.50	ug/L	0.035
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	**0.11 J**	**0.50**	**ug/L**	**0.036**
Fluorene	ND	0.50	ug/L	0.054
Phenanthrene	**0.43 J**	**0.50**	**ug/L**	**0.11**
Anthracene	**0.038 J**	**0.50**	**ug/L**	**0.038**
Fluoranthene	**0.91**	**0.50**	**ug/L**	**0.040**
Pyrene	**0.20 J**	**0.50**	**ug/L**	**0.039**
Benzo(a)anthracene	ND	0.50	ug/L	0.037
Chrysene	ND	0.50	ug/L	0.035
Benzo(b)fluoranthene	ND	0.50	ug/L	0.039
Benzo(k)fluoranthene	ND	0.50	ug/L	0.14
Benzo(a)pyrene	ND	0.50	ug/L	0.034
Indeno(1,2,3-cd)pyrene	ND	0.50	ug/L	0.050
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	ND	0.50	ug/L	0.038

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	75	(23 - 112)
Terphenyl-d14	47	(10 - 132)
2-Fluorobiphenyl	70	(19 - 107)
2-Fluorophenol	69	(10 - 111)
Phenol-d5	60	(15 - 112)
2,4,6-Tribromophenol	61	(16 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-04 6-18"

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-011	**Work Order #...:**	L6HF81AC	**Matrix.....:**	WATER
Date Sampled...:	09/08/10	**Date Received..:**	09/08/10	**MS Run #.....:**	
Prep Date.....:	09/13/10	**Analysis Date..:**	09/14/10		
Prep Batch #...:	0256315	**Analysis Time..:**	18:58		
Dilution Factor:	2.5	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	0.5 mL
Analyst ID.....:	045183	**Instrument ID..:**	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	ND	0.50	ug/L	0.035
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	**0.11 J**	**0.50**	**ug/L**	**0.036**
Fluorene	**0.16 J**	**0.50**	**ug/L**	**0.054**
Phenanthrene	**0.61**	**0.50**	**ug/L**	**0.11**
Anthracene	ND	0.50	ug/L	0.038
Fluoranthene	ND	0.50	ug/L	0.040
Pyrene	ND	0.50	ug/L	0.039
Benzo(a)anthracene	ND	0.50	ug/L	0.037
Chrysene	ND	0.50	ug/L	0.035
Benzo(b)fluoranthene	ND	0.50	ug/L	0.039
Benzo(k)fluoranthene	ND	0.50	ug/L	0.14
Benzo(a)pyrene	ND	0.50	ug/L	0.034
Indeno(1,2,3-cd)pyrene	ND	0.50	ug/L	0.050
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	ND	0.50	ug/L	0.038

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	85	(23 - 112)
Terphenyl-d14	64	(10 - 132)
2-Fluorobiphenyl	85	(19 - 107)
2-Fluorophenol	83	(10 - 111)
Phenol-d5	74	(15 - 112)
2,4,6-Tribromophenol	77	(16 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-05 0-6"

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-013	**Work Order #...:**	L6HGE1AC	**Matrix.....:**	WATER
Date Sampled...:	09/09/10	**Date Received..:**	09/09/10	**MS Run #.....:**	
Prep Date.....:	09/13/10	**Analysis Date..:**	09/14/10		
Prep Batch #...:	0256315	**Analysis Time..:**	19:38		
Dilution Factor:	2.5	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	0.5 mL
Analyst ID.....:	045183	**Instrument ID..:**	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	ND	0.50	ug/L	0.035
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	**0.17 J**	**0.50**	**ug/L**	**0.036**
Fluorene	ND	0.50	ug/L	0.054
Phenanthrene	**0.47 J**	**0.50**	**ug/L**	**0.11**
Anthracene	ND	0.50	ug/L	0.038
Fluoranthene	**0.97**	**0.50**	**ug/L**	**0.040**
Pyrene	**0.27 J**	**0.50**	**ug/L**	**0.039**
Benzo(a)anthracene	ND	0.50	ug/L	0.037
Chrysene	ND	0.50	ug/L	0.035
Benzo(b)fluoranthene	ND	0.50	ug/L	0.039
Benzo(k)fluoranthene	ND	0.50	ug/L	0.14
Benzo(a)pyrene	ND	0.50	ug/L	0.034
Indeno(1,2,3-cd)pyrene	ND	0.50	ug/L	0.050
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	ND	0.50	ug/L	0.038

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	88	(23 - 112)
Terphenyl-d14	67	(10 - 132)
2-Fluorobiphenyl	89	(19 - 107)
2-Fluorophenol	79	(10 - 111)
Phenol-d5	73	(15 - 112)
2,4,6-Tribromophenol	83	(16 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-05 18-30"

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-015	Work Order #...:	L6HGH1AC	Matrix.....:	WATER
Date Sampled...:	09/09/10	Date Received..:	09/09/10	MS Run #.....:	
Prep Date.....:	09/13/10	Analysis Date..:	09/14/10		
Prep Batch #...:	0256315	Analysis Time..:	20:17		
Dilution Factor:	2.5	Initial Wgt/Vol:	200 mL	Final Wgt/Vol..:	0.5 mL
Analyst ID.....:	045183	Instrument ID..:	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	ND	0.50	ug/L	0.035
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	**0.093 J**	**0.50**	**ug/L**	**0.036**
Fluorene	ND	0.50	ug/L	0.054
Phenanthrene	**0.58**	**0.50**	**ug/L**	**0.11**
Anthracene	ND	0.50	ug/L	0.038
Fluoranthene	ND	0.50	ug/L	0.040
Pyrene	ND	0.50	ug/L	0.039
Benzo(a)anthracene	ND	0.50	ug/L	0.037
Chrysene	ND	0.50	ug/L	0.035
Benzo(b)fluoranthene	ND	0.50	ug/L	0.039
Benzo(k)fluoranthene	ND	0.50	ug/L	0.14
Benzo(a)pyrene	ND	0.50	ug/L	0.034
Indeno(1,2,3-cd)pyrene	ND	0.50	ug/L	0.050
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	ND	0.50	ug/L	0.038

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	21 *	(23 - 112)
Terphenyl-d14	80	(10 - 132)
2-Fluorobiphenyl	75	(19 - 107)
2-Fluorophenol	14	(10 - 111)
Phenol-d5	49	(15 - 112)
2,4,6-Tribromophenol	88	(16 - 122)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-05 6-18"

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-014	Work Order #...:	L6HGF1AC	Matrix.....:	WATER
Date Sampled...:	09/09/10	Date Received..:	09/09/10	MS Run #.....:	
Prep Date.....:	09/13/10	Analysis Date..:	09/14/10		
Prep Batch #...:	0256315	Analysis Time..:	19:58		
Dilution Factor:	2.5	Initial Wgt/Vol:	200 mL	Final Wgt/Vol..:	0.5 mL
Analyst ID.....:	045183	Instrument ID..:	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	ND	0.50	ug/L	0.035
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	0.44 J	0.50	ug/L	0.036
Fluorene	0.24 J	0.50	ug/L	0.054
Phenanthrene	0.80	0.50	ug/L	0.11
Anthracene	0.17 J	0.50	ug/L	0.038
Fluoranthene	2.1	0.50	ug/L	0.040
Pyrene	1.4	0.50	ug/L	0.039
Benzo(a)anthracene	0.48 J	0.50	ug/L	0.037
Chrysene	0.39 J	0.50	ug/L	0.035
Benzo(b)fluoranthene	2.6	0.50	ug/L	0.039
Benzo(k)fluoranthene	0.98	0.50	ug/L	0.14
Benzo(a)pyrene	0.23 J	0.50	ug/L	0.034
Indeno(1,2,3-cd)pyrene	0.98	0.50	ug/L	0.050
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	0.82	0.50	ug/L	0.038

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	100	(23 - 112)
Terphenyl-d14	78	(10 - 132)
2-Fluorobiphenyl	105	(19 - 107)
2-Fluorophenol	95	(10 - 111)
Phenol-d5	89	(15 - 112)
2,4,6-Tribromophenol	95	(16 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: Rinsate Blank

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-022	Work Order #...:	L6M4H1AC	Matrix.....:	WATER
Date Sampled...:	09/08/10	Date Received..:	09/08/10	MS Run #.....:	
Prep Date.....:	09/13/10	Analysis Date..:	09/14/10		
Prep Batch #...:	0256315	Analysis Time..:	20:57		
Dilution Factor:	2.5	Initial Wgt/Vol:	200 mL	Final Wgt/Vol..:	0.5 mL
Analyst ID.....:	045183	Instrument ID..:	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	ND	0.50	ug/L	0.035
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	ND	0.50	ug/L	0.036
Fluorene	ND	0.50	ug/L	0.054
Phenanthrene	**0.41 J**	**0.50**	**ug/L**	**0.11**
Anthracene	ND	0.50	ug/L	0.038
Fluoranthene	ND	0.50	ug/L	0.040
Pyrene	ND	0.50	ug/L	0.039
Benzo(a)anthracene	ND	0.50	ug/L	0.037
Chrysene	ND	0.50	ug/L	0.035
Benzo(b)fluoranthene	ND	0.50	ug/L	0.039
Benzo(k)fluoranthene	ND	0.50	ug/L	0.14
Benzo(a)pyrene	ND	0.50	ug/L	0.034
Indeno(1,2,3-cd)pyrene	ND	0.50	ug/L	0.050
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	ND	0.50	ug/L	0.038

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	103	(23 - 112)
Terphenyl-d14	106	(10 - 132)
2-Fluorobiphenyl	101	(19 - 107)
2-Fluorophenol	98	(10 - 111)
Phenol-d5	93	(15 - 112)
2,4,6-Tribromophenol	92	(16 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-03 0-6"

GC Semivolatiles

Lot-Sample #...:	C0I020508-007	**Work Order #...:**	L6G831AA	**Matrix.....:**	WATER
Date Sampled...:	09/07/10	**Date Received..:**	09/07/10	**MS Run #.....:**	
Prep Date.....:	09/09/10	**Analysis Date..:**	09/13/10		
Prep Batch #...:	0252401	**Analysis Time..:**	22:24		
Dilution Factor:	1	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	8 mL
Analyst ID.....:	001797	**Instrument ID..:**	U/V		
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	**0.49**	**0.40**	**ug/L**	**0.054**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	109	(35 - 140)
Decachlorobiphenyl	100	(35 - 140)

Tetra Tech NUS, Inc

Client Sample ID: PW-03 18-30"

GC Semivolatiles

Lot-Sample #...: C0I020508-009	Work Order #...: L6G851AA	Matrix.....: WATER
Date Sampled...: 09/07/10	Date Received..: 09/07/10	MS Run #.....:
Prep Date.....: 09/09/10	Analysis Date..: 09/13/10	
Prep Batch #...: 0252401	Analysis Time..: 23:04	
Dilution Factor: 1	Initial Wgt/Vol: 200 mL	Final Wgt/Vol...: 8 mL
Analyst ID.....: 001797	Instrument ID..: U/V	
	Method.....: SW846 8082	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	ND	0.40	ug/L	0.054

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	92	(35 - 140)
Decachlorobiphenyl	87	(35 - 140)

Tetra Tech NUS, Inc

Client Sample ID: PW-03 6-18"

GC Semivolatiles

Lot-Sample #...:	C0I020508-008	**Work Order #...:**	L6G841AA	**Matrix.....:**	WATER
Date Sampled...:	09/07/10	**Date Received..:**	09/07/10	**MS Run #.....:**	
Prep Date.....:	09/09/10	**Analysis Date..:**	09/13/10		
Prep Batch #...:	0252401	**Analysis Time..:**	22:44		
Dilution Factor:	1	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	8 mL
Analyst ID.....:	001797	**Instrument ID..:**	U/V		
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	**0.13 J**	**0.40**	**ug/L**	**0.054**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	96	(35 - 140)
Decachlorobiphenyl	90	(35 - 140)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-04 0-6"

GC Semivolatiles

Lot-Sample #...:	C0I020508-010	**Work Order #...:**	L6HF51AC	**Matrix.....:**	WATER
Date Sampled...:	09/08/10	**Date Received..:**	09/08/10	**MS Run #.....:**	
Prep Date.....:	09/09/10	**Analysis Date..:**	09/13/10		
Prep Batch #...:	0252401	**Analysis Time..:**	23:25		
Dilution Factor:	1	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	8 mL
Analyst ID.....:	001797	**Instrument ID..:**	U/V		
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	**0.18 J**	**0.40**	**ug/L**	**0.054**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	100	(35 - 140)
Decachlorobiphenyl	97	(35 - 140)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-04 18-30"

GC Semivolatiles

Lot-Sample #...:	C0I020508-012	Work Order #...:	L6HGD1AA	Matrix.....:	WATER
Date Sampled...:	09/08/10	Date Received..:	09/08/10	MS Run #.....:	
Prep Date.....:	09/09/10	Analysis Date..:	09/14/10		
Prep Batch #...:	0252401	Analysis Time..:	00:06		
Dilution Factor:	1	Initial Wgt/Vol:	200 mL	Final Wgt/Vol..:	8 mL
Analyst ID.....:	001797	Instrument ID..:	U/V		
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	ND	0.40	ug/L	0.054

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	100	(35 - 140)
Decachlorobiphenyl	95	(35 - 140)

Tetra Tech NUS, Inc

Client Sample ID: PW-04 6-18"

GC Semivolatiles

Lot-Sample #...:	C0I020508-011	Work Order #...:	L6HF81AA	Matrix.....:	WATER
Date Sampled...:	09/08/10	Date Received..:	09/08/10	MS Run #.....:	
Prep Date.....:	09/09/10	Analysis Date..:	09/13/10		
Prep Batch #...:	0252401	Analysis Time..:	23:45		
Dilution Factor:	1	Initial Wgt/Vol:	200 mL	Final Wgt/Vol..:	8 mL
Analyst ID.....:	001797	Instrument ID..:	U/V		
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	**0.10 J**	**0.40**	**ug/L**	**0.054**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	102	(35 - 140)
Decachlorobiphenyl	97	(35 - 140)

NOTE(S):

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: PW-05 0-6"

GC Semivolatiles

Lot-Sample #...: C0I020508-013	Work Order #...: L6HGE1AA	Matrix.....: WATER
Date Sampled...: 09/09/10	Date Received..: 09/09/10	MS Run #.....:
Prep Date.....: 09/09/10	Analysis Date..: 09/14/10	
Prep Batch #...: 0252401	Analysis Time..: 00:26	
Dilution Factor: 1	Initial Wgt/Vol: 200 mL	Final Wgt/Vol..: 8 mL
Analyst ID.....: 001797	Instrument ID..: U/V	
	Method.....: SW846 8082	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	**0.61**	**0.40**	**ug/L**	**0.054**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	101	(35 - 140)
Decachlorobiphenyl	93	(35 - 140)

Tetra Tech NUS, Inc

Client Sample ID: PW-05 18-30"

GC Semivolatiles

Lot-Sample #...:	C0I020508-015	**Work Order #...:**	L6HGH1AA	**Matrix.....:**	WATER
Date Sampled...:	09/09/10	**Date Received..:**	09/09/10	**MS Run #.....:**	
Prep Date.....:	09/09/10	**Analysis Date..:**	09/14/10		
Prep Batch #...:	0252401	**Analysis Time..:**	01:07		
Dilution Factor:	1	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	8 mL
Analyst ID.....:	001797	**Instrument ID..:**	U/V		
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	ND	0.40	ug/L	0.054

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	94	(35 - 140)
Decachlorobiphenyl	89	(35 - 140)

Tetra Tech NUS, Inc

Client Sample ID: PW-05 6-18"

GC Semivolatiles

Lot-Sample #...:	C0I020508-014	**Work Order #...:**	L6HGF1AA	**Matrix.....:**	WATER
Date Sampled...:	09/09/10	**Date Received..:**	09/09/10	**MS Run #.....:**	
Prep Date.....:	09/09/10	**Analysis Date..:**	09/14/10		
Prep Batch #...:	0252401	**Analysis Time..:**	00:46		
Dilution Factor:	1	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	8 mL
Analyst ID.....:	001797	**Instrument ID..:**	U/V		
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	**0.55**	**0.40**	**ug/L**	**0.054**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	98	(35 - 140)
Decachlorobiphenyl	96	(35 - 140)

Tetra Tech NUS, Inc

Client Sample ID: Rinsate Blank

GC Semivolatiles

Lot-Sample #...:	C0I020508-022	Work Order #...:	L6M4H1AA	Matrix.....:	WATER
Date Sampled...:	09/08/10	Date Received..:	09/08/10	MS Run #.....:	
Prep Date.....:	09/09/10	Analysis Date..:	09/14/10		
Prep Batch #...:	0252401	Analysis Time..:	01:27		
Dilution Factor:	1	Initial Wgt/Vol:	200 mL	Final Wgt/Vol..:	8 mL
Analyst ID.....:	001797	Instrument ID..:	U/V		
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	ND	0.40	ug/L	0.054

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	102	(35 - 140)
Decachlorobiphenyl	98	(35 - 140)

Appendix C

Support Documentation

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0I020508

Sample Receiving:
TestAmerica's Pittsburgh laboratory received samples on August 24, 2010. The coolers were received within the proper temperature range.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

GC/MS Volatiles:
TestAmerica's North Canton laboratory performed the VOA analysis. All data is included in the package.

Due to the concentration of target compounds detected, PW-01 Composite was analyzed at a dilution.

The method blank had compounds detected below the reporting limit but above the MDL. The result was flagged with a "J" qualifier. Any sample associated with this blank that had the same compounds detected had the result flagged with a "B" qualifier.

GC/MS Semivolatiles:
Due to the concentration of target compounds detected and/or matrix, all samples were analyzed at a dilution.

Sample PW-05 18-30" had nitrobenzene-d5 surrogate recover below the control limit. The sample was analyzed at a dilution.

The RPD between the LCS and LCSD recovered above the control limit for 4-nitrophenol.

All non-CCC compounds that have >15% RSD were evaluated to see if a better curve could be drawn using a quadratic curve. All compounds <30% RSD will use an average response factor curve if no visible improvement is accomplished using a quadratic curve. A quadratic curve will be used for a compound where it is determined to be the "best-fit" evaluation.

The continuing calibrations had the %D > 25% but were within expected performance range for these compounds.

PCBs:
There were no problems associated with the analysis.

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0I020508

Metals:
The serial dilution percent difference was outside the control limits for antimony in sample PW-07 18-30".

The method blanks had analytes detected at concentrations between the MDL and the reporting limit. The results were flagged with a "B" qualifier. Any sample associated with a method blank that had the same analyte detected had the result flagged with a "J" qualifier.

General Chemistry:
pH is a field parameter. Laboratory pH analysis was completed at the request of the client.

C0I020508

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes☐ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client: TETRA Tech	Project Manager: Mike MARTIN	Date: 8/22/10	Chain of Custody Number: 154232
Address: 20251 Century Blvd suite 200	Telephone Number (Area Code)/Fax Number: 301-528-3022 301-528-3000	Lab Number:	Page 1 of 1
City: Germantown State: MD Zip Code: 20874	Site Contact: Tony Apanavage	Lab Contact:	Analysis (Attach list if more space is needed)
Project Name and Location (State): MCR Sed. Sampling	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	2 colors	Metals	PAHs	PCBs	Pesticides	DOC	Hardness	pH	VOCs	Special Instructions/ Conditions of Receipt
PW-01	8/22/10	0818			X		X						X	X				X	X	X		See Table 1-1
PW-02		0917											X	X				X	X	X		Avg. 920
PW-03		1007											X	X	X	X		X	X	X		
PW-04		1344											X	X	X	X		X	X	X		
PW-05		1401											X	X	X	X		X	X	X		
PW-06		1247											X	X				X	X	X		
PW-07	8/22/10	1315			X		X						X	X				X	X	X		
PW-01 Composite																						
Rinsate Blank																						
*See Sample Summary for Lab.																						

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other Standard

QC Requirements (Specify)

1. Relinquished By	Date: 8/23/10	Time: 1530	1. Received By	Date: 8/23/10	Time: 1530
2. Relinquished By	Date: 8/24/10	Time: 1630	2. Received By	Date:	Time:
3. Relinquished By	Date:	Time:	3. Received By	Date: 8/24/10	Time: 1015

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

TestAmerica Pittsburgh

Cooler Receipt Form

Client: Tetra Tech NUS Project: _____ Quote: 86823

Cooler Rec'd & Opened for Temp. Check on: 8/24/10

Coolers Opened and Unpacked on: 8/25/10 By: PRF (Signature)

TestAmerica Pittsburgh Lot Number: COH250419

		Yes	No	NA
1.	Were custody seals on the outside of the cooler?	✓		
	If YES, how many and where? Quantity 1 Location front			
	Were signatures and date correct?	✓		
2.	Were custody papers included inside the cooler?	✓		
3.	Were custody papers properly filled out (ink, signed, match labels)?	✓		
4.	Did you sign the custody papers in the appropriate place?	✓		
5.	Was shippers packing slip attached to this form?	✓		
6.	Were packing materials used?	✓		
	If YES, what type? Bubble Wrap			
7.	Were the samples received within the acceptable temperature range?	✓		
8.	Were the samples appropriately preserved?			✓
9.	Were all bottles sealed in separate plastic bags?		✓	
10.	Did all bottles arrive in good condition (unbroken)?	✓		
11.	Were all bottle labels complete (sample ID, preservatives, etc.)?	✓		
12.	Did all bottle labels and/or tags agree with custody papers?	✓		
13.	Were correct bottles used for tests indicated?	✓		
14.	Were all VOA vials checked for the presence of air bubbles?			✓
15.	Was a sufficient amount of sample sent in each bottle?	✓		
16.	Samples received by: FEDEX UPS CLIENT DROP-OFF OTHER DHL US CARGO			

Explain any discrepancies: _____

Level 2 Review _____

Was contacted on _____ by _____ to resolve discrepancies.

Rev. 1, 01/20/2010
X:\Forms\Cooler Receipt Form_updated 102010.DOC

Cooler Receipt Form

TestAmerica Pittsburgh

P: Preserved

UP: Unpreserved

Sample ID	TMET PH<2	DMET PH<2	HG PH<2	NUT(1) PH<2	CN PH ≥12	OG TPHC PH<2	PHEN PH<2	SULF PH ≥12	TOC PH<2	TOX PH<2	VOA P/UP	(trans) PH<2			

(1) "NUT" could include sample bottles for ammonia, chemical oxygen demand, nitrate/nitrite, TKN, or total phosphorus

Comments: _____

Cooler Number	Temperature*	Thermometer ID
1	4.6°	9
2	4.1°	4
3	3.8°	9

Sample	Lot Number**

* Acceptable Temperature Range: 4°C ± 2°C

**Please use an asterisk if bottle lot number was covered by the label

If samples required preservation in the laboratory, the following lot number(s) was/were used:

Nitric Acid _____ Hydrochloric Acid _____

Sulfuric Acid _____ Sodium Hydroxide _____

SAMPLE SUMMARY

C0I020508

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L6GC3	001	PW-01 0-6"	09/07/10	08:18
L6GDG	002	PW-01 6-18"	09/07/10	08:18
L6GDH	003	PW-01 18-30"	09/07/10	08:18
L6GFH	004	PW-02 0-6"	09/02/10	09:17
L6GFJ	005	PW-02 6-18"	09/02/10	09:17
L6GFK	006	PW-02 18-30"	09/02/10	09:17
L6G83	007	PW-03 0-6"	09/07/10	
L6G84	008	PW-03 6-18"	09/07/10	
L6G85	009	PW-03 18-30"	09/07/10	
L6HF5	010	PW-04 0-6"	09/08/10	
L6HF8	011	PW-04 6-18"	09/08/10	
L6HGD	012	PW-04 18-30"	09/08/10	
L6HGE	013	PW-05 0-6"	09/09/10	
L6HGF	014	PW-05 6-18"	09/09/10	
L6HGH	015	PW-05 18-30"	09/09/10	
L6HGJ	016	PW-06 0-6"	09/03/10	
L6HGL	017	PW-06 6-18"	09/03/10	
L6HGN	018	PW-06 18-30"	09/03/10	
L6HGV	019	PW-07 0-6"	09/03/10	
L6HGX	020	PW-07 6-18"	09/03/10	
L6HG3	021	PW-07 18-30"	09/03/10	
L6M4H	022	Rinsate Blank	09/08/10	
L6NL7	023	PW-01 Composite	09/08/10	16:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

HOLD TIMES

SDG C0I020508

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
MF	UG/L	PW-06 6-18	C0I020508017	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
MF	UG/L	PW-04 6-18	C0I020508011	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
MF	UG/L	PW-04 6-18	C0I020508011	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
MF	UG/L	PW-05 0-6	C0I020508013	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
MF	UG/L	PW-05 0-6	C0I020508013	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
MF	UG/L	PW-05 18-30	C0I020508015	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
MF	UG/L	PW-05 18-30	C0I020508015	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
MF	UG/L	PW-05 6-18	C0I020508014	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
MF	UG/L	PW-05 6-18	C0I020508014	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
MF	UG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
MF	UG/L	PW-06 18-30	C0I020508018	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
MF	UG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
MF	UG/L	PW-06 6-18	C0I020508017	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
MF	UG/L	PW-07 0-6	C0I020508019	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
MF	UG/L	PW-07 0-6	C0I020508019	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
MF	UG/L	PW-07 18-30	C0I020508021	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
MF	UG/L	PW-07 18-30	C0I020508021	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
MF	UG/L	PW-07 6-18	C0I020508020	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
MF	UG/L	PW-07 6-18	C0I020508020	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
MF	UG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
MF	UG/L	PW-06 0-6	C0I020508016	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
MF	UG/L	PW-02 6-18	C0I020508005	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
MF	UG/L	PW-01 0-6	C0I020508001	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-01 0-6	C0I020508001	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-01 18-30	C0I020508003	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-01 18-30	C0I020508003	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-01 6-18	C0I020508002	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-01 6-18	C0I020508002	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-02 0-6	C0I020508004	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
MF	UG/L	PW-02 0-6	C0I020508004	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
MF	UG/L	PW-04 18-30	C0I020508012	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
MF	UG/L	PW-02 18-30	C0I020508006	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
MF	UG/L	PW-04 18-30	C0I020508012	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
MF	UG/L	PW-02 6-18	C0I020508005	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
MF	UG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-03 18-30	C0I020508009	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-03 18-30	C0I020508009	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
MF	UG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
MF	UG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
MF	UG/L	PW-06 18-30	C0I020508018	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
MF	UG/L	PW-02 18-30	C0I020508006	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
MF	UG/L	PW-06 0-6	C0I020508016	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
DOC	MG/L	PW-06 0-6	C0I020508016	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
DOC	MG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/27/2010	09/27/2010	19	0	19
DOC	MG/L	PW-01 0-6	C0I020508001	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
DOC	MG/L	PW-07 0-6	C0I020508019	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
DOC	MG/L	PW-07 6-18	C0I020508020	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
DOC	MG/L	PW-06 18-30	C0I020508018	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
DOC	MG/L	PW-07 18-30	C0I020508021	NM	09/03/2010	09/27/2010	09/27/2010	24	0	24

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
DOC	MG/L	PW-05 6-18	C0I020508014	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
DOC	MG/L	PW-05 18-30	C0I020508015	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
DOC	MG/L	PW-05 0-6	C0I020508013	NM	09/09/2010	09/28/2010	09/28/2010	19	0	19
DOC	MG/L	PW-02 0-6	C0I020508004	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
DOC	MG/L	PW-01 18-30	C0I020508003	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
DOC	MG/L	PW-06 6-18	C0I020508017	NM	09/03/2010	09/28/2010	09/28/2010	25	0	25
DOC	MG/L	PW-01 6-18	C0I020508002	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
DOC	MG/L	PW-04 6-18	C0I020508011	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
DOC	MG/L	PW-02 18-30	C0I020508006	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
DOC	MG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
DOC	MG/L	PW-04 18-30	C0I020508012	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
DOC	MG/L	PW-03 18-30	C0I020508009	NM	09/07/2010	09/29/2010	09/29/2010	22	0	22
DOC	MG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/28/2010	09/28/2010	21	0	21
DOC	MG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/28/2010	09/28/2010	20	0	20
DOC	MG/L	PW-02 6-18	C0I020508005	NM	09/02/2010	09/28/2010	09/28/2010	26	0	26
HARD	MG/L	PW-02 0-6	C0I020508004	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
HARD	MG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
HARD	MG/L	PW-03 18-30	C0I020508009	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
HARD	MG/L	PW-06 6-18	C0I020508017	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
HARD	MG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
HARD	MG/L	PW-01 6-18	C0I020508002	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
HARD	MG/L	PW-02 18-30	C0I020508006	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
HARD	MG/L	PW-01 18-30	C0I020508003	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
HARD	MG/L	PW-01 0-6	C0I020508001	NM	09/07/2010	09/09/2010	09/23/2010	2	14	16
HARD	MG/L	PW-02 6-18	C0I020508005	NM	09/02/2010	09/09/2010	09/23/2010	7	14	21
HARD	MG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
HARD	MG/L	PW-04 18-30	C0I020508012	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
HARD	MG/L	PW-04 6-18	C0I020508011	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
HARD	MG/L	PW-05 0-6	C0I020508013	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
HARD	MG/L	PW-05 18-30	C0I020508015	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
HARD	MG/L	PW-05 6-18	C0I020508014	NM	09/09/2010	09/09/2010	09/23/2010	0	14	14
HARD	MG/L	PW-06 0-6	C0I020508016	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
HARD	MG/L	PW-06 18-30	C0I020508018	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
HARD	MG/L	PW-07 6-18	C0I020508020	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
HARD	MG/L	PW-07 18-30	C0I020508021	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20
HARD	MG/L	PW-07 0-6	C0I020508019	NM	09/03/2010	09/09/2010	09/23/2010	6	14	20

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
HARD	MG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/09/2010	09/23/2010	1	14	15
PH	--	PW-04 18-30	C0I020508012	NM	09/08/2010	09/08/2010	09/08/2010	0	0	0
PH	--	PW-01 0-6	C0I020508001	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
PH	--	PW-01 18-30	C0I020508003	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
PH	--	PW-01 6-18	C0I020508002	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
PH	--	PW-02 0-6	C0I020508004	NM	09/02/2010	09/03/2010	09/03/2010	1	0	1
PH	--	PW-02 18-30	C0I020508006	NM	09/02/2010	09/03/2010	09/03/2010	1	0	1
PH	--	PW-02 6-18	C0I020508005	NM	09/02/2010	09/03/2010	09/03/2010	1	0	1
PH	--	PW-03 0-6	C0I020508007	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
PH	--	PW-03 18-30	C0I020508009	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
PH	--	PW-05 0-6	C0I020508013	NM	09/09/2010	09/09/2010	09/09/2010	0	0	0
PH	--	PW-04 0-6	C0I020508010	NM	09/08/2010	09/08/2010	09/08/2010	0	0	0
PH	--	Rinsate Blank	C0I020508022	NM	09/08/2010	09/08/2010	09/08/2010	0	0	0
PH	--	PW-04 6-18	C0I020508011	NM	09/08/2010	09/08/2010	09/08/2010	0	0	0
PH	--	PW-05 18-30	C0I020508015	NM	09/09/2010	09/09/2010	09/09/2010	0	0	0
PH	--	PW-05 6-18	C0I020508014	NM	09/09/2010	09/09/2010	09/09/2010	0	0	0
PH	--	PW-06 0-6	C0I020508016	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0
PH	--	PW-06 18-30	C0I020508018	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
PH	--	PW-06 6-18	C0I020508017	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0
PH	--	PW-07 0-6	C0I020508019	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0
PH	--	PW-07 18-30	C0I020508021	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0
PH	--	PW-07 6-18	C0I020508020	NM	09/03/2010	09/03/2010	09/03/2010	0	0	0
PH	--	PW-03 6-18	C0I020508008	NM	09/07/2010	09/08/2010	09/08/2010	1	0	1
OV	UG/L	PW-01 Composite	C0I020508023	NM	09/08/2010	09/13/2010	09/13/2010	5	0	5
OV	UG/L	PW-01 Composite	C0I020508023	SUR	09/08/2010	09/13/2010	09/13/2010	5	0	5
SIM	UG/L	PW-04 0-6	C0I020508010	SUR	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	PW-04 18-30	C0I020508012	SUR	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	PW-03 0-6	C0I020508007	SUR	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	PW-03 18-30	C0I020508009	SUR	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	Rinsate Blank	C0I020508022	SUR	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	PW-03 6-18	C0I020508008	SUR	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	PW-05 18-30	C0I020508015	SUR	09/09/2010	09/13/2010	09/14/2010	4	1	5

8/22 – 9/13

8/22 → 9/13 23

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
SIM	UG/L	PW-05 6-18	C0I020508014	SUR	09/09/2010	09/13/2010	09/14/2010	4	1	5
SIM	UG/L	PW-03 18-30	C0I020508009	NM	09/07/2010	09/13/2010	09/14/2010	6	1	7
SIM	UG/L	PW-05 6-18	C0I020508014	NM	09/09/2010	09/13/2010	09/14/2010	4	1	5
SIM	UG/L	PW-04 18-30	C0I020508012	NM	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	PW-05 18-30	C0I020508015	NM	09/09/2010	09/13/2010	09/14/2010	4	1	5
SIM	UG/L	PW-05 0-6	C0I020508013	SUR	09/09/2010	09/13/2010	09/14/2010	4	1	5
SIM	UG/L	PW-05 0-6	C0I020508013	NM	09/09/2010	09/13/2010	09/14/2010	4	1	5
SIM	UG/L	PW-04 6-18	C0I020508011	SUR	09/08/2010	09/13/2010	09/14/2010	5	1	6
SIM	UG/L	PW-04 6-18	C0I020508011	NM	09/08/2010	09/13/2010	09/14/2010	5	1	6
PCB	UG/L	PW-04 18-30	C0I020508012	SUR	09/08/2010	09/09/2010	09/14/2010	1	5	6
PCB	UG/L	PW-05 6-18	C0I020508014	SUR	09/09/2010	09/09/2010	09/14/2010	0	5	5
PCB	UG/L	PW-05 18-30	C0I020508015	SUR	09/09/2010	09/09/2010	09/14/2010	0	5	5
PCB	UG/L	PW-05 18-30	C0I020508015	NM	09/09/2010	09/09/2010	09/14/2010	0	5	5
PCB	UG/L	PW-05 0-6	C0I020508013	SUR	09/09/2010	09/09/2010	09/14/2010	0	5	5
PCB	UG/L	PW-05 0-6	C0I020508013	NM	09/09/2010	09/09/2010	09/14/2010	0	5	5
PCB	UG/L	PW-04 6-18	C0I020508011	SUR	09/08/2010	09/09/2010	09/13/2010	1	4	5
PCB	UG/L	PW-04 6-18	C0I020508011	NM	09/08/2010	09/09/2010	09/13/2010	1	4	5
PCB	UG/L	PW-05 6-18	C0I020508014	NM	09/09/2010	09/09/2010	09/14/2010	0	5	5

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
PCB	UG/L	PW-04 18-30	C0I020508012	NM	09/08/2010	09/09/2010	09/14/2010	1	5	6
PCB	UG/L	PW-04 0-6	C0I020508010	SUR	09/08/2010	09/09/2010	09/13/2010	1	4	5
PCB	UG/L	PW-04 0-6	C0I020508010	NM	09/08/2010	09/09/2010	09/13/2010	1	4	5
PCB	UG/L	PW-03 6-18	C0I020508008	SUR	09/07/2010	09/09/2010	09/13/2010	2	4	6
PCB	UG/L	PW-03 6-18	C0I020508008	NM	09/07/2010	09/09/2010	09/13/2010	2	4	6
PCB	UG/L	PW-03 18-30	C0I020508009	SUR	09/07/2010	09/09/2010	09/13/2010	2	4	6
PCB	UG/L	PW-03 18-30	C0I020508009	NM	09/07/2010	09/09/2010	09/13/2010	2	4	6
PCB	UG/L	PW-03 0-6	C0I020508007	SUR	09/07/2010	09/09/2010	09/13/2010	2	4	6
PCB	UG/L	Rinsate Blank	C0I020508022	SUR	09/08/2010	09/09/2010	09/14/2010	1	5	6
PCB	UG/L	Rinsate Blank	C0I020508022	NM	09/08/2010	09/09/2010	09/14/2010	1	5	6
PCB	UG/L	PW-03 0-6	C0I020508007	NM	09/07/2010	09/09/2010	09/13/2010	2	4	6

METHODS SUMMARY

C0I020508

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Aqueous	SW846 9040	SW846 9040
Dissolved Organic Carbon 5310C	SM20 5310C	
ICP-MS (6020)	SW846 6020	SW846 3005A
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A	SW846 7470A
PCBs by SW-846 8082	SW846 8082	SW846 3510C
Semivolatile Organics GCMS BNA 8270C	SW846 8270C	
Total Hardness	SM18 2340B	
Volatile Organics by GC/MS	SW846 8260B	SW846 5030B

References:

SM18 "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992.

SM20 "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER", 20TH EDITION."

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: NORTH CANTON Contract:

Lab Code: TALCAN Case No.: SAS No.: SDG No.: C0I020508

Lab File ID: BFB524 BFB Injection Date: 08/03/10

Instrument ID: A3UX16 BFB Injection Time: 1600

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.0
75	30.0 - 60.0% of mass 95	45.8
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	88.3
175	5.0 - 9.0% of mass 174	6.4 (7.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.7 (97.0)1
177	5.0 - 9.0% of mass 176	5.3 (6.2)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD040	200NG-IC	UXM7963	08/03/10	1644
02	VSTD020	100NG-IC	UXM7964	08/03/10	1705
03	VSTD010	50NG-IC	UXM7965	08/03/10	1727
04	VSTD005	25NG-IC	UXM7966	08/03/10	1749
05	VSTD002	10NG-IC	UXM7967	08/03/10	1811
06	VSTD001	5NG-IC	UXM7968	08/03/10	1832
07	VSTD040	200NG-A9IC	UXM7970	08/03/10	1916
08	VSTD020	100NG-A9IC	UXM7971	08/03/10	1938
09	VSTD010	50NG-A9IC	UXM7972	08/03/10	1959
10	VSTD005	25NG-A9IC	UXM7973	08/03/10	2021
11	VSTD002	10NG-A9IC	UXM7974	08/03/10	2043
12	VSTD001	5NG-A9IC	UXM7975	08/03/10	2105
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date : 04-Aug-2010 09:34

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 03-AUG-2010 16:44
End Cal Date : 03-AUG-2010 21:05
Quant Method : ISTD
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\8260LLUX16.m
Last Edit : 04-Aug-2010 09:28 a3ux16.i

Calibration File Names:
Level 1: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7975.D
Level 2: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7974.D
Level 3: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7973.D
Level 4: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7972.D
Level 5: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7971.D
Level 6: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7970.D

Compound	5.0000 Level 1	10.0000 Level 2	25.0000 Level 3	50.0000 Level 4	100.0000 Level 5	200.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2
8 Dichlorodifluoromethane	0.16587	0.14951	0.18671	0.18976	0.20707	0.22360	AVRG		0.18709		14.34605
9 Chloromethane	0.34811	0.31503	0.31891	0.33855	0.29137	0.30593	AVRG		0.31965		6.52727
10 Vinyl Chloride	0.29593	0.28340	0.30604	0.30367	0.30549	0.30647	AVRG		0.30017		3.03163
11 Bromomethane	23100	41141	107491	180067	319868	512180	QUAD	0.03889	5.41371	26.23238	0.99944
12 Chloroethane	36417	56315	136727	255644	487419	931664	WLINR	-0.05431	0.14262		0.99559
13 Trichlorofluoromethane	0.19219	0.17155	0.20525	0.20827	0.21574	0.21701	AVRG		0.20167		8.55106
14 Dichlorofluoromethane	0.39892	0.38754	0.32483	0.33783	0.34290	0.32341	AVRG		0.35257		9.23596
15 Acrolein	0.03507	0.03454	0.03536	0.03583	0.03667	0.03512	AVRG		0.03543		2.08281
16 Acetone	0.10811	0.08454	0.08079	0.08208	0.07605	0.07345	AVRG		0.08417		14.74406
17 1,1-Dichloroethene	0.23779	0.25990	0.25465	0.25077	0.25483	0.25945	AVRG		0.25290		3.21885
18 Freon-113	0.12483	0.16331	0.15236	0.16880	0.17894	0.18220	AVRG		0.16174		13.01835
19 Iodomethane	0.40270	0.42098	0.41968	0.42282	0.41425	0.41721	AVRG		0.41628		1.75179
20 Carbon Disulfide	0.79238	0.83594	0.82953	0.84286	0.84839	0.86014	AVRG		0.83487		2.79400
21 Methylene Chloride	88122	135381	275528	519271	977821	1981760	WLINR	-0.08976	0.28456		0.99982

Report Date : 04-Aug-2010 09:34

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 03-AUG-2010 16:44
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Quant Method : ISTD
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\8260LLUX16.m
Last Edit : 04-Aug-2010 09:28 a3ux16.i

	Compound	5.0000 Level 1	10.0000 Level 2	25.0000 Level 3	50.0000 Level 4	100.0000 Level 5	200.0000 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2
	22 Acetonitrile	0.02931	0.02704	0.02813	0.02738	0.02792	0.02598	AVRG		0.02763		4.06576
	23 Acrylonitrile	0.07827	0.08238	0.08669	0.08490	0.08461	0.08030	AVRG		0.08286		3.80725
	24 Methyl tert-butyl ether	0.40107	0.38966	0.38998	0.38913	0.37094	0.35453	AVRG		0.38255		4.39267
	25 trans-1,2-Dichloroethene	0.27676	0.29679	0.28761	0.28399	0.28520	0.28482	AVRG		0.28586		2.26921
	26 Hexane	5267	14676	30905	71996	157400	356958	WLINR	0.04744	0.05042		0.99425
	27 Vinyl acetate	0.35171	0.36614	0.37795	0.38176	0.40080	0.40079	AVRG		0.37986		5.08331
	28 1,1-Dichloroethane	0.45332	0.47819	0.46358	0.45834	0.46474	0.47002	AVRG		0.46470		1.87967
	29 tert-Butyl Alcohol	0.01331	0.01333	0.01319	0.01314	0.01310	0.01194	AVRG		0.01300		4.06889
	30 2-Butanone	0.11668	0.10961	0.10749	0.10455	0.10560	0.09823	AVRG		0.10703		5.69181
M	31 1,2-Dichloroethene (total)	0.28426	0.29959	0.28958	0.28745	0.28781	0.28922	AVRG		0.28965		1.80227
	32 cis-1,2-dichloroethene	0.29176	0.30239	0.29155	0.29090	0.29042	0.29362	AVRG		0.29344		1.53928
	33 2,2-Dichloropropane	0.29731	0.29652	0.29457	0.29883	0.29998	0.29423	AVRG		0.29691		0.76914
	34 Bromochloromethane	0.13250	0.13515	0.13292	0.13539	0.13462	0.13547	AVRG		0.13434		0.97156
	35 Chloroform	0.44401	0.45246	0.43715	0.43755	0.43622	0.43833	AVRG		0.44095		1.42319
	36 Tetrahydrofuran	39983	47367	85260	127284	234964	437924	WLINR	-0.29515	0.06128		0.99029
	37 1,1,1-Trichloroethane	0.35536	0.37709	0.37483	0.37368	0.37791	0.37841	AVRG		0.37288		2.35392
	38 1,1-Dichloropropene	0.32645	0.34723	0.33658	0.34371	0.34787	0.35666	AVRG		0.34308		3.03992
	39 Carbon Tetrachloride	0.26448	0.30168	0.29811	0.30822	0.31234	0.32111	AVRG		0.30099		6.52359
	40 1,2-Dichloroethane	0.33335	0.34992	0.32973	0.32739	0.32946	0.32626	AVRG		0.33269		2.64039
	41 Benzene	1.17196	1.15482	1.08754	1.08329	1.08733	1.10608	AVRG		1.11517		3.45794
	42 Trichloroethene	0.27315	0.27787	0.27140	0.27161	0.27477	0.27913	AVRG		0.27465		1.17999
	43 1,2-Dichloropropane	0.23973	0.24890	0.24028	0.24936	0.25361	0.25852	AVRG		0.24840		2.96822

(1001 - 1163)

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C0I020508

Report Date : 04-Aug-2010 09:34

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 03-AUG-2010 16:44
End Cal Date : 03-AUG-2010 21:05
Quant Method : ISTD
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\8260LLUX16.m
Last Edit : 04-Aug-2010 09:28 a3ux16.i

	Compound	5.0000 Level 1	10.0000 Level 2	25.0000 Level 3	50.0000 Level 4	100.0000 Level 5	200.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2
	44 1,4-Dioxane	25483	48936	102846	195003	391483	701321	WLINR	-2.13488	0.00227		0.99230
	45 Dibromomethane	0.13982	0.14506	0.13551	0.13644	0.13818	0.13671	AVRG		0.13862		2.52479
	46 Bromodichloromethane	0.30397	0.31015	0.30098	0.30893	0.32024	0.32407	AVRG		0.31139		2.90824
	47 2-Chloroethyl vinyl ether	0.07690	0.07301	0.07401	0.07682	0.07904	0.07913	AVRG		0.07648		3.31073
	48 cis-1,3-Dichloropropene	0.36012	0.39329	0.38351	0.39606	0.41785	0.43019	AVRG		0.39684		6.26718
	49 4-Methyl-2-pentanone	0.19553	0.19490	0.20205	0.20000	0.20801	0.19807	AVRG		0.19976		2.42868
	50 Toluene	1.66646	1.71134	1.63480	1.62235	1.61674	1.60399	AVRG		1.64261		2.42367
	51 trans-1,3-Dichloropropene	0.45380	0.47756	0.48427	0.49942	0.50619	0.50616	AVRG		0.48790		4.18393
	52 Ethyl Methacrylate	0.41669	0.46026	0.44001	0.43940	0.44946	0.43800	AVRG		0.44064		3.28127
	53 1,1,2-Trichloroethane	0.29227	0.30298	0.29550	0.29013	0.28579	0.27597	AVRG		0.29044		3.14585
	54 1,3-Dichloropropane	0.52504	0.55595	0.51971	0.52016	0.51945	0.51126	AVRG		0.52526		2.98413
	55 Tetrachloroethene	0.29029	0.30773	0.30454	0.30194	0.30160	0.30325	AVRG		0.30156		1.97250
	56 2-Hexanone	0.17838	0.17401	0.18345	0.17989	0.18576	0.17013	AVRG		0.17860		3.25741
	57 Dibromochloromethane	0.28242	0.30120	0.29833	0.30768	0.31525	0.31413	AVRG		0.30317		4.02438
	58 1,2-Dibromoethane	0.27215	0.29534	0.28341	0.28033	0.28167	0.27124	AVRG		0.28069		3.12763
	59 Chlorobenzene	1.03863	1.06237	0.99485	0.98775	1.00664	1.00192	AVRG		1.01536		2.85140
	60 1,1,1,2-Tetrachloroethane	0.36103	0.36445	0.36862	0.36977	0.36449	0.35757	AVRG		0.36432		1.25582
	61 Ethylbenzene	0.52828	0.55991	0.53536	0.53773	0.54684	0.54352	AVRG		0.54194		2.01644
	62 m + p-Xylene	0.65483	0.70529	0.66219	0.66653	0.67294	0.67695	AVRG		0.67312		2.61307
M	63 Xylenes (total)	0.66413	0.70930	0.67489	0.67565	0.67990	0.67589	AVRG		0.67996		2.25231
	64 Xylene-o	0.68272	0.71734	0.70029	0.69387	0.69381	0.67378	AVRG		0.69364		2.15720
	65 Styrene	1.07529	1.12437	1.08332	1.09776	1.11497	1.10672	AVRG		1.10040		1.70307

Report Date : 04-Aug-2010 09:34

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 03-AUG-2010 16:44
End Cal Date : 03-AUG-2010 21:05
Quant Method : ISTD
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\8260LLUX16.m
Last Edit : 04-Aug-2010 09:28 a3ux16.i

Compound	5.0000 Level 1	10.0000 Level 2	25.0000 Level 3	50.0000 Level 4	100.0000 Level 5	200.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2
66 Bromoform	0.14832	0.16294	0.16910	0.17582	0.18626	0.18675	AVRG		0.17153		8.58884
67 Isopropylbenzene	1.64366	1.74160	1.70406	1.69720	1.69879	1.67914	AVRG		1.69408		1.89541
68 1,1,2,2-Tetrachloroethane	0.64693	0.70793	0.66835	0.68199	0.66465	0.67284	AVRG		0.67378		3.01853
69 1,4-Dichloro-2-butene	0.12309	0.13682	0.13306	0.14451	0.15276	0.15756	AVRG		0.14130		9.09483
70 1,2,3-Trichloropropane	0.22173	0.22074	0.20523	0.21405	0.21095	0.21039	AVRG		0.21385		2.98952
71 Bromobenzene	0.76083	0.80890	0.76936	0.77528	0.77526	0.81889	AVRG		0.78475		2.98151
72 n-Propylbenzene	0.71872	0.79486	0.77383	0.79033	0.79563	0.84145	AVRG		0.78580		5.07058
73 2-Chlorotoluene	0.71514	0.73933	0.72718	0.75292	0.73650	0.77294	AVRG		0.74067		2.72995
74 1,3,5-Trimethylbenzene	2.40822	2.53918	2.48889	2.59463	2.57440	2.75141	AVRG		2.55946		4.50821
75 4-Chlorotoluene	0.73103	0.74219	0.72106	0.72635	0.73139	0.76864	AVRG		0.73678		2.32095
76 tert-Butylbenzene	2.00352	2.13089	2.12474	2.23276	2.16102	2.32486	AVRG		2.16296		5.02200
77 1,2,4-Trimethylbenzene	2.54442	2.62024	2.59061	2.68069	2.63377	2.76841	AVRG		2.63969		2.94164
78 sec-Butylbenzene	2.48973	2.72205	2.66291	2.82285	2.79726	3.03593	AVRG		2.75512		6.59834
79 4-Isopropyltoluene	2.12318	2.33682	2.29167	2.41679	2.40873	2.58396	AVRG		2.36019		6.48256
80 1,3-Dichlorobenzene	1.45256	1.48798	1.42776	1.43962	1.42931	1.46261	AVRG		1.44997		1.58454
81 1,4-Dichlorobenzene	1.50511	1.51829	1.46185	1.48150	1.46515	1.50194	AVRG		1.48897		1.54536
82 n-Butylbenzene	1.68287	1.82988	1.81306	1.89744	1.90625	2.08397	AVRG		1.86891		7.08689
83 1,2-Dichlorobenzene	1.44706	1.51515	1.45738	1.49146	1.43018	1.45707	AVRG		1.46638		2.12605
84 1,2-Dibromo-3-chloropropane	0.12866	0.13713	0.13607	0.14569	0.14282	0.14300	AVRG		0.13890		4.48991
85 1,2,4-Trichlorobenzene	0.90222	0.90424	0.93086	0.93910	0.91748	0.91503	AVRG		0.91816		1.58420
86 Hexachlorobutadiene	0.34725	0.38848	0.38891	0.38861	0.38421	0.39164	AVRG		0.38152		4.44353
87 Naphthalene	2.24281	2.30154	2.40714	2.45384	2.32204	2.26676	AVRG		2.33235		3.52142

(1001 - 1163)

1035

C0I020508

Report Date : 04-Aug-2010 09:34

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 03-AUG-2010 16:44
End Cal Date : 03-AUG-2010 21:05
Quant Method : ISTD
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\8260LLUX16.m
Last Edit : 04-Aug-2010 09:28 a3ux16.i

	Compound	5.0000 Level 1	10.0000 Level 2	25.0000 Level 3	50.0000 Level 4	100.0000 Level 5	200.0000 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
88	1,2,3-Trichlorobenzene	0.79458	0.79064	0.83610	0.84880	0.81358	0.79958	AVRG		0.81388		2.92326	
89	Ethyl Ether	0.19456	0.20579	0.20322	0.20376	0.20371	0.21143	AVRG		0.20375		2.66886	
90	Ethanol	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
91	3-Chloropropene	0.13423	0.13356	0.13532	0.13831	0.14608	0.14858	AVRG		0.13935		4.62374	
92	Isopropyl Ether	0.23104	0.24546	0.24045	0.24045	0.24231	0.24839	AVRG		0.24135		2.45240	
93	2-Chloro-1,3-butadiene	0.34669	0.36339	0.36333	0.35495	0.37754	0.37682	AVRG		0.36378		3.32055	
94	Propionitrile	0.02851	0.02770	0.02766	0.02715	0.02875	0.02901	AVRG		0.02813		2.59550	
95	Ethyl Acetate	0.18102	0.20210	0.17961	0.18576	0.18512	0.19083	AVRG		0.18741		4.38169	
96	Methacrylonitrile	0.13821	0.12676	0.13012	0.13518	0.13364	0.13475	AVRG		0.13311		3.05129	
97	Isobutanol	0.01000	0.00839	0.00792	0.00843	0.00872	0.00801	AVRG		0.00858		8.80899	<-
98	Cyclohexane	0.30334	0.37647	0.35329	0.38116	0.40044	0.41814	AVRG		0.37214		10.81959	
99	n-Butanol	0.00696	0.00722	0.00710	0.00800	0.00768	0.00604	AVRG		0.00717		9.42681	<-
100	Methyl Methacrylate	0.19526	0.17392	0.17146	0.17272	0.17351	0.18229	AVRG		0.17819		5.16498	
101	2-Nitropropane	0.04195	0.03968	0.03778	0.03903	0.04064	0.04663	AVRG		0.04095		7.61695	
102	Chloropicrin	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
103	Cyclohexanone	0.02322	0.02860	0.02805	0.03223	0.03039	0.02754	AVRG		0.02834		10.74762	
104	Pentachloroethane	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
105	Benzyl Chloride	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
134	Thiophene	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
135	Crotononitrile(1st Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
136	Crotononitrile(2nd Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
M 137	Total Crotononitrile	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-

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1036

C0I020508

Report Date : 04-Aug-2010 09:34

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 03-AUG-2010 16:44
End Cal Date : 03-AUG-2010 21:05
Quant Method : ISTD
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\8260LLUX16.m
Last Edit : 04-Aug-2010 09:28 a3ux16.i

Compound	5.0000 Level 1	10.0000 Level 2	25.0000 Level 3	50.0000 Level 4	100.0000 Level 5	200.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
138 Paraldehyde	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
139 3,3,5-Trimethylcyclohexanone	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
140 1-Chlorohexane	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
141 1,3,5-Trichlorobenzene	0.93681	0.97393	0.97204	0.98034	0.96933	1.00048	AVRG		0.97215		2.12296	
143 Methyl Acetate	0.17715	0.17540	0.17734	0.17469	0.18055	0.16741	AVRG		0.17542		2.51904	
144 Methylcyclohexane	0.23835	0.30483	0.28989	0.32341	0.34497	0.37111	AVRG		0.31209		14.80597	
145 Dimethoxymethane	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
146 2-Methylnaphthalene	0.86198	0.94642	1.00107	1.09495	1.18707	1.12925	AVRG		1.03679		11.77461	
147 Tetrahydrothiophene	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
148 1,4-Dichlorobutane	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
149 Vinyl Acetate-86	0.04108	0.03867	0.04346	0.04450	0.04699	0.04663	AVRG		0.04355		7.41046	
150 1,3-Butadiene	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
151 t-Butyl ethyl ether	0.52464	0.51543	0.51345	0.49325	0.52118	0.48893	AVRG		0.50948		2.91638	
152 t-Amyl methyl ether	0.45971	0.45931	0.46161	0.44507	0.48405	0.45297	AVRG		0.46045		2.83653	
153 1,2,3-Trimethylbenzene	2.38208	2.54185	2.56554	2.61518	2.70337	2.77032	AVRG		2.59639		5.22175	
$ 4 Dibromofluoromethane	0.22501	0.22614	0.22425	0.21945	0.23551	0.23398	AVRG		0.22739		2.70709	
$ 5 1,2-Dichloroethane-d4	0.27507	0.27739	0.27004	0.26008	0.27712	0.27038	AVRG		0.27168		2.39902	
$ 6 Toluene-d8	1.37409	1.36945	1.38907	1.30841	1.36567	1.34819	AVRG		1.35915		2.07110	
$ 7 Bromofluorobenzene	0.47287	0.47746	0.46384	0.45213	0.46975	0.45752	AVRG		0.46560		2.06132	

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1037

C0I020508

Report Date : 04-Aug-2010 09:34

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 03-AUG-2010 16:44
End Cal Date : 03-AUG-2010 21:05
Quant Method : ISTD
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\8260LLUX16.m
Last Edit : 04-Aug-2010 09:28 a3ux16.i

Curve	Formula	Units
Averaged	Amt = Rsp/m1	Response
Wt Linear	Amt = b + Rsp/m1	Response
Quad	Amt = b + m1*Rsp + m2*Rsp^2	Response

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

North Canton

Work Instruction WI-NC-041A_110308
Effective _____
Data review checklist: 8260 A/8260B/624 Initial Calibration

Method (check the applicable box): ☒ 8260A ☒ 8260B ☐ 624

Analysis Date: 8.3.10 **Run batch ID:** N/A

Curve ID: M00803-IC.b **(curve ID must include instrument designation and date reference)**

Acceptance criteria is found in the applicable laboratory SOP. If item is N/A, mark as such in Notes column

Item for review	Level I Yes	Level I No	Level II Yes	Level II No
Tune:				
BFB passes, all points within 12 hr clock (24 hr for 624)	Yes		Yes	
All calibration points ID'd on Calibration Summary Form	Yes		Yes	
Documentation: Raw data and run logs present for all points	Yes		Yes	
Run log and Raw data clearly indicate method by version	Yes		Yes	
RLs: Minimum of 5 points, lowest standards at or below RL	Yes		Yes	
Linearity: 8260 CCCs ≤ 30% RSD	Yes		Yes	
Linear Regression curve fit for all >15% RSD (35% 624) r2>0.980 (r>0.990)	Yes		Yes	
Plots for all Linear Regressions printed	Yes		Yes	
Response: SPCCs all pass minimum response factors	Yes		Yes	
ICV- Second source standard Analytes 60-140% recovery, problem compounds may be allowed outside these limits, but must be evaluated (acrolein, acrylonitrile, 2-ceve, propionitrile, trans 1,4-dichloro-2-butene) Internal Standards 50-200% of recent curve	Yes		Yes	
Manual integrations: necessary, correct & documented	NA		NA	
Other: Verify Avg RF on Cal Summary matches Avg RF on Con Cal form	NA		NA	

Reviewed by Analyst/ Level I: Lary A. Wil Date: 8.4.10

Reviewed by Peer/Sup/ Level II: _____ Date: 8-5-10

By signing in "Reviewed by" above I agree that I have reviewed the data as indicated on this checklist.

*Peer/Sup only: In addition to the items above, all manual integrations in this package have been reviewed and found acceptable.

Reviewed by Peer/Sup: _____ Date: _____

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: NORTH CANTON Contract:

Lab Code: TALCAN Case No.: SAS No.: SDG No.: C0I020508

Lab File ID: BFB563 BFB Injection Date: 09/13/10

Instrument ID: A3UX16 BFB Injection Time: 1041

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.7
75	30.0 - 60.0% of mass 95	48.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	0.4 (0.5)1
174	50.0 - 100.0% of mass 95	80.5
175	5.0 - 9.0% of mass 174	5.4 (6.7)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.8 (97.8)1
177	5.0 - 9.0% of mass 176	4.9 (6.2)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	50NG-CC	UXM8987	09/13/10	1123
02	VSTD010	50NG-A9CC	UXM8988	09/13/10	1145
03	L6W2RCHK	L6W2R1AC	UXM8989	09/13/10	1207
04	L6W2RCKDUP	L6W2R1AD	UXM8990	09/13/10	1229
05	L6W2RBLK	L6W2R1AA	UXM8991	09/13/10	1251
06	PW-01 COMPOS	L6NL71AA	UXM9011	09/13/10	2003
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Data File: \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\UXM8987.D
Report Date: 13-Sep-2010 13:15

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux16.i Injection Date: 13-SEP-2010 11:23
Lab File ID: UXM8987.D Init. Cal. Date(s): 03-AUG-2010 03-AUG-2010
Analysis Type: WATER Init. Cal. Times: 16:44 21:05
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\8260LLUX16.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
$ 4 Dibromofluoromethane	0.22739	0.23554	0.23554	0.010	-3.58395	50.00000	Averaged	
$ 5 1,2-Dichloroethane-d4	0.27168	0.26019	0.26019	0.010	4.23087	50.00000	Averaged	
$ 6 Toluene-d8	1.35915	1.37104	1.37104	0.010	-0.87534	50.00000	Averaged	
$ 7 Bromofluorobenzene	0.46560	0.47395	0.47395	0.010	-1.79464	50.00000	Averaged	
8 Dichlorodifluoromethane	0.18709	0.23260	0.23260	0.010	-24.32581	50.00000	Averaged	
9 Chloromethane	0.31965	0.31516	0.31516	0.100	1.40623	50.00000	Averaged	
10 Vinyl Chloride	0.30017	0.35080	0.35080	0.010	-16.86686	20.00000	Averaged	
11 Bromomethane	50.00000	88.24927	0.17330	0.010	-76.49854	0.000e+000	Quadratic	
12 Chloroethane	50.00000	58.45314	0.17448	0.010	-16.90629	0.000e+000	Wt Linear	
13 Trichlorofluoromethane	0.20167	0.25714	0.25714	0.010	-27.50816	50.00000	Averaged	
15 Acrolein	0.03543	0.02636	0.02636	0.010	25.60375	50.00000	Averaged	
16 Acetone	0.08417	0.06107	0.06107	0.010	27.43990	50.00000	Averaged	
17 1,1-Dichloroethene	0.25290	0.24118	0.24118	0.010	4.63316	20.00000	Averaged	
18 Freon-113	0.16174	0.16649	0.16649	0.010	-2.93769	50.00000	Averaged	
19 Iodomethane	0.41628	0.40526	0.40526	0.010	2.64593	50.00000	Averaged	
20 Carbon Disulfide	0.83487	0.79398	0.79398	0.010	4.89802	50.00000	Averaged	
21 Methylene Chloride	50.00000	52.67251	0.32531	0.010	-5.34501	0.000e+000	Wt Linear	
22 Acetonitrile	0.02763	0.02487	0.02487	0.010	9.97720	50.00000	Averaged	
23 Acrylonitrile	0.08286	0.07737	0.07737	0.010	6.62757	50.00000	Averaged	
24 Methyl tert-butyl ether	0.38255	0.33144	0.33144	0.010	13.36223	50.00000	Averaged	
25 trans-1,2-Dichloroethene	0.28586	0.28767	0.28767	0.010	-0.63426	50.00000	Averaged	
26 Hexane	50.00000	41.59122	0.03955	0.010	16.81756	0.000e+000	Wt Linear	
27 Vinyl acetate	0.37986	0.21734	0.21734	0.010	42.78375	50.00000	Averaged	
28 1,1-Dichloroethane	0.46470	0.47008	0.47008	0.100	-1.15919	50.00000	Averaged	
29 tert-Butyl Alcohol	0.01300	0.00705	0.00705	0.010	45.74195	50.00000	Averaged	<-
30 2-Butanone	0.10703	0.08387	0.08387	0.010	21.63305	50.00000	Averaged	
M 31 1,2-Dichloroethene (total)	0.28965	0.29004	0.29004	0.010	-0.13343	50.00000	Averaged	
32 cis-1,2-dichloroethene	0.29344	0.29240	0.29240	0.010	0.35446	50.00000	Averaged	
33 2,2-Dichloropropane	0.29691	0.22449	0.22449	0.010	24.39041	50.00000	Averaged	
34 Bromochloromethane	0.13434	0.13233	0.13233	0.010	1.50049	50.00000	Averaged	
35 Chloroform	0.44095	0.44819	0.44819	0.010	-1.64009	20.00000	Averaged	
36 Tetrahydrofuran	50.00000	23.56395	0.04697	0.010	52.87211	0.000e+000	Wt Linear	
37 1,1,1-Trichloroethane	0.37288	0.35445	0.35445	0.010	4.94407	50.00000	Averaged	
38 1,1-Dichloropropene	0.34308	0.33592	0.33592	0.010	2.08674	50.00000	Averaged	
39 Carbon Tetrachloride	0.30099	0.30967	0.30967	0.010	-2.88384	50.00000	Averaged	
40 1,2-Dichloroethane	0.33269	0.31799	0.31799	0.010	4.41643	50.00000	Averaged	
41 Benzene	1.11517	1.10887	1.10887	0.010	0.56532	50.00000	Averaged	
42 Trichloroethene	0.27465	0.26302	0.26302	0.010	4.23570	50.00000	Averaged	
43 1,2-Dichloropropane	0.24840	0.24936	0.24936	0.010	-0.38700	20.00000	Averaged	
44 1,4-Dioxane	2500	1839	0.00177	0.001	26.44369	0.000e+000	Wt Linear	
45 Dibromomethane	0.13862	0.13111	0.13111	0.010	5.41548	50.00000	Averaged	
46 Bromodichloromethane	0.31139	0.30990	0.30990	0.010	0.47847	50.00000	Averaged	
47 2-Chloroethyl vinyl ether	0.07648	0.08605	0.08605	0.010	-12.50762	50.00000	Averaged	

Data File: \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\UXM8987.D
Report Date: 13-Sep-2010 13:15

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux16.i Injection Date: 13-SEP-2010 11:23
Lab File ID: UXM8987.D Init. Cal. Date(s): 03-AUG-2010 03-AUG-2010
Analysis Type: WATER Init. Cal. Times: 16:44 21:05
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\8260LLUX16.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
48 cis-1,3-Dichloropropene	0.39684	0.34097	0.34097	0.010	14.07780	50.00000	Averaged
49 4-Methyl-2-pentanone	0.19976	0.15144	0.15144	0.010	24.19111	50.00000	Averaged
50 Toluene	1.64261	1.61495	1.61495	0.010	1.68403	20.00000	Averaged
51 trans-1,3-Dichloropropene	0.48790	0.39208	0.39208	0.010	19.63994	50.00000	Averaged
52 Ethyl Methacrylate	0.44064	0.35033	0.35033	0.010	20.49477	50.00000	Averaged
53 1,1,2-Trichloroethane	0.29044	0.27304	0.27304	0.010	5.98949	50.00000	Averaged
54 1,3-Dichloropropane	0.52526	0.50377	0.50377	0.010	4.09067	50.00000	Averaged
55 Tetrachloroethene	0.30156	0.28760	0.28760	0.010	4.63090	50.00000	Averaged
56 2-Hexanone	0.17860	0.14075	0.14075	0.010	21.19259	50.00000	Averaged
57 Dibromochloromethane	0.30317	0.29866	0.29866	0.010	1.48779	50.00000	Averaged
58 1,2-Dibromoethane	0.28069	0.24965	0.24965	0.010	11.05731	50.00000	Averaged
59 Chlorobenzene	1.01536	1.01860	1.01860	0.300	-0.31909	50.00000	Averaged
60 1,1,1,2-Tetrachloroethane	0.36432	0.37318	0.37318	0.010	-2.43262	50.00000	Averaged
61 Ethylbenzene	0.54194	0.55021	0.55021	0.010	-1.52519	20.00000	Averaged
62 m + p-Xylene	0.67312	0.69501	0.69501	0.010	-3.25209	50.00000	Averaged
M 63 Xylenes (total)	0.67996	0.69826	0.69826	0.010	-2.69146	50.00000	Averaged
64 Xylene-o	0.69364	0.70476	0.70476	0.010	-1.60337	50.00000	Averaged
65 Styrene	1.10040	1.12895	1.12895	0.010	-2.59399	50.00000	Averaged
66 Bromoform	0.17153	0.17213	0.17213	0.100	-0.34596	50.00000	Averaged
67 Isopropylbenzene	1.69408	1.69431	1.69431	0.010	-0.01390	50.00000	Averaged
68 1,1,2,2-Tetrachloroethane	0.67378	0.60773	0.60773	0.300	9.80316	50.00000	Averaged
69 1,4-Dichloro-2-butene	0.14130	0.13518	0.13518	0.010	4.32822	50.00000	Averaged
70 1,2,3-Trichloropropane	0.21385	0.18520	0.18520	0.010	13.39526	50.00000	Averaged
71 Bromobenzene	0.78475	0.74027	0.74027	0.010	5.66882	50.00000	Averaged
72 n-Propylbenzene	0.78580	0.77171	0.77171	0.010	1.79299	50.00000	Averaged
73 2-Chlorotoluene	0.74067	0.73215	0.73215	0.010	1.15040	50.00000	Averaged
74 1,3,5-Trimethylbenzene	2.55946	2.52081	2.52081	0.010	1.50998	50.00000	Averaged
75 4-Chlorotoluene	0.73678	0.73560	0.73560	0.010	0.15951	50.00000	Averaged
76 tert-Butylbenzene	2.16296	2.03474	2.03474	0.010	5.92805	50.00000	Averaged
77 1,2,4-Trimethylbenzene	2.63969	2.62130	2.62130	0.010	0.69661	50.00000	Averaged
78 sec-Butylbenzene	2.75512	2.70735	2.70735	0.010	1.73396	50.00000	Averaged
79 4-Isopropyltoluene	2.36019	2.31961	2.31961	0.010	1.71933	50.00000	Averaged
80 1,3-Dichlorobenzene	1.44997	1.40990	1.40990	0.010	2.76356	50.00000	Averaged
81 1,4-Dichlorobenzene	1.48897	1.45885	1.45885	0.010	2.02293	50.00000	Averaged
82 n-Butylbenzene	1.86891	1.88658	1.88658	0.010	-0.94552	50.00000	Averaged
83 1,2-Dichlorobenzene	1.46638	1.43121	1.43121	0.010	2.39853	50.00000	Averaged
84 1,2-Dibromo-3-chloropropane	0.13890	0.10042	0.10042	0.010	27.69926	50.00000	Averaged
85 1,2,4-Trichlorobenzene	0.91816	0.77226	0.77226	0.010	15.89001	50.00000	Averaged
86 Hexachlorobutadiene	0.38152	0.33821	0.33821	0.010	11.35059	50.00000	Averaged
87 Naphthalene	2.33235	1.62749	1.62749	0.010	30.22098	50.00000	Averaged
88 1,2,3-Trichlorobenzene	0.81388	0.67565	0.67565	0.010	16.98352	50.00000	Averaged
98 Cyclohexane	0.37214	0.38441	0.38441	0.010	-3.29810	50.00000	Averaged
143 Methyl Acetate	0.17542	0.15797	0.15797	0.010	9.94961	50.00000	Averaged

Data File: \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\UXM8987.D
Report Date: 13-Sep-2010 13:15

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux16.i Injection Date: 13-SEP-2010 11:23
Lab File ID: UXM8987.D Init. Cal. Date(s): 03-AUG-2010 03-AUG-2010
Analysis Type: WATER Init. Cal. Times: 16:44 21:05
Lab Sample ID: 50NG-CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\8260LLUX16.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
144 Methylcyclohexane	0.31209	0.32438	0.32438	0.010	-3.93865	50.00000	Averaged
141 1,3,5-Trichlorobenzene	0.97215	0.89909	0.89909	0.010	7.51603	50.00000	Averaged
149 Vinyl Acetate-86	0.04355	0.02512	0.02512	0.010	42.31437	50.00000	Averaged

Data File: \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\UXM8988.D
Report Date: 13-Sep-2010 12:01

TestAmerica North Canton

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux16.i Injection Date: 13-SEP-2010 11:45
Lab File ID: UXM8988.D Init. Cal. Date(s): 03-AUG-2010 03-AUG-2010
Analysis Type: WATER Init. Cal. Times: 16:44 21:05
Lab Sample ID: 50NG-A9CC Quant Type: ISTD
Method: \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\8260LLUX16.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
14 Dichlorofluoromethane	0.35257	0.37514	0.37514	0.010	-6.40173	50.00000	Averaged	
89 Ethyl Ether	0.20375	0.21252	0.21252	0.010	-4.30882	50.00000	Averaged	
91 3-Chloropropene	0.13935	0.14766	0.14766	0.010	-5.96492	50.00000	Averaged	
92 Isopropyl Ether	0.24135	0.23929	0.23929	0.010	0.85231	50.00000	Averaged	
93 2-Chloro-1,3-butadiene	0.36378	0.39909	0.39909	0.010	-9.70645	50.00000	Averaged	
94 Propionitrile	0.02813	0.02734	0.02734	0.010	2.78351	50.00000	Averaged	
95 Ethyl Acetate	0.18741	0.15378	0.15378	0.010	17.94360	50.00000	Averaged	
96 Methacrylonitrile	0.13311	0.11286	0.11286	0.010	15.21335	50.00000	Averaged	
97 Isobutanol	0.00858	0.00767	0.00767	0.010	10.57486	50.00000	Averaged	<-
99 n-Butanol	0.00717	0.00497	0.00497	0.010	30.68235	50.00000	Averaged	<-
100 Methyl Methacrylate	0.17819	0.14286	0.14286	0.010	19.82687	50.00000	Averaged	
101 2-Nitropropane	0.04095	0.03430	0.03430	0.010	16.25525	50.00000	Averaged	
103 Cyclohexanone	0.02834	0.04313	0.04313	0.010	-52.22159	50.00000	Averaged	<-
146 2-Methylnaphthalene	1.03679	0.57505	0.57505	0.010	44.53556	50.00000	Averaged	
151 t-Butyl ethyl ether	0.50948	0.43930	0.43930	0.010	13.77408	50.00000	Averaged	
152 t-Amyl methyl ether	0.46045	0.34529	0.34529	0.010	25.01055	50.00000	Averaged	
153 1,2,3-Trimethylbenzene	2.59639	2.75281	2.75281	0.010	-6.02472	50.00000	Averaged	

SW846 8260B METHOD BLANK SUMMARY

BLANK WORKORDER NO.: L6W2R1AA

Lab Name: TestAmerica Laboratories, Inc.

Lab Code: TALPIT — SDG Number:

Lab File ID: UXM8991.D — Lot Number: C0I020508

Date Analyzed: 09/13/10 — Time Analyzed: 12:51

Matrix: WATER — Date Extracted: 09/13/10

GC Column: DB624 ID: .18 — Extraction Method: 5030B

Instrument ID: UX16 — Level: (low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	INTRA-LAB QC	L6KPW1AA	UXM8993.D	09/13/10	13:34
02	LAB MS/MSD	L6KPW1AC S	UXM9012.D	09/13/10	20:24
03	LAB MS/MSD	L6KPW1AD D	UXM9013.D	09/13/10	20:46
04	PW-01 Composite	L6NL71AA	UXM9011.D	09/13/10	20:03
05	CHECK SAMPLE	L6W2R1AC C	UXM8989.D	09/13/10	12:07
06	DUPLICATE CHECK	L6W2R1AD L	UXM8990.D	09/13/10	12:29
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COMMENTS:

FORM IV

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0I020508 **Work Order #...:** L6W2R1AA **Matrix.....:** WATER
MB Lot-Sample #: A0I140000-090

Prep Date.....: 09/13/10 **Analysis Time..:** 12:51
Analysis Date..: 09/13/10 **Prep Batch #...:** 0257090 **Final Wgt/Vol..:** 5 mL
Dilution Factor: 1 **Initial Wgt/Vol:** 5 mL **Instrument ID..:** UX16
Analyst ID.....: 001644

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acetone	ND	5.0	ug/L	SW846 8260B
Bromobenzene	ND	1.0	ug/L	SW846 8260B
Bromochloromethane	ND	1.0	ug/L	SW846 8260B
Bromodichloromethane	ND	1.0	ug/L	SW846 8260B
n-Butylbenzene	ND	1.0	ug/L	SW846 8260B
sec-Butylbenzene	ND	1.0	ug/L	SW846 8260B
tert-Butylbenzene	ND	1.0	ug/L	SW846 8260B
Carbon disulfide	ND	1.0	ug/L	SW846 8260B
Dibromochloromethane	ND	1.0	ug/L	SW846 8260B
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	SW846 8260B
2-Chloroethyl vinyl ether	ND	5.0	ug/L	SW846 8260B
2-Chlorotoluene	ND	1.0	ug/L	SW846 8260B
4-Chlorotoluene	ND	1.0	ug/L	SW846 8260B
1,2-Dibromoethane	ND	1.0	ug/L	SW846 8260B
Dibromomethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,3-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,4-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
Dichlorodifluoromethane	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,3-Dichloropropane	ND	1.0	ug/L	SW846 8260B
2,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Trichlorofluoromethane	ND	1.0	ug/L	SW846 8260B
Hexachlorobutadiene	**0.40 J**	**1.0**	**ug/L**	**SW846 8260B**
2-Hexanone	ND	5.0	ug/L	SW846 8260B
Isopropylbenzene	ND	1.0	ug/L	SW846 8260B
p-Isopropyltoluene	ND	1.0	ug/L	SW846 8260B
Naphthalene	ND	1.0	ug/L	SW846 8260B
n-Propylbenzene	ND	1.0	ug/L	SW846 8260B
Styrene	ND	1.0	ug/L	SW846 8260B
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
1,2,3-Trichlorobenzene	**0.21 J**	**1.0**	**ug/L**	**SW846 8260B**
1,2,4-Trichloro-benzene	ND	1.0	ug/L	SW846 8260B
1,2,3-Trichloropropane	ND	1.0	ug/L	SW846 8260B
1,2,4-Trimethylbenzene	ND	1.0	ug/L	SW846 8260B
Vinyl acetate	ND	2.0	ug/L	SW846 8260B

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0I020508 **Work Order #...:** L6W2R1AA **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Xylenes (total)	ND	2.0	ug/L	SW846 8260B
Methyl tert-butyl ether	ND	5.0	ug/L	SW846 8260B
2-Butanone	ND	5.0	ug/L	SW846 8260B
4-Methyl-2-pentanone	ND	5.0	ug/L	SW846 8260B
1,2,3-Trimethylbenzene	ND	5.0	ug/L	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	5.0	ug/L	SW846 8260B
tert-Butyl alcohol	ND	20	ug/L	SW846 8260B
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	2.0	ug/L	SW846 8260B
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	SW846 8260B
Tert-amyl methyl ether (T	ND	5.0	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
Bromoform	ND	1.0	ug/L	SW846 8260B
Bromomethane	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chlorobenzene	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
Chloromethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	1.0	ug/L	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	95	(73 - 122)
1,2-Dichloroethane-d4	95	(61 - 128)
Toluene-d8	96	(76 - 110)
4-Bromofluorobenzene	92	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

(Continued on next page)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0I020508 **Work Order #...:** L6W2R1AA **Matrix.....:** WATER

NOTE(S):

J Estimated result. Result is less than RL.

SW846 8260B SURROGATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0I020508

Extraction: XXI25QK01

	CLIENT ID.	SRG01	SRG02	SRG03	SRG04	TOT OUT
01	INTRA-LAB QC	100	99	98	94	00
02	PW-01 Composite	106	97	106	98	00
03	METHOD BLK. L6W2R1AA	95	95	96	92	00
04	LCS L6W2R1AC	105	98	100	104	00
05	LAB MS/MSD D	100	93	103	97	00
06	LCSD L6W2R1AD	99	97	100	101	00
07	LAB MS/MSD S	100	95	103	103	00

SURROGATES		QC LIMITS
SRG01	= Dibromofluoromethane	(73-122)
SRG02	= 1,2-Dichloroethane-d4	(61-128)
SRG03	= Toluene-d8	(76-110)
SRG04	= 4-Bromofluorobenzene	(74-116)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8260B CHECK SAMPLE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: A0I140000 WO #: L6W2R1AC
BATCH: 0257090

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	10.0	9.72	97	63 - 130	
Trichloroethene	10.0	9.40	94	75 - 122	
Benzene	10.0	9.84	98	80 - 116	
Toluene	10.0	9.41	94	74 - 119	
Chlorobenzene	10.0	9.62	96	76 - 117	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

SW846 8260B CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: A0I140000 WO #: L6W2R1AD
BATCH: 0257090

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	10.0	9.66	97	63 - 130	
Trichloroethene	10.0	9.56	96	75 - 122	
Benzene	10.0	9.91	99	80 - 116	
Toluene	10.0	9.72	97	74 - 119	
Chlorobenzene	10.0	9.80	98	76 - 117	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

SW846 8260B MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Matrix Spike ID: LAB MS/MSD

Lot #: A0I040423 WO #: L6KPW1AC
BATCH: 0257090

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	MS CONCENT. (ug/L)	MS % REC	LIMITS REC	QUAL
1,1-Dichloroethene	10.0	ND	9.65	97	62 - 130	
Trichloroethene	10.0	ND	9.36	94	62 - 130	
Benzene	10.0	ND	9.65	97	78 - 118	
Toluene	10.0	ND	9.81	98	70 - 119	
Chlorobenzene	10.0	ND	9.46	95	76 - 117	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

SW846 8260B MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Matrix Spike ID: LAB MS/MSD

Lot #: A0I040423 WO #: L6KPW1AD
BATCH: 0257090

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENT. (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	QUAL
1,1-Dichloroethene	10.0	9.57	96	0.87	20	62 - 130	
Trichloroethene	10.0	9.19	92	1.9	20	62 - 130	
Benzene	10.0	9.46	95	2.0	20	78 - 118	
Toluene	10.0	9.51	95	3.1	20	70 - 119	
Chlorobenzene	10.0	9.22	92	2.6	20	76 - 117	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: NORTH CANTON Contract:

Lab Code: TALCAN Case No.: SAS No.: SDG No.: C0I020508

Lab File ID (Standard): UXM8987 Date Analyzed: 09/13/10

Instrument ID: A3UX16 Time Analyzed: 1123

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 (CBZ) AREA #	RT	IS2 (DCB) AREA #	RT	IS3 AREA #	RT
	12 HOUR STD	955765	8.41	533894	10.65	1413269	5.72
	UPPER LIMIT	1911530	8.91	1067788	11.15	2826538	6.22
	LOWER LIMIT	477883	7.91	266947	10.15	706635	5.22
	EPA SAMPLE NO.						
01	L6W2RCHK	939544	8.41	527643	10.65	1377336	5.72
02	L6W2RCKDUP	953024	8.41	516705	10.65	1396735	5.72
03	L6W2RBLK	946147	8.41	495884	10.65	1454659	5.72
04	PW-01 COMPOS	688788	8.41	399971	10.65	1190380	5.72
05							
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IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Lab File ID: S0826DFT DFTPP Injection Date: 08/26/10

Instrument ID: 71 DFTPP Injection Time: 0616

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	49.4
68	Less than 2.0% of mass 69	0.5 (1.1)1
69	Mass 69 relative abundance	44.3
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	56.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.3
275	10.0 - 30.0% of mass 198	23.6
365	Greater than 1.0% of mass 198	4.58
441	Present, but less than mass 443	9.6
442	40.0 - 100.0% of mass 198	65.0
443	17.0 - 23.0% of mass 442	11.2 (17.3)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD4	SSTD4	S0826CCC	08/26/10	0632
02	SSTD0.4	SSTD0.4	S0826CC1	08/26/10	0652
03	SSTD2	SSTD2	S0826CC2	08/26/10	0711
04	SSTD10	SSTD10	S0826CC4	08/26/10	0731
05	SSTD20	SSTD20	S0826CC5	08/26/10	0750
06	SSTD40	SSTD40	S0826CC6	08/26/10	0810
07	SSTD60	SSTD60	S0826CC7	08/26/10	0830
08	SSTD80	SSTD80	S0826CC8	08/26/10	0850
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18					
19					
20					
21					
22					

Report Date : 26-Aug-2010 12:29

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 26-AUG-2010 06:32
End Cal Date : 26-AUG-2010 08:50
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\D\chem\71.i\s0826108270C.b\11b.m
Last Edit : 26-Aug-2010 12:24 bachas

Calibration File Names:
Level 1: \\PITSVR06\D\chem\71.i\s0826108270C.b\S0826CC1.D
Level 2: \\PITSVR06\D\chem\71.i\s0826108270C.b\S0826CC2.D
Level 3: \\PITSVR06\D\chem\71.i\s0826108270C.b\S0826CCC.D
Level 4: \\PITSVR06\D\chem\71.i\s0826108270C.b\S0826CC4.D
Level 5: \\PITSVR06\D\chem\71.i\s0826108270C.b\S0826CC5.D
Level 6: \\PITSVR06\D\chem\71.i\s0826108270C.b\S0826CC6.D
Level 7: \\PITSVR06\D\chem\71.i\s0826108270C.b\S0826CC7.D
Level 8: \\PITSVR06\D\chem\71.i\s0826108270C.b\S0826CC8.D

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
198 1,4-Dioxane	+++++	0.24188	0.37150	0.39124	0.34342	0.34814						
	0.36465	0.33615					AVRG		0.34243		14.05834	
226 n-Decane	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
227 n-Octadecane	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
46 2,4-Toluenediamene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
47 1,3,5-Trichlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
48 2,4-Dichlorophenol	0.27521	0.29402	0.30895	0.31370	0.32720	0.33714						
	0.34256	0.33684					AVRG		0.31695		7.45351	
49 Benzoic Acid	+++++	+++++	0.21265	0.22333	0.24139	0.25145						
	0.26166	0.26265					AVRG		0.24219		8.48738	
50 1,2,4-Trichlorobenzene	0.34346	0.35192	0.34885	0.35893	0.37056	0.37491						
	0.38936	0.38622					AVRG		0.36553		4.74220	
51 Naphthalene	1.09672	1.06319	1.06814	1.08752	1.12055	1.13098						
	1.16809	1.15309					AVRG		1.11103		3.46923	
52 4-Chloroaniline	0.40805	0.43912	0.44912	0.46377	0.47769	0.47834						
	0.48292	0.47558					AVRG		0.45933		5.63012	

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
59 4-Chloro-3-Methylphenol	0.24029	0.27890	0.29088	0.29608	0.30867	0.29775						
	0.30206	0.30032					AVRG		0.28937		7.49054	
60 p-Phenylene diamine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
61 Safrole	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
62 2-Methylnaphthalene	0.68541	0.65216	0.67183	0.69536	0.71963	0.73754						
	0.76111	0.76143					AVRG		0.71056		5.76012	
63 1-Methylnaphthalene	0.63180	0.62269	0.64450	0.66899	0.68874	0.71582						
	0.74579	0.73966					AVRG		0.68225		7.05045	
64 Hexachlorocyclopentadiene	3903	25852	62951	183742	409403	848941						
	1257831	1653995					QUAD	0.13908	1.79894	-0.02097	0.99959	
65 1,2,4,5-Tetrachlorobenzene	0.64476	0.65104	0.63637	0.65985	0.71782	0.75646						
	0.76754	0.77118					AVRG		0.70063		8.39896	

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
78 2,6-Dinitrotoluene	+++++	0.23754	0.24866	0.26922	0.28087	0.29079						
	0.29462	0.28827					AVRG		0.27285		8.11604	
79 Acenaphthylene	1.41511	1.63534	1.67611	1.76369	1.89303	2.02711						
	2.07955	2.14389					AVRG		1.82923		13.73285	
80 1,2-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
81 3-Nitroaniline	+++++	0.25595	0.27507	0.29742	0.31646	0.31535						
	0.31457	0.31553					AVRG		0.29862		8.10602	
82 Acenaphthene	1.08571	1.05766	1.03037	1.08262	1.14118	1.23078						
	1.26172	1.28548					AVRG		1.14694		8.64845	
83 2,4-Dinitrophenol	+++++	+++++	0.13225	0.14820	0.16563	0.17202						
	0.18101	0.18597					AVRG		0.16418		12.47198	
84 Pentachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

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Compound	0.4000000 Level 1 / 60.0000 Level 7	2.0000 Level 2 / 80.0000 Level 8	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
92 2-Naphthylamine	0.99100	1.08407	1.06460	1.05420	1.04085	0.98906						
	0.94345	+++++					AVRG		1.02389		4.92382	
93 Diethylphthalate	1.10902	1.17087	1.17596	1.17492	1.23219	1.23106						
	1.24271	1.23598					AVRG		1.19659		3.91471	
94 Fluorene	1.05985	1.20543	1.18105	1.27611	1.36723	1.49885						
	1.55335	1.57937					AVRG		1.34016		14.23424	
95 4-Chlorophenyl-phenylether	0.61897	0.59899	0.59896	0.62972	0.69201	0.76696						
	0.79876	0.81381					AVRG		0.68977		13.23417	
96 4-Nitroaniline	+++++	0.24251	0.28008	0.28492	0.30687	0.30972						
	0.30718	0.25779					AVRG		0.28415		9.25107	
97 5-Nitro-o-toluidine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
98 4,6-Dinitro-2-methylphenol	+++++	+++++	0.13618	0.15596	0.16051	0.16234						
	0.16963	0.17228					AVRG		0.15948		8.08560	

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Compound	0.4000000 Level 1 / 60.0000 Level 7	2.0000 Level 2 / 80.0000 Level 8	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
110 Dimethoate	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
111 Pentachlorophenol	9951	25597	76987	161642	248734	329120						
	507293	691927					QUAD	0.17238	6.44586	-0.63832	0.99945	
112 Pentachloronitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
113 4-Aminobiphenyl	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
114 Pronamide	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
115 Phenanthrene	1.08557	1.14576	1.12444	1.21629	1.26979	1.39841						
	1.50612	1.54173					AVRG		1.28601		13.70837	
116 Anthracene	1.02491	1.10868	1.13411	1.21816	1.27889	1.41298						
	1.47293	1.46441					AVRG		1.26438		13.58397	

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
117 Dinoseb	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
118 Disulfoton	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
119 Carbazole	0.84372	0.96727	0.96043	1.00052	1.04685	1.07777						
	1.12337	1.16458					AVRG		1.02306		10.00604	
120 Di-n-Butylphthalate	+++++	1.03535	1.14533	1.23741	1.29621	1.33529						
	1.41121	1.43402					AVRG		1.27069		11.28840	
121 4-Nitroquinoline 1-oxide	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
122 Methapyrilene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
123 Fluoranthene	21234	113735	231613	604950	1253460	2510680						
	3890501	5263146					QUAD	0.07426	0.84545	-0.01039	0.99962	

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Compound	0.4000000 Level 1 / 60.0000 Level 7	2.0000 Level 2 / 80.0000 Level 8	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
124 Benzidine	+++++	+++++	0.56517	0.48340	0.49621	0.43288						
	0.44083	0.40512					AVRG		0.47060		12.15484	
125 Pyrene	1.34423	1.53040	1.48050	1.52291	1.55743	1.61137						
	1.66287	1.66159					AVRG		1.54641		6.79087	
126 Aramite 1	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
M 191 Aramite, Total	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
127 Aramite 2	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
128 p-Dimethylamino azobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
129 p-Chlorobenzilate	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

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	60.0000 Level 7	80.0000 Level 8										
130 Famphur	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
131 Butylbenzylphthalate	+++++	0.60474	0.62413	0.64310	0.64259	0.61948						
	0.62120	0.56900					AVRG		0.61775		4.10626	
132 3,3'-Dimethylbenzidine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
133 3,3'-Dimethoxybenzidine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
134 2-Acetylaminofluorene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
135 3,3'-Dichlorobenzidine	+++++	0.28923	0.33345	0.35130	0.35503	0.36596						
	0.39562	0.38984					AVRG		0.35435		10.16492	
136 Benzo(a)Anthracene	1.12710	1.08793	1.14921	1.10665	1.18001	1.21248						
	1.28348	1.34591					AVRG		1.18660		7.57428	

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
137 Chrysene	1.05886	1.05205	0.98758	1.07329	1.07309	1.15457						
	1.24359	1.20277					AVRG		1.10573		7.79207	
138 4,4'-Methylene bis(o-chloroan	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
139 bis(2-ethylhexyl)Phthalate	+++++	0.69515	0.75783	0.82992	0.86964	0.89471						
	0.93570	0.90091					AVRG		0.84055		10.25418	
140 Di-n-octylphthalate	+++++	69033	153947	426224	888789	1813276						
	2803773	3716173					QUAD	0.20778	0.40713	-0.00079	0.99907	
141 Benzo(b)fluoranthene	13941	63986	126421	356894	735256	1911381						
	2935872	4115454					QUAD	0.24678	0.42346	-0.00270	0.99656	
204 6-Methylchrysene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
142 Benzo(k)fluoranthene	13185	73616	143486	335034	763685	1417913						
	2472574	3650431					QUAD	0.08049	0.56870	-0.00684	0.99890	

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	60.0000 Level 7	80.0000 Level 8										
143 7,12-dimethylbenz[a]anthracen	+++++	29733	60388	154378	350080	823163						
	1288318	1845728					QUAD	0.27927	0.96785	-0.01532	0.99834	
144 Hexachlorophene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
145 Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
146 Benzo(a)pyrene	0.83660	0.91050	0.93321	0.96885	1.02394	1.11756						
	1.17484	1.21188					AVRG		1.02217		13.12852	
148 3-Methylcholanthrene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
149 Indeno(1,2,3-cd)pyrene	9042	51714	97183	254888	512681	1046722						
	1738627	2594572					QUAD	0.08616	0.79330	-0.01311	0.99958	
150 Dibenz(a,h)anthracene	7416	40511	86129	211460	432005	878326						
	1488515	2275721					QUAD	0.08677	0.94862	-0.01992	0.99951	

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	60.0000 Level 7	80.0000 Level 8										
151 Benzo(g,h,i)perylene	8086	42338	83980	204240	408420	826163						
	1292061	1874377					QUAD	0.06023	1.00435	-0.01737	0.99983	
211 Benzenethiol	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
212 Kepone	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
213 Dibenzo(a,h) acridine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
214 Methyl parathion	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
215 Parathion	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
216 Isodrin	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

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FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Lab File ID: S0914DF1 DFTPP Injection Date: 09/14/10

Instrument ID: 71 DFTPP Injection Time: 1339

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	51.5
68	Less than 2.0% of mass 69	0.3 (0.6)1
69	Mass 69 relative abundance	46.3
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	57.0
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	25.0
365	Greater than 1.0% of mass 198	6.12
441	Present, but less than mass 443	10.8
442	Greater than 40.0% of mass 198	65.5
443	17.0 - 23.0% of mass 442	12.0 (18.3)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD4	SSTD4	S0914CC1	09/14/10	1420
02	INTRA-LAB BL	L6WLF1AA	S0914001	09/14/10	1439
03	INTRA-LAB CH	L6WLF1AC	S0914002	09/14/10	1539
04	INTRA-LAB CH	L6WLF1AD	S0914003	09/14/10	1559
05	PW-03 0-6"	L6G831AC	S0914010	09/14/10	1738
06	PW-03 6-18"	L6G841AC	S0914011	09/14/10	1758
07	PW-03 18-30"	L6G851AC	S0914012	09/14/10	1818
08	PW-04 0-6"	L6HF51AD	S0914013	09/14/10	1838
09	PW-04 6-18"	L6HF81AC	S0914014	09/14/10	1858
10	PW-04 18-30"	L6HGD1AC	S0914015	09/14/10	1918
11	PW-05 0-6"	L6HGE1AC	S0914016	09/14/10	1938
12	PW-05 6-18"	L6HGF1AC	S0914017	09/14/10	1958
13	PW-05 18-30"	L6HGH1AC	S0914018	09/14/10	2017
14	RINSATE BLAN	L6M4H1AC	S0914019	09/14/10	2057
15					
16					
17					
18					
19					
20					
21					
22					

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 71.i
Lab File ID: S0914CC1.D
Analysis Type:
Lab Sample ID: sstd4
Method: \\pitsvr06\D\chem\71.i\s091410.b\llb.m

Injection Date: 14-SEP-2010 14:20
Init. Cal. Date(s): 26-AUG-2010 27-AUG-2010
Init. Cal. Times: 06:32 11:55
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
198 1,4-Dioxane	0.34243	0.26337	0.26337	0.010	23.08737	25.00000	Averaged
10 N-Nitrosodimethylamine	0.62213	0.62173	0.62173	0.010	0.06448	25.00000	Averaged
9 Pyridine	1.15028	1.27753	1.27753	0.010	-11.06244	25.00000	Averaged
16 Methyl methanesulfonate	0.62429	0.68503	0.68503	0.010	-9.72989	25.00000	Averaged
206 Benzaldehyde	4.00000	3.03202	0.89989	0.010	24.19938	25.00000	Quadratic
21 Aniline	2.09413	1.91890	1.91890	0.010	8.36770	25.00000	Averaged
22 Phenol	1.66934	1.60145	1.60145	0.010	4.06702	20.00000	Averaged
23 bis(2-Chloroethyl)ether	1.29455	1.24814	1.24814	0.010	3.58554	25.00000	Averaged
24 2-Chlorophenol	1.45921	1.45396	1.45396	0.010	0.35965	25.00000	Averaged
26 1,3-Dichlorobenzene	1.62921	1.63106	1.63106	0.010	-0.11339	25.00000	Averaged
27 1,4-Dichlorobenzene	1.66231	1.62608	1.62608	0.010	2.17921	20.00000	Averaged
28 1,2-Dichlorobenzene	1.56665	1.51339	1.51339	0.010	3.39951	25.00000	Averaged
29 Benzyl Alcohol	0.87818	0.70591	0.70591	0.010	19.61652	25.00000	Averaged
30 2-Methylphenol	1.30315	1.20852	1.20852	0.010	7.26187	25.00000	Averaged
31 2,2'-oxybis(1-Chloropropane	1.43788	1.32505	1.32505	0.010	7.84698	25.00000	Averaged
217 Indene	2.47311	2.28627	2.28627	0.010	7.55477	25.00000	Averaged
37 Acetophenone	1.92319	1.71656	1.71656	0.010	10.74412	25.00000	Averaged
32 N-Nitroso-di-n-propylamine	0.87571	0.79989	0.79989	0.050	8.65801	50.00000	Averaged
192 4-Methylphenol	1.28453	1.12009	1.12009	0.010	12.80129	25.00000	Averaged
34 Hexachloroethane	0.63622	0.63163	0.63163	0.010	0.72108	25.00000	Averaged
35 Nitrobenzene	0.35651	0.39083	0.39083	0.010	-9.62561	25.00000	Averaged
36 N-Nitrosopyrrolidine	0.63652	0.53829	0.53829	0.010	15.43152	25.00000	Averaged
41 Isophorone	0.62179	0.63527	0.63527	0.010	-2.16815	25.00000	Averaged
42 2-Nitrophenol	0.19416	0.19517	0.19517	0.010	-0.52180	20.00000	Averaged
43 2,4-Dimethylphenol	0.35637	0.36270	0.36270	0.010	-1.77494	25.00000	Averaged
44 bis(2-Chloroethoxy)methane	0.39378	0.37918	0.37918	0.010	3.70790	25.00000	Averaged
48 2,4-Dichlorophenol	0.31695	0.31724	0.31724	0.010	-0.08950	20.00000	Averaged
49 Benzoic Acid	0.24219	0.18272	0.18272	0.010	24.55331	25.00000	Averaged
50 1,2,4-Trichlorobenzene	0.36553	0.38285	0.38285	0.010	-4.73885	25.00000	Averaged
51 Naphthalene	1.11103	1.05903	1.05903	0.010	4.68097	25.00000	Averaged
52 4-Chloroaniline	0.45933	0.42987	0.42987	0.010	6.41374	25.00000	Averaged
54 2,6-Dichlorophenol	0.31361	0.28868	0.28868	0.010	7.94971	25.00000	Averaged
56 Hexachlorobutadiene	0.21774	0.22790	0.22790	0.010	-4.66510	20.00000	Averaged
208 Caprolactam	0.09537	0.07724	0.07724	0.010	19.01016	25.00000	Averaged
59 4-Chloro-3-Methylphenol	0.28937	0.26541	0.26541	0.010	8.27967	20.00000	Averaged
62 2-Methylnaphthalene	0.71056	0.62233	0.62233	0.010	12.41662	25.00000	Averaged
63 1-Methylnaphthalene	0.68225	0.58130	0.58130	0.010	14.79622	25.00000	Averaged
64 Hexachlorocyclopentadiene	4.00000	3.92451	0.39167	0.050	1.88716	25.00000	Quadratic
65 1,2,4,5-Tetrachlorobenzene	0.70063	0.77994	0.77994	0.010	-11.31945	25.00000	Averaged
66 2,4,6-Trichlorophenol	0.42281	0.44522	0.44522	0.010	-5.29922	20.00000	Averaged
67 2,4,5-Trichlorophenol	0.41251	0.43457	0.43457	0.010	-5.34807	25.00000	Averaged
209 1,1'-Biphenyl	1.73133	1.69565	1.69565	0.010	2.06114	25.00000	Averaged

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 71.i
Lab File ID: S0914CC1.D
Analysis Type:
Lab Sample ID: sstd4
Method: \\pitsvr06\D\chem\71.i\s091410.b\llb.m

Injection Date: 14-SEP-2010 14:20
Init. Cal. Date(s): 26-AUG-2010 27-AUG-2010
Init. Cal. Times: 06:32 11:55
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
70 2-Chloronaphthalene	1.28730	1.29763	1.29763	0.010	-0.80209	25.00000	Averaged
73 2-Nitroaniline	0.32546	0.33606	0.33606	0.010	-3.25757	25.00000	Averaged
76 Dimethylphthalate	1.28597	1.27930	1.27930	0.010	0.51906	25.00000	Averaged
78 2,6-Dinitrotoluene	0.27285	0.24609	0.24609	0.010	9.80934	25.00000	Averaged
79 Acenaphthylene	1.82923	1.75505	1.75505	0.010	4.05499	25.00000	Averaged
81 3-Nitroaniline	0.29862	0.28900	0.28900	0.010	3.22192	25.00000	Averaged
82 Acenaphthene	1.14694	1.05121	1.05121	0.010	8.34633	20.00000	Averaged
83 2,4-Dinitrophenol	0.16418	0.12176	0.12176	0.050	25.83973†	50.00000	Averaged
85 4-Nitrophenol	0.20957	0.27689	0.27689	0.050	-32.12002†	50.00000	Averaged
86 Dibenzofuran	1.70087	1.53758	1.53758	0.010	9.60030	25.00000	Averaged
87 2,4-Dinitrotoluene	0.38579	0.34599	0.34599	0.010	10.31676	25.00000	Averaged
92 2-Naphthylamine	1.02389	0.99737	0.99737	0.010	2.58995	25.00000	Averaged
91 2,3,5,6-Tetrachlorophenol	4.00000	4.26741	0.31533	0.010	-6.68513	25.00000	Quadratic
88 2,3,4,6-Tetrachlorophenol	0.32849	0.28699	0.28699	0.010	12.63533	25.00000	Averaged
93 Diethylphthalate	1.19659	1.13116	1.13116	0.010	5.46782	25.00000	Averaged
94 Fluorene	1.34016	1.16409	1.16409	0.010	13.13750	25.00000	Averaged
95 4-Chlorophenyl-phenylether	0.68977	0.60258	0.60258	0.010	12.64096	25.00000	Averaged
96 4-Nitroaniline	0.28415	0.28738	0.28738	0.010	-1.13658	25.00000	Averaged
98 4,6-Dinitro-2-methylphenol	0.15948	0.14225	0.14225	0.010	10.80253	25.00000	Averaged
99 N-Nitrosodiphenylamine (1)	0.59356	0.58919	0.58919	0.010	0.73569	20.00000	Averaged
100 1,2-Diphenylhydrazine	0.96162	1.10932	1.10932	0.010	-15.35920	25.00000	Averaged
106 4-Bromophenyl-phenylether	0.25708	0.24093	0.24093	0.010	6.28216	25.00000	Averaged
107 Hexachlorobenzene	0.27117	0.25237	0.25237	0.010	6.93192	25.00000	Averaged
210 Atrazine	0.23827	0.23438	0.23438	0.010	1.63360	25.00000	Averaged
111 Pentachlorophenol	10.00000	9.85911	0.13377	0.010	1.40893	20.00000	Quadratic
115 Phenanthrene	1.28601	1.13609	1.13609	0.010	11.65822	25.00000	Averaged
116 Anthracene	1.26438	1.14928	1.14928	0.010	9.10342	25.00000	Averaged
119 Carbazole	1.02306	0.96740	0.96740	0.010	5.44142	25.00000	Averaged
120 Di-n-Butylphthalate	1.27069	1.18735	1.18735	0.010	6.55811	25.00000	Averaged
123 Fluoranthene	4.00000	3.94993	0.99846	0.010	1.25166	20.00000	Quadratic
124 Benzidine	0.47060	0.46046	0.46046	0.010	2.15469	25.00000	Averaged
125 Pyrene	1.54641	1.34635	1.34635	0.010	12.93690	25.00000	Averaged
131 Butylbenzylphthalate	0.61775	0.60813	0.60813	0.010	1.55685	25.00000	Averaged
135 3,3'-Dichlorobenzidine	0.35435	0.38919	0.38919	0.010	-9.83274	25.00000	Averaged
136 Benzo(a)Anthracene	1.18660	1.16198	1.16198	0.010	2.07438	25.00000	Averaged
137 Chrysene	1.10573	0.94078	0.94078	0.010	14.91731	25.00000	Averaged
139 bis(2-ethylhexyl)Phthalate	0.84055	0.76494	0.76494	0.010	8.99565	25.00000	Averaged
140 Di-n-octylphthalate	4.00000	4.16260	1.53765	0.010	-4.06508	20.00000	Quadratic
141 Benzo(b)fluoranthene	4.00000	4.24107	1.34406	0.010	-6.02682	25.00000	Quadratic
142 Benzo(k)fluoranthene	4.00000	3.56529	1.29431	0.010	10.86773	25.00000	Quadratic
143 7,12-dimethylbenz[a]anthrac	4.00000	4.29751	0.53524	0.010	-7.43775	25.00000	Quadratic
146 Benzo(a)pyrene	1.02217	0.95848	0.95848	0.010	6.23166	20.00000	Averaged

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 71.i
Lab File ID: S0914CC1.D
Analysis Type:
Lab Sample ID: sstd4
Method: \\pitsvr06\D\chem\71.i\s091410.b\llb.m

Injection Date: 14-SEP-2010 14:20
Init. Cal. Date(s): 26-AUG-2010 27-AUG-2010
Init. Cal. Times: 06:32 11:55
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
149 Indeno(1,2,3-cd)pyrene	4.00000	4.01270	1.05657	0.010	-0.31749	25.00000	Quadratic
150 Dibenz(a,h)anthracene	4.00000	4.00139	0.87973	0.010	-0.03480	25.00000	Quadratic
151 Benzo(g,h,i)perylene	4.00000	4.17589	0.92694	0.010	-4.39722	25.00000	Quadratic
$ 154 Nitrobenzene-d5	0.34951	0.39672	0.39672	0.010	-13.50922	25.00000	Averaged
$ 155 2-Fluorobiphenyl	1.40336	1.47236	1.47236	0.010	-4.91682	25.00000	Averaged
$ 156 Terphenyl-d14	0.93955	0.83545	0.83545	0.010	11.07956	25.00000	Averaged
$ 157 Phenol-d5	1.54903	1.54590	1.54590	0.010	0.20216	25.00000	Averaged
$ 158 2-Fluorophenol	1.16698	1.25264	1.25264	0.010	-7.34024	25.00000	Averaged
$ 159 2,4,6-Tribromophenol	4.00000	4.49357	0.11879	0.010	-12.33931	25.00000	Quadratic
$ 186 2-Chlorophenol-d4	1.41327	1.36907	1.36907	0.010	3.12751	25.00000	Averaged
$ 187 1,2-Dichlorobenzene-d4	0.97526	0.95971	0.95971	0.010	1.59480	25.00000	Averaged

SW846 8270C METHOD BLANK SUMMARY

BLANK WORKORDER NO.: L6WLF1AA

Lab Name: TestAmerica Laboratories, Inc.

Lab Code: TALPIT

SDG Number:

Lab File ID: S0914001.

Lot Number: C0I020508

Date Analyzed: 09/14/10

Time Analyzed: 14:39

Matrix: WATER

Date Extracted:09/13/10

GC Column: DB5MS ID: .25

Extraction Method:

Instrument ID: 71

Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	PW-03 0-6"	L6G831AC	S0914010.	09/14/10	17:38
02	PW-03 6-18"	L6G841AC	S0914011.	09/14/10	17:58
03	PW-03 18-30"	L6G851AC	S0914012.	09/14/10	18:18
04	PW-04 0-6"	L6HF51AD	S0914013.	09/14/10	18:38
05	PW-04 6-18"	L6HF81AC	S0914014.	09/14/10	18:58
06	PW-04 18-30"	L6HGD1AC	S0914015.	09/14/10	19:18
07	PW-05 0-6"	L6HGE1AC	S0914016.	09/14/10	19:38
08	PW-05 6-18"	L6HGF1AC	S0914017.	09/14/10	19:58
09	PW-05 18-30"	L6HGH1AC	S0914018.	09/14/10	20:17
10	Rinsate Blank	L6M4H1AC	S0914019.	09/14/10	20:57
11	CHECK SAMPLE	L6WLF1AC C	S0914002.	09/14/10	15:39
12	DUPLICATE CHECK	L6WLF1AD L	S0914003.	09/14/10	15:59
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COMMENTS:

FORM IV

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: C0I020508	Work Order #...: L6WLF1AA	Matrix.....: WATER
MB Lot-Sample #: C0I130000-315		
	Prep Date.....: 09/13/10	Analysis Time..: 14:39
Analysis Date..: 09/14/10	Prep Batch #...: 0256315	Final Wgt/Vol..: 0.5 mL
Dilution Factor: 1	Initial Wgt/Vol: 1000 mL	Instrument ID..: 71
	Analyst ID.....: 045183	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
1,4-Dioxane	ND	2.0	ug/L	SW846 8270C
Naphthalene	ND	0.20	ug/L	SW846 8270C
Acenaphthylene	ND	0.20	ug/L	SW846 8270C
Acenaphthene	ND	0.20	ug/L	SW846 8270C
Fluorene	ND	0.20	ug/L	SW846 8270C
Phenanthrene	ND	0.20	ug/L	SW846 8270C
Anthracene	ND	0.20	ug/L	SW846 8270C
Fluoranthene	ND	0.20	ug/L	SW846 8270C
Pyrene	ND	0.20	ug/L	SW846 8270C
Benzo(a)anthracene	ND	0.20	ug/L	SW846 8270C
Chrysene	ND	0.20	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	0.20	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	0.20	ug/L	SW846 8270C
Benzo(a)pyrene	ND	0.20	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	0.20	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	0.20	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	0.20	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	91	(23 - 112)
Terphenyl-d14	83	(10 - 132)
2-Fluorobiphenyl	88	(19 - 107)
2-Fluorophenol	81	(10 - 111)
Phenol-d5	80	(15 - 112)
2,4,6-Tribromophenol	73	(16 - 122)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

SW846 8270C SURROGATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0I020508

Extraction: XXI514201

	CLIENT ID.	SRG01	SRG02	SRG03	SRG04	SRG05	SRG06	TOT OUT
01	PW-03 0-6"	64	47	64	46	38	55	00
02	PW-03 6-18"	80	58	82	79	70	75	00
03	PW-03 18-30"	84	55	82	82	73	71	00
04	PW-04 0-6"	83	69	82	81	73	73	00
05	PW-04 6-18"	85	64	85	83	74	77	00
06	PW-04 18-30"	75	47	70	69	60	61	00
07	PW-05 0-6"	88	67	89	79	73	83	00
08	PW-05 6-18"	100	78	105	95	89	95	00
09	PW-05 18-30"	21 *	80	75	14	49	88	01
10	Rinsate Blank	103	106	101	98	93	92	00
11	METHOD BLK. L6WLF1AA	91	83	88	81	80	73	00
12	LCS L6WLF1AC	89	59	91	81	77	81	00
13	LCSD L6WLF1AD	76	62	75	55	47	66	00

SURROGATES		QC LIMITS
SRG01	= Nitrobenzene-d5	(23-112)
SRG02	= Terphenyl-d14	(10-132)
SRG03	= 2-Fluorobiphenyl	(19-107)
SRG04	= 2-Fluorophenol	(10-111)
SRG05	= Phenol-d5	(15-112)
SRG06	= 2,4,6-Tribromophenol	(16-122)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8270C CHECK SAMPLE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0I130000 WO #: L6WLF1AC
BATCH: 0256315

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
Acenaphthene	10.0	6.73	67	35 - 99	
4-Nitrophenol	10.0	10.8	108	29 - 115	
2,4-Dinitrotoluene	10.0	8.61	86	37 - 115	
Pentachlorophenol	10.0	6.48	65	15 - 111	
Pyrene	10.0	6.62	66	35 - 106	
4-Methylphenol	20.0	15.3	76	32 - 100	
Hexachloroethane	10.0	5.50	55	32 - 94	
Naphthalene	10.0	6.31	63	35 - 97	
4-Bromophenyl phenyl ethe	10.0	6.39	64	37 - 104	
Butyl benzyl phthalate	10.0	6.87	69	36 - 108	
Phenol	10.0	7.39	74	32 - 95	
2-Chlorophenol	10.0	7.28	73	31 - 99	
1,4-Dichlorobenzene	10.0	5.58	56	34 - 93	
N-Nitrosodi-n-propylamine	10.0	6.55	65	34 - 101	
1,2,4-Trichlorobenzene	10.0	6.24	62	34 - 96	
4-Chloro-3-methylphenol	10.0	7.73	77	35 - 104	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 16 outside limits

COMMENTS:

FORM III

SW846 8270C CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0I130000 WO #: L6WLF1AD
BATCH: 0256315

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
Phenol	10.0	5.24	52	32 - 95	
2-Chlorophenol	10.0	5.92	59	31 - 99	
1,4-Dichlorobenzene	10.0	5.74	57	34 - 93	
N-Nitrosodi-n-propylamine	10.0	6.18	62	34 - 101	
1,2,4-Trichlorobenzene	10.0	6.33	63	34 - 96	
4-Chloro-3-methylphenol	10.0	5.40	54	35 - 104	
Acenaphthene	10.0	6.76	68	35 - 99	
4-Nitrophenol	10.0	6.91	69	29 - 115	p
2,4-Dinitrotoluene	10.0	7.90	79	37 - 115	
Pentachlorophenol	10.0	4.78	48	15 - 111	
Pyrene	10.0	6.66	67	35 - 106	
4-Methylphenol	20.0	11.1	55	32 - 100	
Hexachloroethane	10.0	5.71	57	32 - 94	
Naphthalene	10.0	6.27	63	35 - 97	
4-Bromophenyl phenyl ethe	10.0	6.17	62	37 - 104	
Butyl benzyl phthalate	10.0	7.23	72	36 - 108	

NOTES(S):

p Relative percent difference (RPD) is outside stated control limits.

* Values outside of QC limits

Spike Recovery: 0 out of 16 outside limits

COMMENTS:

FORM III

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: C0I020508

Lab File ID (Standard): S0914CC1 Date Analyzed: 09/14/10

Instrument ID: 71 Time Analyzed: 1420

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	157164	3.97	490163	4.92	206609	6.23
	UPPER LIMIT	314328	4.47	980326	5.42	413218	6.73
	LOWER LIMIT	78582	3.47	245082	4.42	103305	5.73
	CLIENT SAMPLE NO.						
01	INTRA-LAB BL	140686	3.98	462454	4.93	203913	6.23
02	INTRA-LAB CH	130892	3.98	414305	4.92	178621	6.23
03	INTRA-LAB CH	130334	3.98	419846	4.93	180089	6.23
04	PW-03 0-6"	167161	3.97	552558	4.92	237855	6.22
05	PW-03 6-18"	156023	3.97	539952	4.92	226577	6.22
06	PW-03 18-30"	149100	3.97	511588	4.92	214899	6.22
07	PW-04 0-6"	147757	3.98	515649	4.92	213620	6.23
08	PW-04 6-18"	149666	3.97	514619	4.92	209635	6.22
09	PW-04 18-30"	146950	3.97	492203	4.92	208109	6.22
10	PW-05 0-6"	149081	3.97	486091	4.92	196290	6.22
11	PW-05 6-18"	141470	3.97	467271	4.92	191392	6.22
12	PW-05 18-30"	140833	3.97	476780	4.92	197302	6.22
13	RINSATE BLAN	145318	3.97	471863	4.92	208558	6.22
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: C0I020508

Lab File ID (Standard): S0914CC1 Date Analyzed: 09/14/10

Instrument ID: 71 Time Analyzed: 1420

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD	259658		7.33		202657		9.31		162216		10.39	
	UPPER LIMIT	519316		7.83		405314		9.81		324432		10.89	
	LOWER LIMIT	129829		6.83		101329		8.81		81108		9.89	
	CLIENT SAMPLE NO.												
01	INTRA-LAB BL	306790		7.33		222415		9.32		189042		10.39	
02	INTRA-LAB CH	251347		7.33		227448		9.31		160893		10.38	
03	INTRA-LAB CH	256338		7.33		216304		9.31		155795		10.39	
04	PW-03 0-6"	321546		7.32		233735		9.32		216554		10.42	
05	PW-03 6-18"	296461		7.32		207758		9.31		198139		10.40	
06	PW-03 18-30"	298955		7.32		201829		9.32		184391		10.41	
07	PW-04 0-6"	291172		7.33		205214		9.31		182733		10.39	
08	PW-04 6-18"	281787		7.32		202569		9.31		189475		10.38	
09	PW-04 18-30"	278332		7.32		199419		9.31		184334		10.38	
10	PW-05 0-6"	263208		7.33		181231		9.31		192805		10.37	
11	PW-05 6-18"	264068		7.32		198910		9.31		211550		10.37	
12	PW-05 18-30"	263994		7.32		176390		9.31		183475		10.38	
13	RINSATE BLAN	256989		7.32		188022		9.31		186575		10.36	
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8D

PESTICIDE ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: METHODS

GC Column: MR-1 ID: 0.53 (mm) Init. Calib. Date(s): 09/13/10 09/13/10

Instrument ID: GC14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01		M2154	09/13/10	1516		
02		M1232	09/13/10	1537		
03		M1242	09/13/10	1557		
04		M1248	09/13/10	1617		
05		M1262	09/13/10	1638		
06		M1268	09/13/10	1658		
07		XL1660	09/13/10	1718		
08		L1660	09/13/10	1739		
09		ML1660	09/13/10	1759		
10		M1660	09/13/10	1820		
11		MH1660	09/13/10	1840		
12		H1660	09/13/10	1900		
13		XH1660	09/13/10	1921		
14		ICV2154	09/13/10	1941		
15		ICV1232	09/13/10	2001		
16		ICV1242	09/13/10	2022		
17		ICV1248	09/13/10	2042		
18		ICV1262	09/13/10	2102		
19		ICV1268	09/13/10	2123		
20		ICV1660	09/13/10	2143		
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

8D
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: C0I020508

GC Column: MR-1 ID: 0.53 (mm) Init. Calib. Date(s): 09/13/10 09/13/10

Instrument ID: GC14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
DCB: 12.97 TCX: 5.99

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	DCB RT #	TCX RT #
01	PW-03 0-6"	L6G831AA	09/13/10	2224	13.00*	6.00
02	PW-03 6-18"	L6G841AA	09/13/10	2244	13.00	6.00
03	PW-03 18-30"	L6G851AA	09/13/10	2304	13.00	6.00
04	PW-04 0-6"	L6HF51AC	09/13/10	2325	13.00	6.00
05	PW-04 6-18"	L6HF81AA	09/13/10	2345	13.00	6.00
06	PW-04 18-30"	L6HGD1AA	09/14/10	0006	13.00	6.00
07	PW-05 0-6"	L6HGE1AA	09/14/10	0026	13.00	6.00
08	PW-05 6-18"	L6HGF1AA	09/14/10	0046	13.00	6.00
09	PW-05 18-30"	L6HGH1AA	09/14/10	0107	13.00	6.00
10	RINSATE BLAN	L6M4H1AA	09/14/10	0127	13.00	6.00
11	PBLK2401	L6Q3F1AA	09/14/10	0147	13.00	6.00
12	LCS2401	L6Q3F1AC	09/14/10	0208	13.00*	6.00
13	LCD2401	L6Q3F1AD	09/14/10	0228	13.00	6.00
14		MH1660	09/14/10	0450	13.00	6.00
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS

DCB = Decachlorobiphenyl (+/- 0.03 MINUTES)
TCX = Tetrachloro-m-xylene (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

HP689014Y
MR-1

Report Date : 14-Sep-2010 08:50

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 15:16
End Cal Date : 13-SEP-2010 19:21
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\PCBA.m
Last Edit : 14-Sep-2010 08:50 gc14.i
Curve Type : Average

Calibration File Names:
Level 1: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900454.D
Level 2: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900455.D
Level 3: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900456.D
Level 4: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900457.D
Level 5: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900458.D
Level 6: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900459.D
Level 7: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900453.D

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
1 Aroclor-1221(1)	+++++ / +++++	+++++	166446	+++++	+++++	+++++	166446	0.000	
(2)	+++++ / +++++	+++++	123880	+++++	+++++	+++++	123880	0.000	
(3)	+++++ / +++++	+++++	403102	+++++	+++++	+++++	403102	0.000	<-
3 Aroclor-1232(1)	+++++ / +++++	+++++	249408	+++++	+++++	+++++	249408	0.000	
(2)	+++++ / +++++	+++++	278550	+++++	+++++	+++++	278550	0.000	<-
(3)	+++++ / +++++	+++++	212144	+++++	+++++	+++++	212144	0.000	<-
(4)	+++++ / +++++	+++++	256330	+++++	+++++	+++++	256330	0.000	<-
(5)	+++++ / +++++	+++++	230038	+++++	+++++	+++++	230038	0.000	<-

Report Date : 14-Sep-2010 08:50

6C
HP6890144
MR 1

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 15:16
End Cal Date : 13-SEP-2010 19:21
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\PCBA.m
Last Edit : 14-Sep-2010 08:50 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD
4 Aroclor-1016(1)	558040 / 655400	555270	501526	519006	571231	589672	564306	8.891
(2)	688500 / 761600	686640	665976	677264	753903	813751	721091	7.703
(3)	377580 / 426700	381430	379614	396883	436480	471251	409991	8.735
(4)	573320 / 767000	577930	536230	514531	563025	595870	589701	14.035
(5)	613680 / 674100	586275	563802	563062	614297	660272	610784	7.188
5 Aroclor-1242(1)	+++++ / +++++	+++++	533358	+++++	+++++	+++++	533358	0.000
(2)	+++++ / +++++	+++++	409204	+++++	+++++	+++++	409204	0.000
(3)	+++++ / +++++	+++++	519930	+++++	+++++	+++++	519930	0.000
(4)	+++++ / +++++	+++++	415942	+++++	+++++	+++++	415942	0.000
(5)	+++++ / +++++	+++++	467780	+++++	+++++	+++++	467780	0.000
6 Aroclor-1248(1)	+++++ / +++++	+++++	741676	+++++	+++++	+++++	741676	0.000

Report Date : 14-Sep-2010 08:50

6C
HP689044
MR-1

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 15:16
End Cal Date : 13-SEP-2010 19:21
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\PCBA.m
Last Edit : 14-Sep-2010 08:50 gc14.i
Curve Type : Average

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	0.01000 Level 7	___ RRF	% RSD	
(2)	+++++	+++++	793622	+++++	+++++	+++++	+++++	793622	0.000	<-
(3)	+++++	+++++	702356	+++++	+++++	+++++	+++++	702356	0.000	<-
(4)	+++++	+++++	314530	+++++	+++++	+++++	+++++	314530	0.000	<-
(5)	+++++	+++++	144922	+++++	+++++	+++++	+++++	144922	0.000	<-
7 Aroclor-1254(1)	+++++	+++++	950058	+++++	+++++	+++++	+++++	950058	0.000	
(2)	+++++	+++++	945672	+++++	+++++	+++++	+++++	945672	0.000	<-
(3)	+++++	+++++	961464	+++++	+++++	+++++	+++++	961464	0.000	<-
(4)	+++++	+++++	664836	+++++	+++++	+++++	+++++	664836	0.000	<-
(5)	+++++	+++++	714362	+++++	+++++	+++++	+++++	714362	0.000	<-
8 Aroclor-1260(1)	948000	878095	858646	824676	895766	940785	1008600	907795	6.852	
(2)	1217720	1158190	1160188	1126372	1199168	1257433	1151200	1181467	3.839	

Report Date : 14-Sep-2010 08:50

6C
HP6890144
M2-1

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 15:16
End Cal Date : 13-SEP-2010 19:21
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\PCBA.m
Last Edit : 14-Sep-2010 08:50 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
(3)	640700 / 580700	644015	614986	625880	634053	672478	630402	4.488	
(4)	1241520 / 1309700	1299065	1180584	1220906	1343095	1455993	1292980	7.052	
(5)	525180 / 574400	477685	505648	481033	545701	573294	526134	7.657	
9 Aroclor-1262(1)	+++++ / +++++	+++++	751970	+++++	+++++	+++++	751970	0.000	
(2)	+++++ / +++++	+++++	390090	+++++	+++++	+++++	390090	0.000	<-
(3)	+++++ / +++++	+++++	284828	+++++	+++++	+++++	284828	0.000	<-
(4)	+++++ / +++++	+++++	1337704	+++++	+++++	+++++	1337704	0.000	<-
(5)	+++++ / +++++	+++++	652848	+++++	+++++	+++++	652848	0.000	<-
10 Aroclor-1268(1)	+++++ / +++++	+++++	1672826	+++++	+++++	+++++	1672826	0.000	<-
(2)	+++++ / +++++	+++++	1297858	+++++	+++++	+++++	1297858	0.000	<-
(3)	+++++ / +++++	+++++	1218974	+++++	+++++	+++++	1218974	0.000	<-

Report Date : 14-Sep-2010 08:50

6C
HP6890144
MR-1

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 15:16
End Cal Date : 13-SEP-2010 19:21
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\PCBA.m
Last Edit : 14-Sep-2010 08:50 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
(4)	+++++ / +++++	+++++	2502230	+++++	+++++	+++++	2502230	0.000	<-
$ 2 Tetrachloro-m-xylene	19143200 / 21640000	20065100	22188680	21318280	22791030	23205990	21478897	6.777	
$ 11 Decachlorobiphenyl	5864400 / 6458000	5375300	6106360	5853120	6226270	6047775	5990175	5.719	

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900466.D
Report Date: 14-Sep-2010 08:59

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc14.i
Lab File ID: Y0900466.D
Analysis Type:
Lab Sample ID: ICV1660
Method: \\pitsvr06\d\chem\gc14.i\09130.b\PCBA.m

Injection Date: 13-SEP-2010 21:43
Init. Cal. Date(s): 13-SEP-2010 13-SEP-2010
Init. Cal. Times: 15:16 19:21
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF0.500	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
4 Aroclor-1016 (1)	564306	524716	400.000	7.01575	15.00000	Averaged	
(2)	721091	657090	400.000	8.87552	15.00000	Averaged	
(3)	409991	378920	400.000	7.57849	15.00000	Averaged	
(4)	589701	545904	400.000	7.42694	15.00000	Averaged	
(5)	610784	571140	400.000	6.49066	15.00000	Averaged	
$ 2 Tetrachloro-m-xylene	21478897	1064200	400.000	95.04537	15.00000	Averaged	<- N/A
$ 11 Decachlorobiphenyl	5990175	130000	400.000	97.82978	15.00000	Averaged	<-
8 Aroclor-1260 (1)	907795	890096	400.000	1.94972	15.00000	Averaged	
(2)	1181467	1206684	400.000	-2.13436	15.00000	Averaged	
(3)	630402	569556	400.000	9.65189	15.00000	Averaged	
(4)	1292980	1097994	400.000	15.08038	15.00000	Averaged	<- OK
(5)	526134	495266	400.000	5.86702	15.00000	Averaged	

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900487.D
Report Date: 14-Sep-2010 09:22

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc14.i
Lab File ID: Y0900487.D
Analysis Type:
Lab Sample ID: MH1660
Method: \\pitsvr06\d\chem\gc14.i\09130.b\PCBA.m

Injection Date: 14-SEP-2010 04:50
Init. Cal. Date(s): 13-SEP-2010 13-SEP-2010
Init. Cal. Times: 15:16 19:21
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF1	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
4 Aroclor-1016(1)	564306	515474	400.000	8.65351	15.00000	Averaged
(2)	721091	678635	400.000	5.88768	15.00000	Averaged
(3)	409991	394819	400.000	3.70060	15.00000	Averaged
(4)	589701	542926	400.000	7.93195	15.00000	Averaged
(5)	610784	590868	400.000	3.26071	15.00000	Averaged
$ 2 Tetrachloro-m-xylene	21478897	20730840	400.000	3.48275	15.00000	Averaged
$ 11 Decachlorobiphenyl	5990175	6057940	400.000	-1.13127	15.00000	Averaged
8 Aroclor-1260(1)	907795	856268	400.000	5.67611	15.00000	Averaged
(2)	1181467	1135975	400.000	3.85048	15.00000	Averaged
(3)	630402	627057	400.000	0.53056	15.00000	Averaged
(4)	1292980	1231430	400.000	4.76035	15.00000	Averaged
(5)	526134	516803	400.000	1.77358	15.00000	Averaged

8D
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: METHODS

GC Column: MR-2 ID: 0.53 (mm) Init. Calib. Date(s): 09/13/10 09/13/10

Instrument ID: GC14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

			MEAN SURROGATE RT FROM INITIAL CALIBRATION			
	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01		M2154	09/13/10	1456		
02		M1232	09/13/10	1516		
03		M1242	09/13/10	1537		
04		M1248	09/13/10	1557		
05		M1262	09/13/10	1617		
06		M1268	09/13/10	1638		
07		XL1660	09/13/10	1658		
08		L1660	09/13/10	1718		
09		ML1660	09/13/10	1739		
10		M1660	09/13/10	1759		
11		MH1660	09/13/10	1820		
12		H1660	09/13/10	1840		
13		XH1660	09/13/10	1900		
14		ICV2154	09/13/10	1921		
15		ICV1232	09/13/10	1941		
16		ICV1242	09/13/10	2001		
17		ICV1248	09/13/10	2022		
18		ICV1262	09/13/10	2042		
19		ICV1268	09/13/10	2102		
20		ICV1660	09/13/10	2123		
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

8D
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: C0I020508

GC Column: MR-2 ID: 0.53 (mm) Init. Calib. Date(s): 09/13/10 09/13/10

Instrument ID: GC14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
DCB: 13.24 TCX: 6.05

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	DCB RT #	TCX RT #
01	PW-03 0-6"	L6G831AA	09/13/10	2203	13.24	6.05
02	PW-03 6-18"	L6G841AA	09/13/10	2224	13.24	6.05
03	PW-03 18-30"	L6G851AA	09/13/10	2244	13.24	6.05
04	PW-04 0-6"	L6HF51AC	09/13/10	2304	13.23	6.05
05	PW-04 6-18"	L6HF81AA	09/13/10	2325	13.24	6.05
06	PW-04 18-30"	L6HGD1AA	09/13/10	2345	13.24	6.05
07	PW-05 0-6"	L6HGE1AA	09/14/10	0006	13.24	6.05
08	PW-05 6-18"	L6HGF1AA	09/14/10	0026	13.23	6.05
09	PW-05 18-30"	L6HGH1AA	09/14/10	0046	13.24	6.05
10	RINSATE BLAN	L6M4H1AA	09/14/10	0107	13.24	6.05
11	PBLK2401	L6Q3F1AA	09/14/10	0127	13.24	6.05
12	LCS2401	L6Q3F1AC	09/14/10	0147	13.24	6.05
13	LCD2401	L6Q3F1AD	09/14/10	0208	13.24	6.05
14		MH1660	09/14/10	0430	13.23	6.05
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS
DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)
TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Report Date : 14-Sep-2010 10:31

HP890147
MR-2

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 14:56
End Cal Date : 13-SEP-2010 19:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\yPCBB.m
Last Edit : 14-Sep-2010 10:31 gc14.i
Curve Type : Average

Calibration File Names:
Level 1: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900454.D
Level 2: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900455.D
Level 3: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900456.D
Level 4: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900457.D
Level 5: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900458.D
Level 6: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900459.D
Level 7: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900453.D

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	0.01000 Level 7	RRF	% RSD	
1 Aroclor-1221(1)	+++++	+++++	220430	+++++	+++++	+++++	+++++	220430	0.000	
(2)	+++++	+++++	142682	+++++	+++++	+++++	+++++	142682	0.000	<-
(3)	+++++	+++++	476374	+++++	+++++	+++++	+++++	476374	0.000	<-
3 Aroclor-1232(1)	+++++	+++++	255552	+++++	+++++	+++++	+++++	255552	0.000	<-
(2)	+++++	+++++	299926	+++++	+++++	+++++	+++++	299926	0.000	<-
(3)	+++++	+++++	219214	+++++	+++++	+++++	+++++	219214	0.000	<-
(4)	+++++	+++++	310570	+++++	+++++	+++++	+++++	310570	0.000	<-
(5)	+++++	+++++	201332	+++++	+++++	+++++	+++++	201332	0.000	<-

Report Date : 14-Sep-2010 10:31

6L
HP6890147
MR-2

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 14:56
End Cal Date : 13-SEP-2010 19:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\yPCBB.m
Last Edit : 14-Sep-2010 10:31 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
4 Aroclor-1016(1)	671380 / 939800	733325	662490	697314	705442	704470	730603	13.026	
(2)	912980 / 1277900	794335	783388	784073	781886	769368	871990	21.286	<-
(3)	620220 / 712300	635910	630354	728159	724841	736821	684086	7.658	<-
(4)	803380 / 1227300	775550	731386	779575	771390	760343	835561	20.836	<-
(5)	589180 / 806600	541895	528210	529317	558402	535164	584110	17.190	<-
5 Aroclor-1242(1)	+++++ / +++++	+++++	241668	+++++	+++++	+++++	241668	0.000	
(2)	+++++ / +++++	+++++	493262	+++++	+++++	+++++	493262	0.000	
(3)	+++++ / +++++	+++++	579510	+++++	+++++	+++++	579510	0.000	
(4)	+++++ / +++++	+++++	386272	+++++	+++++	+++++	386272	0.000	
(5)	+++++ / +++++	+++++	280754	+++++	+++++	+++++	280754	0.000	
6 Aroclor-1248(1)	+++++ / +++++	+++++	871838	+++++	+++++	+++++	871838	0.000	

Avg 16.0% RSD

Report Date : 14-Sep-2010 10:31

HP689014Z
MR-2

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 14:56
End Cal Date : 13-SEP-2010 19:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\yPCBB.m
Last Edit : 14-Sep-2010 10:31 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
(2)	+++++ / +++++	+++++	363258	+++++	+++++	+++++	363258	0.000	<-
(3)	+++++ / +++++	+++++	424154	+++++	+++++	+++++	424154	0.000	<-
(4)	+++++ / +++++	+++++	373486	+++++	+++++	+++++	373486	0.000	<-
(5)	+++++ / +++++	+++++	532860	+++++	+++++	+++++	532860	0.000	<-
7 Aroclor-1254(1)	+++++ / +++++	+++++	1034226	+++++	+++++	+++++	1034226	0.000	
(2)	+++++ / +++++	+++++	1631804	+++++	+++++	+++++	1631804	0.000	
(3)	+++++ / +++++	+++++	971890	+++++	+++++	+++++	971890	0.000	
(4)	+++++ / +++++	+++++	1234692	+++++	+++++	+++++	1234692	0.000	
(5)	+++++ / +++++	+++++	805378	+++++	+++++	+++++	805378	0.000	
8 Aroclor-1260(1)	1734860 / 2037200	1726240	1565694	1577573	1568475	1546408	1679493	10.500	
(2)	2294320 / 2563800	2260750	2068896	2063086	2057373	2092825	2200150	8.558	

Report Date : 14-Sep-2010 10:31

HP6890147
MR-2

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 14:56
End Cal Date : 13-SEP-2010 19:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\yPCBB.m
Last Edit : 14-Sep-2010 10:31 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
(3)	1930800 / 2244300	1916195	1753108	1817863	1794160	1841906	1899762	8.667	
(4)	2166920 / 2480400	2081180	1876288	1839084	1802399	1769922	2002313	12.869	
(5)	980200 / 1100600	943145	864620	868243	835293	851732	920548	10.340	
9 Aroclor-1262(1)	+++++ / +++++	+++++	2451212	+++++	+++++	+++++	2451212	0.000	
(2)	+++++ / +++++	+++++	2161058	+++++	+++++	+++++	2161058	0.000	<-
(3)	+++++ / +++++	+++++	4162070	+++++	+++++	+++++	4162070	0.000	<-
(4)	+++++ / +++++	+++++	1769208	+++++	+++++	+++++	1769208	0.000	<-
(5)	+++++ / +++++	+++++	2748096	+++++	+++++	+++++	2748096	0.000	<-
10 Aroclor-1268(1)	+++++ / +++++	+++++	5197936	+++++	+++++	+++++	5197936	0.000	
(2)	+++++ / +++++	+++++	4278186	+++++	+++++	+++++	4278186	0.000	<-
(3)	+++++ / +++++	+++++	3794872	+++++	+++++	+++++	3794872	0.000	<-

Report Date : 14-Sep-2010 10:31

HP689947
MR-2

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 14:56
End Cal Date : 13-SEP-2010 19:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\yPCBB.m
Last Edit : 14-Sep-2010 10:31 gc14.i
Curve Type : Average

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	0.01000 Level 7	RRF	% RSD	
(4)	+++++	+++++	1066664	+++++	+++++	+++++	+++++	1066664	0.000	<-
$ 2 Tetrachloro-m-xylene	18531600	20208400	20675000	21682700	22858520	+++++	24844000	21466703	10.252	
$ 11 Decachlorobiphenyl	14462400	13130000	14689520	13988840	13891770	+++++	14116000	14046422	3.845	

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900466.D
Report Date: 14-Sep-2010 10:34

MR-2

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc14.i
Lab File ID: Z0900466.D
Analysis Type:
Lab Sample ID: ICV1660
Method: \\pitsvr06\d\chem\gc14.i\09130.b\yPCBB.m

Injection Date: 13-SEP-2010 21:23
Init. Cal. Date(s): 13-SEP-2010 13-SEP-2010
Init. Cal. Times: 14:56 19:00
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF0.500	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
4 Aroclor-1016 (1)	730603	650582	0.010	10.95273	15.00000	Averaged	
(2)	871990	792648	0.010	9.09895	15.00000	Averaged	
(3)	684086	623932	0.010	8.79339	15.00000	Averaged	
(4)	835561	748996	0.010	10.36005	15.00000	Averaged	
(5)	584110	492782	0.010	15.63538	15.00000	Averaged	<-
$ 2 Tetrachloro-m-xylene	21466703	++++	0.000	++++	15.00000	Averaged	<-
$ 11 Decachlorobiphenyl	14046422	314880	0.010	97.75829	15.00000	Averaged	<-
8 Aroclor-1260 (1)	1679493	1648406	0.010	1.85096	15.00000	Averaged	
(2)	2200150	2158454	0.010	1.89514	15.00000	Averaged	
(3)	1899762	1913692	0.010	-0.73326	15.00000	Averaged	
(4)	2002313	1741800	0.010	13.01061	15.00000	Averaged	
(5)	920548	856288	0.010	6.98057	15.00000	Averaged	

TC H#607014C
MR-2

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900487.D
Report Date: 14-Sep-2010 10:34

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc14.i
Lab File ID: Z0900487.D
Analysis Type:
Lab Sample ID: MH1660
Method: \\pitsvr06\d\chem\gc14.i\09130.b\yPCBB.m

Injection Date: 14-SEP-2010 04:30
Init. Cal. Date(s): 13-SEP-2010 13-SEP-2010
Init. Cal. Times: 14:56 19:00
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF1	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
4 Aroclor-1016(1)	730603	673343	0.010	7.83736	15.00000	Averaged
(2)	871990	796477	0.010	8.65984	15.00000	Averaged
(3)	684086	725921	0.010	-6.11540	15.00000	Averaged
(4)	835561	777523	0.010	6.94594	15.00000	Averaged
(5)	584110	554698	0.010	5.03531	15.00000	Averaged
$ 2 Tetrachloro-m-xylene	21466703	21507400	0.000	-0.18958	15.00000	Averaged
$ 11 Decachlorobiphenyl	14046422	13772100	0.010	1.95296	15.00000	Averaged
8 Aroclor-1260(1)	1679493	1557180	0.010	7.28272	15.00000	Averaged
(2)	2200150	2001181	0.010	9.04342	15.00000	Averaged
(3)	1899762	1766117	0.010	7.03482	15.00000	Averaged
(4)	2002313	1800926	0.010	10.05773	15.00000	Averaged
(5)	920548	797621	0.010	13.35363	15.00000	Averaged

SW846 8082 METHOD BLANK SUMMARY

BLANK WORKORDER NO.: L6Q3F1AA

Lab Name: TestAmerica Laboratories, Inc.

Lab Code: TALPIT

SDG Number:

Lab File ID: Y0900478.

Lot Number: C0I020508

Matrix: WATER

Extraction Method:

Date Extracted: 09/09/10

Date Analyzed(1): 09/14/10

Date Analyzed(2): N/A

Time Analyzed(1): 01:47

Time Analyzed(2): N/A

Instrument ID(1): U/V

Instrument ID(2): N/A

GC Column(1): MR1/MR2 ID: 053 GC Column(2): N/A ID: N/A

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	DATE ANALYZED(1)	DATE ANALYZED(2)
01	PW-03 0-6"	L6G831AA	09/13/10	N/A
02	PW-03 6-18"	L6G841AA	09/13/10	N/A
03	PW-03 18-30"	L6G851AA	09/13/10	N/A
04	PW-04 0-6"	L6HF51AC	09/13/10	N/A
05	PW-04 6-18"	L6HF81AA	09/13/10	N/A
06	PW-04 18-30"	L6HGD1AA	09/14/10	N/A
07	PW-05 0-6"	L6HGE1AA	09/14/10	N/A
08	PW-05 6-18"	L6HGF1AA	09/14/10	N/A
09	PW-05 18-30"	L6HGH1AA	09/14/10	N/A
10	Rinsate Blank	L6M4H1AA	09/14/10	N/A
11	CHECK SAMPLE	L6Q3F1AC C	09/14/10	N/A
12	DUPLICATE CHECK	L6Q3F1AD L	09/14/10	N/A
13				
14				
15				
16				
17				
18				
19				
20				

COMMENTS:

FORM IV

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: C0I020508	**Work Order #...:** L6Q3F1AA	**Matrix.....:** WATER
MB Lot-Sample #: C0I090000-401		
	Prep Date.....: 09/09/10	**Analysis Time..:** 01:47
Analysis Date..: 09/14/10	**Prep Batch #...:** 0252401	**Final Wgt/Vol..:** 8 mL
Dilution Factor: 1	**Initial Wgt/Vol:** 200 mL	**Instrument ID..:** U/V
	Analyst ID.....: 001797	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Aroclor 1016	ND	0.40	ug/L	SW846 8082
Aroclor 1221	ND	0.40	ug/L	SW846 8082
Aroclor 1232	ND	0.40	ug/L	SW846 8082
Aroclor 1242	ND	0.40	ug/L	SW846 8082
Aroclor 1248	ND	0.40	ug/L	SW846 8082
Aroclor 1254	ND	0.40	ug/L	SW846 8082
Aroclor 1260	ND	0.40	ug/L	SW846 8082

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	105	(35 - 140)
Decachlorobiphenyl	97	(35 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

SW846 8082 SURROGATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0I020508

Extraction: XXI09QH01

	CLIENT ID.	SRG01	SRG02	TOT OUT
01	PW-03 0-6"	109	100	00
02	PW-03 6-18"	96	90	00
03	PW-03 18-30"	92	87	00
04	PW-04 0-6"	100	97	00
05	PW-04 6-18"	102	97	00
06	PW-04 18-30"	100	95	00
07	PW-05 0-6"	101	93	00
08	PW-05 6-18"	98	96	00
09	PW-05 18-30"	94	89	00
10	Rinsate Blank	102	98	00
11	METHOD BLK. L6Q3F1AA	105	97	00
12	LCS L6Q3F1AC	104	89	00
13	LCSD L6Q3F1AD	102	92	00

SURROGATES		QC LIMITS
SRG01	= Tetrachloro-m-xylene	(35-140)
SRG02	= Decachlorobiphenyl	(35-140)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8082 CHECK SAMPLE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0I090000 WO #: L6Q3F1AC
BATCH: 0252401

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
Aroclor 1016	40.0	33.1	83	60- 130	
Aroclor 1260	40.0	35.5	89	60- 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM III

SW846 8082 CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0I090000 WO #: L6Q3F1AD
BATCH: 0252401

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
Aroclor 1016	40.0	33.5	84	60- 130	
Aroclor 1260	40.0	34.4	86	60- 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM III

Sample Number	Results from Column 1	Results from Column 2	RPD
	Aroclor 1260	Aroclor 1260	
PW-03 0-6"	0.4941	0.42821	14.29
PW-03 6-18"	0.12348	0.13193	6.62
PW-04 0-6"	0.18449	0.17457	5.53
PW-04 6-18"	0.098384	0.10408	5.63
PW-05 0-6"	0.59631	0.60589	1.59
PW-05 6-18"	0.50676	0.55051	8.28

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900468.D
Report Date: 14-Sep-2010 09:20

	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242						CAS #: 53469-21-9		
Peaks not detected for Quant. or Qual. signal(s).								
6 Aroclor-1248						CAS #: 12672-29-6		
Peaks not detected for Quant. or Qual. signal(s).								
7 Aroclor-1254						CAS #: 11097-69-1		
Operator disabled compound identification.								
8 Aroclor-1260						CAS #: 11096-82-5		
	9.561	9.561	0.000	22118	0.02436	0.97458	0.00- 0.00	0.00(a)
	9.965	9.966	-0.001	13654	0.01156	0.46227	115.86- 115.86	0.00
	10.725	10.725	0.000	8761	0.01390	0.55590	136.91- 136.91	0.00
	11.153	11.152	0.001	6926	0.00536	0.21426	140.00- 140.00	0.00
	11.488	11.487	0.001	3466	0.00659	0.26351	128.33- 128.33	0.00
Average of Peak Concentrations = 0.49410								
9 Aroclor-1262						CAS #: 37324-23-5		
Peaks not detected for Quant. or Qual. signal(s).								
10 Aroclor-1268						CAS #: 11100-14-4		
Operator disabled compound identification.								
$ 11 Decachlorobiphenyl						CAS #: 2051-24-3		
	13.003	13.005	-0.002	119527	0.01995	0.79815		

PW-03 0-6"

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900468.D
Report Date: 14-Sep-2010 12:10

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242					CAS #: 53469-21-9		
Operator disabled compound identification.							
6 Aroclor-1248					CAS #: 12672-29-6		
Peaks not detected for Quant. or Qual. signal(s).							
7 Aroclor-1254					CAS #: 11097-69-1		
Peaks not detected for Quant. or Qual. signal(s).							
8 Aroclor-1260					CAS #: 11096-82-5		
9.735	9.736	-0.001	42457	0.02528	1.0112	0.00- 0.00	0.00(a)
10.029	10.031	-0.002	31115	0.01414	0.56569	115.86- 115.86	0.00
10.243	10.243	0.000	4170	0.00220	0.087800	136.91- 136.91	0.00
10.552	10.553	-0.001	12403	0.00619	0.24777	140.00- 140.00	0.00
11.028	11.032	-0.004	5261	0.00572	0.22860	128.33- 128.33	0.00
Average of Peak Concentrations =					0.42821		
9 Aroclor-1262					CAS #: 37324-23-5		
Operator disabled compound identification.							
10 Aroclor-1268					CAS #: 11100-14-4		
Operator disabled compound identification.							
$ 11 Decachlorobiphenyl					CAS #: 2051-24-3		
13.236	13.238	-0.002	284403	0.02025	0.80989		

PW-03 0-6"

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900469.D
Report Date: 14-Sep-2010 09:20

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	CONCENTRATIONS FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242					CAS #: 53469-21-9		
Operator disabled compound identification.							
6 Aroclor-1248					CAS #: 12672-29-6		
Operator disabled compound identification.							
7 Aroclor-1254					CAS #: 11097-69-1		
Operator disabled compound identification.							
8 Aroclor-1260					CAS #: 11096-82-5		
9.559	9.561	-0.002	6057	0.00667	0.26689	0.00- 0.00	0.00(a)
9.963	9.966	-0.003	3912	0.00331	0.13244	115.86- 115.86	0.00
10.725	10.725	0.000	790	0.00125	0.050127	136.91- 136.91	0.00
11.151	11.152	-0.001	2833	0.00219	0.087642	140.00- 140.00	0.00
11.483	11.487	-0.004	1056	0.00201	0.080284	128.33- 128.33	0.00
Average of Peak Concentrations =					0.12348		
9 Aroclor-1262					CAS #: 37324-23-5		
Operator disabled compound identification.							
10 Aroclor-1268					CAS #: 11100-14-4		
Peaks not detected for Quant. or Qual. signal(s).							
$ 11 Decachlorobiphenyl					CAS #: 2051-24-3		
13.002	13.005	-0.003	107766	0.01799	0.71962		(R)

PW-03 6-18"

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900469.D
Report Date: 14-Sep-2010 12:10

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242					CAS #: 53469-21-9		
Operator disabled compound identification.							
6 Aroclor-1248					CAS #: 12672-29-6		
Peaks not detected for Quant. or Qual. signal(s).							
7 Aroclor-1254					CAS #: 11097-69-1		
Peaks not detected for Quant. or Qual. signal(s).							
8 Aroclor-1260					CAS #: 11096-82-5		
9.738	9.736	0.002	11690	0.00696	0.27842	0.00- 0.00	0.00(a)
10.034	10.031	0.003	9526	0.00433	0.17319	115.86- 115.86	0.00
10.245	10.243	0.002	1774	9e-004	0.037352	136.91- 136.91	0.00
10.556	10.553	0.003	4286	0.00214	0.085621	140.00- 140.00	0.00
11.031	11.032	-0.001	1958	0.00213	0.085080	128.33- 128.33	0.00
Average of Peak Concentrations = 0.13193							
9 Aroclor-1262					CAS #: 37324-23-5		
Operator disabled compound identification.							
10 Aroclor-1268					CAS #: 11100-14-4		
Operator disabled compound identification.							
$ 11 Decachlorobiphenyl					CAS #: 2051-24-3		
13.236	13.238	-0.002	263903	0.01879	0.75152		(R)

PW-03 6-18"

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900471.D
Report Date: 14-Sep-2010 12:10

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242					CAS #: 53469-21-9		

Operator disabled compound identification.

---

6 Aroclor-1248 CAS #: 12672-29-6

Peaks not detected for Quant. or Qual. signal(s).

---

7 Aroclor-1254 CAS #: 11097-69-1

Peaks not detected for Quant. or Qual. signal(s).

---

8 Aroclor-1260 CAS #: 11096-82-5

9.734	9.736	-0.002	16820	0.01001	0.40060	0.00- 0.00	0.00(a)
10.033	10.031	0.002	14163	0.00644	0.25749	115.86- 115.86	0.00
10.241	10.243	-0.002	1791	9e-004	0.037710	136.91- 136.91	0.00
10.554	10.553	0.001	5363	0.00268	0.10714	140.00- 140.00	0.00
11.031	11.032	-0.001	2751	0.00299	0.11954	128.33- 128.33	0.00

Average of Peak Concentrations = 0.18449

PW-04 0-6"

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9 Aroclor-1262 CAS #: 37324-23-5

Operator disabled compound identification.

---

10 Aroclor-1268 CAS #: 11100-14-4

Operator disabled compound identification.

$ 11 Decachlorobiphenyl					CAS #: 2051-24-3		
13.234	13.238	-0.004	274015	0.01951	0.78031		

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900471.D
Report Date: 14-Sep-2010 09:20

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	CONCENTRATIONS FINAL (ug/L)	TARGET RANGE	RATIO
	5 Aroclor-1242				CAS #: 53469-21-9		
Operator disabled compound identification.							
	6 Aroclor-1248				CAS #: 12672-29-6		
Operator disabled compound identification.							
	7 Aroclor-1254				CAS #: 11097-69-1		
Operator disabled compound identification.							
	8 Aroclor-1260				CAS #: 11096-82-5		
9.559	9.561	-0.002	8644	0.00952	0.38088	0.00- 0.00	0.00(a)
9.964	9.966	-0.002	6320	0.00535	0.21397	115.86- 115.86	0.00
10.726	10.725	0.001	1065	0.00169	0.067576	136.91- 136.91	0.00
11.152	11.152	0.000	3322	0.00257	0.10277	140.00- 140.00	0.00
11.488	11.487	0.001	1416	0.00269	0.10765	128.33- 128.33	0.00
	Average of Peak Concentrations =				0.17457		
	9 Aroclor-1262				CAS #: 37324-23-5		
Peaks not detected for Quant. or Qual. signal(s).							
	10 Aroclor-1268				CAS #: 11100-14-4		
Operator disabled compound identification.							
$	11 Decachlorobiphenyl				CAS #: 2051-24-3		
13.002	13.005	-0.003	116566	0.01946	0.77838		

PW-04 0-6"

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900472.D
Report Date: 14-Sep-2010 09:20

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242					CAS #: 53469-21-9		
Operator disabled compound identification.							
6 Aroclor-1248					CAS #: 12672-29-6		
Operator disabled compound identification.							
7 Aroclor-1254					CAS #: 11097-69-1		
Operator disabled compound identification.							
8 Aroclor-1260					CAS #: 11096-82-5		
9.556	9.561	-0.005	4764	0.00525	0.20992	0.00- 0.00	0.00(a)
9.963	9.966	-0.003	3416	0.00289	0.11565	115.86- 115.86	0.00
10.723	10.725	-0.002	613	1e-003	0.038896	136.91- 136.91	0.00
11.149	11.152	-0.003	1923	0.00149	0.059490	140.00- 140.00	0.00
11.485	11.487	-0.002	894	0.00170	0.067967	128.33- 128.33	0.00
Average of Peak Concentrations					0.098384		
9 Aroclor-1262					CAS #: 37324-23-5		
Operator disabled compound identification.							
10 Aroclor-1268					CAS #: 11100-14-4		
Peaks not detected for Quant. or Qual. signal(s).							
$ 11 Decachlorobiphenyl					CAS #: 2051-24-3		
13.001	13.005	-0.004	115858	0.01934	0.77365		

PW-04 6-18"

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900472.D
Report Date: 14-Sep-2010 12:10

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242					CAS #: 53469-21-9		
Peaks not detected for Quant. or Qual. signal(s).							
6 Aroclor-1248					CAS #: 12672-29-6		
Peaks not detected for Quant. or Qual. signal(s).							
7 Aroclor-1254					CAS #: 11097-69-1		
Peaks not detected for Quant. or Qual. signal(s).							
8 Aroclor-1260					CAS #: 11096-82-5		
9.735	9.736	-0.001	9102	0.00542	0.21678	0.00- 0.00	0.00(a)
10.032	10.031	0.001	7987	0.00363	0.14521	115.86- 115.86	0.00
10.241	10.243	-0.002	1009	5e-004	0.021245	136.91- 136.91	0.00
10.554	10.553	0.001	2731	0.00136	0.054557	140.00- 140.00	0.00
11.031	11.032	-0.001	1901	0.00207	0.082603	128.33- 128.33	0.00
Average of Peak Concentrations					0.10408		
9 Aroclor-1262					CAS #: 37324-23-5		
Operator disabled compound identification.							
10 Aroclor-1268					CAS #: 11100-14-4		
Operator disabled compound identification.							
$ 11 Decachlorobiphenyl					CAS #: 2051-24-3		
13.235	13.238	-0.003	276986	0.01972	0.78877		

PW-04 6-18"

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900474.D
Report Date: 14-Sep-2010 09:20

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	CONCENTRATIONS FINAL (ug/L)	TARGET RANGE	RATIO	
5 Aroclor-1242					CAS #: 53469-21-9			
Operator disabled compound identification.								
6 Aroclor-1248					CAS #: 12672-29-6			
Operator disabled compound identification.								
7 Aroclor-1254					CAS #: 11097-69-1			
Operator disabled compound identification.								
8 Aroclor-1260					CAS #: 11096-82-5			
9.557	9.561	-0.004	22013	0.02425	0.96995	0.00- 0.00	0.00	(a)
9.962	9.966	-0.004	20815	0.01762	0.70472	115.86- 115.86	0.00	
10.724	10.725	-0.001	5497	0.00872	0.34879	136.91- 136.91	0.00	
11.149	11.152	-0.003	13708	0.01060	0.42407	140.00- 140.00	0.00	
11.486	11.487	-0.001	7024	0.01335	0.53401	128.33- 128.33	0.00	
Average of Peak Concentrations =					0.59631			
9 Aroclor-1262					CAS #: 37324-23-5			
Operator disabled compound identification.								
10 Aroclor-1268					CAS #: 11100-14-4			
Operator disabled compound identification.								
$ 11 Decachlorobiphenyl					CAS #: 2051-24-3			
13.000	13.005	-0.005	111420	0.01860	0.74402			(R)

PW-05 0-6"

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900474.D
Report Date: 14-Sep-2010 12:10

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	CONCENTRATIONS FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242					CAS #: 53469-21-9		

Operator disabled compound identification.

---

6 Aroclor-1248 CAS #: 12672-29-6

Peaks not detected for Quant. or Qual. signal(s).

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7 Aroclor-1254 CAS #: 11097-69-1

Peaks not detected for Quant. or Qual. signal(s).

---

8 Aroclor-1260 CAS #: 11096-82-5

9.736	9.736	0.000	44093	0.02625	1.0502	0.00- 0.00	0.00(a)	
10.031	10.031	0.000	43873	0.01994	0.79764	115.86- 115.86	0.00	
10.241	10.243	-0.002	12923	0.00680	0.27210	136.91- 136.91	0.00	
10.552	10.553	-0.001	22832	0.01140	0.45611	140.00- 140.00	0.00	
11.030	11.032	-0.002	10436	0.01134	0.45347	128.33- 128.33	0.00	

Average of Peak Concentrations = 0.60589

PW-05 0-6"

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9 Aroclor-1262 CAS #: 37324-23-5

Operator disabled compound identification.

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10 Aroclor-1268 CAS #: 11100-14-4

Operator disabled compound identification.

$ 11 Decachlorobiphenyl					CAS #: 2051-24-3			
13.236	13.238	-0.002	280569	0.01997	0.79898			

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Y0900475.D
Report Date: 14-Sep-2010 09:20

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242					CAS #: 53469-21-9		
Operator disabled compound identification.							
6 Aroclor-1248					CAS #: 12672-29-6		
Operator disabled compound identification.							
7 Aroclor-1254					CAS #: 11097-69-1		
Operator disabled compound identification.							
8 Aroclor-1260					CAS #: 11096-82-5		
9.558	9.561	-0.003	15923	0.01754	0.70161	0.00- 0.00	0.00(a)
9.964	9.966	-0.002	21173	0.01792	0.71684	115.86- 115.86	0.00
10.724	10.725	-0.001	4397	0.00697	0.27900	136.91- 136.91	0.00
11.150	11.152	-0.002	13050	0.01009	0.40372	140.00- 140.00	0.00
11.482	11.487	-0.005	5691	0.01082	0.43266	128.33- 128.33	0.00
Average of Peak Concentrations =					0.50676		
9 Aroclor-1262					CAS #: 37324-23-5		
Operator disabled compound identification.							
10 Aroclor-1268					CAS #: 11100-14-4		
Operator disabled compound identification.							
$ 11 Decachlorobiphenyl					CAS #: 2051-24-3		
12.999	13.005	-0.006	114868	0.01918	0.76704		(R)

PW-05 6-18"

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900475.D
Report Date: 14-Sep-2010 12:10

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242					CAS #: 53469-21-9		
Peaks not detected for Quant. or Qual. signal(s).							
6 Aroclor-1248					CAS #: 12672-29-6		
Peaks not detected for Quant. or Qual. signal(s).							
7 Aroclor-1254					CAS #: 11097-69-1		
Peaks not detected for Quant. or Qual. signal(s).							
8 Aroclor-1260					CAS #: 11096-82-5		
9.730	9.736	-0.006	30737	0.01830	0.73205	0.00- 0.00	0.00(a)
10.025	10.031	-0.006	43238	0.01965	0.78609	115.86- 115.86	0.00
10.237	10.243	-0.006	13135	0.00691	0.27656	136.91- 136.91	0.00
10.549	10.553	-0.004	24549	0.01226	0.49041	140.00- 140.00	0.00
11.028	11.032	-0.004	10757	0.01169	0.46742	128.33- 128.33	0.00
Average of Peak Concentrations =					0.55051		
9 Aroclor-1262					CAS #: 37324-23-5		
Operator disabled compound identification.							
10 Aroclor-1268					CAS #: 11100-14-4		
Operator disabled compound identification.							
$ 11 Decachlorobiphenyl					CAS #: 2051-24-3		
13.233	13.238	-0.005	273774	0.01949	0.77963		

PW-05 6-18"

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT Middle River Center	JOB NUMBER COI020508
SUBJECT Sample Calculation	
BASED ON	DRAWING NUMBER
BY Ann Cognetti / CHECKED BY	APPROVED BY 11-2-10 / DATE 10-26-10

I. VOC; Sample PW-01 Composite; Acetone

$$\frac{229954}{1190380} * \frac{1}{10\ (\text{ng conversion})} * \frac{1}{2.5\ \text{mL}} * \frac{500\ 50\ \text{ng}}{0.08417} = 45.9\ \text{ug/L acetone}$$

2 (dilution factor)

II. PAH; Sample PW-05 6-18"; Acenaphthene

$$\frac{9570}{191392} * 1 * 1 * \frac{500\ \text{ul}}{200\ \text{mL} * 2\ \text{ul}} * \frac{8\ \text{ng}}{1.14694} = 0.44\ \text{ug/L acenaphthene}$$

III. Aroclor 1260; Sample PW-05 6-18"

$$\frac{30737\ \text{AREA}}{1679493\ \text{AREA/ng}} * 1 * \frac{8000\ \text{ul}}{1\ \text{ul}\ 200\ \text{mL}} = 0.73$$

$$\frac{43238}{2200150} * 1 * \frac{8000}{200} = 0.79$$

$$\frac{13135}{1899762} * 1 * \frac{8000}{200} = 0.28$$

$$\frac{24549}{2002313} * 1 * \frac{8000}{200} = 0.49$$

$$\frac{10757}{920548} * 1 * \frac{8000}{200} = 0.47$$

$$\frac{0.73 + 0.79 + 0.28 + 0.49 + 0.47}{5}$$

$= 0.55$ ug/L Aroclor 1260

Sample Calculation
VOC

Tetra Tech NUS, Inc

Client Sample ID: PW-01 Composite

GC/MS Volatiles

Lot-Sample #...:	C0I020508-023	**Work Order #...:**	L6NL71AA	**Matrix.....:**	WATER
Date Sampled...:	09/08/10	**Date Received..:**	09/08/10	**MS Run #.....:**	0257050
Prep Date.....:	09/13/10	**Analysis Date..:**	09/13/10		
Prep Batch #...:	0257090	**Analysis Time..:**	20:03		
Dilution Factor:	2	**Initial Wgt/Vol:**	5 mL	**Final Wgt/Vol..:**	5 mL
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acetone	**46**	**10**	**ug/L**
Bromobenzene	ND	2.0	ug/L
Bromochloromethane	ND	2.0	ug/L
Bromodichloromethane	ND	2.0	ug/L
2-Butanone	**7.1 J**	**10**	**ug/L**
n-Butylbenzene	ND	2.0	ug/L
sec-Butylbenzene	ND	2.0	ug/L
tert-Butylbenzene	ND	2.0	ug/L
Carbon disulfide	ND	2.0	ug/L
Dibromochloromethane	ND	2.0	ug/L
1,2-Dibromo-3-chloro-propane	ND	4.0	ug/L
2-Chloroethyl vinyl ether	ND	10	ug/L
2-Chlorotoluene	ND	2.0	ug/L
4-Chlorotoluene	ND	2.0	ug/L
1,2-Dibromoethane	ND	2.0	ug/L
Dibromomethane	ND	2.0	ug/L
1,2-Dichlorobenzene	ND	2.0	ug/L
1,3-Dichlorobenzene	ND	2.0	ug/L
1,4-Dichlorobenzene	ND	2.0	ug/L
Dichlorodifluoromethane	ND	2.0	ug/L
cis-1,2-Dichloroethene	ND	2.0	ug/L
trans-1,2-Dichloroethene	ND	2.0	ug/L
1,3-Dichloropropane	ND	2.0	ug/L
2,2-Dichloropropane	ND	2.0	ug/L
1,1-Dichloropropene	ND	2.0	ug/L
Trichlorofluoromethane	ND	2.0	ug/L
Hexachlorobutadiene	ND	2.0	ug/L
2-Hexanone	ND	10	ug/L
Isopropylbenzene	ND	2.0	ug/L
p-Isopropyltoluene	ND	2.0	ug/L
tert-Butyl alcohol	ND	40	ug/L
4-Methyl-2-pentanone	ND	10	ug/L
Naphthalene	ND	2.0	ug/L
n-Propylbenzene	ND	2.0	ug/L
Styrene	ND	2.0	ug/L
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L
1,2,3-Trichlorobenzene	ND	2.0	ug/L

(Continued on next page)

Sample Calculation
VOC

Data File: \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\UXM9011.D
Report Date: 14-Sep-2010 10:05

TestAmerica North Canton

VOLATILE REPORT SW-846 Method 8260A/B

Data file : \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\UXM9011.D
Lab Smp Id: L6NL71AA Client Smp ID: PW-01 Composite
Inj Date : 13-SEP-2010 20:03
Operator : 1644 Inst ID: a3ux16.i
Smp Info : L6NL71AA,2.5ML/5ML
Misc Info : M00913A,8260LLUX16,,1644
Comment :
Method : \\cansvr11\dd\chem\MSV\a3ux16.i\M00913A.b\8260LLUX16.m
Meth Date : 13-Sep-2010 13:15 a3ux16.i Quant Type: ISTD
Cal Date : 03-AUG-2010 19:59 Cal File: UXM7972.D
Als bottle: 25
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 4-8260+IX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * 1/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	2.500	Sample volume
Va	100.000	Injection Volume
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	CONCENTRATIONS FINAL (ug/L)
*	1 Fluorobenzene	96	5.715	5.715	(1.000)	1190380	50.0000	
*	2 Chlorobenzene-d5	117	8.407	8.407	(1.000)	688788	50.0000	
*	3 1,4-Dichlorobenzene-d4	152	10.648	10.648	(1.000)	399971	50.0000	
$	4 Dibromofluoromethane	113	5.134	5.134	(0.898)	286771	52.9719	21.189
$	5 1,2-Dichloroethane-d4	65	5.431	5.431	(0.950)	314233	48.5824	19.433
$	6 Toluene-d8	98	7.091	7.091	(0.843)	996788	53.2379	21.295
$	7 Bromofluorobenzene	95	9.522	9.522	(1.133)	314849	49.0882	19.635
	8 Dichlorodifluoromethane	85	Compound Not Detected.					
	9 Chloromethane	50	Compound Not Detected.					
	10 Vinyl Chloride	62	Compound Not Detected.					
	11 Bromomethane	94	Compound Not Detected.					
	12 Chloroethane	64	Compound Not Detected.					
	13 Trichlorofluoromethane	101	Compound Not Detected.					
	14 Dichlorofluoromethane	67	Compound Not Detected.					
	15 Acrolein	56	Compound Not Detected.					
	16 Acetone	43	3.189	3.189	(0.558)	229954	114.753	45.901
	17 1,1-Dichloroethene	96	Compound Not Detected.					
	18 Freon-113	151	Compound Not Detected.					
	19 Iodomethane	142	Compound Not Detected.					
	20 Carbon Disulfide	76	Compound Not Detected.					
	21 Methylene Chloride	84	3.593	3.593	(0.629)	144637	16.8615	6.745

Sample Calculation
VOC

Report Date : 04-Aug-2010 08:58

TestAmerica North Canton

INITIAL CALIBRATION DATA

Start Cal Date : 03-AUG-2010 16:44
End Cal Date : 03-AUG-2010 21:05
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP RTE
Method file : \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\8260LLUX16.m
Last Edit : 04-Aug-2010 08:59 quayler
Curve Type : Average

Calibration File Names:
Level 1: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7975.D
Level 2: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7974.D
Level 3: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7973.D
Level 4: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7972.D
Level 5: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7971.D
Level 6: \\cansvr11\dd\chem\MSV\a3ux16.i\M00803A-IC.b\UXM7970.D

	Compound	5.000 Level 1	10.000 Level 2	25.000 Level 3	50.000 Level 4	100.000 Level 5	200.000 Level 6	___ RRF	% RSD
	8 Dichlorodifluoromethane	0.16587	0.14951	0.18671	0.18976	0.20707	0.22360	0.18709	14.346
	9 Chloromethane	0.34811	0.31503	0.31891	0.33855	0.29137	0.30593	0.31965	6.527
	10 Vinyl Chloride	0.29593	0.28340	0.30604	0.30367	0.30549	0.30647	0.30017	3.032
	11 Bromomethane	0.14146	0.12515	0.13145	0.10936	0.09612	0.07456	0.11302	21.940
	12 Chloroethane	0.22302	0.17130	0.16720	0.15527	0.14647	0.13562	0.16648	18.414
	13 Trichlorofluoromethane	0.19219	0.17155	0.20525	0.20827	0.21574	0.21701	0.20167	8.551
	14 Dichlorofluoromethane	0.39892	0.38754	0.32483	0.33783	0.34290	0.32341	0.35257	9.236
	15 Acrolein	0.03507	0.03454	0.03536	0.03583	0.03667	0.03512	0.03543	2.083
	16 Acetone	0.10811	0.08454	0.08079	0.08208	0.07605	0.07345	0.08417	14.744
	17 1,1-Dichloroethene	0.23779	0.25990	0.25465	0.25077	0.25483	0.25945	0.25290	3.219
	18 Freon-113	0.12483	0.16331	0.15236	0.16880	0.17894	0.18220	0.16174	13.018
	19 Iodomethane	0.40270	0.42098	0.41968	0.42282	0.41425	0.41721	0.41628	1.752
	20 Carbon Disulfide	0.79238	0.83594	0.82953	0.84286	0.84839	0.86014	0.83487	2.794
	21 Methylene Chloride	0.53966	0.41181	0.33694	0.31538	0.29383	0.28849	0.36435	26.571
	22 Acetonitrile	0.02931	0.02704	0.02813	0.02738	0.02792	0.02598	0.02763	4.066
	23 Acrylonitrile	0.07827	0.08238	0.08669	0.08490	0.08461	0.08030	0.08286	3.807
	24 Methyl tert-butyl ether	0.40107	0.38966	0.38998	0.38913	0.37094	0.35453	0.38255	4.393
	25 trans-1,2-Dichloroethene	0.27676	0.29679	0.28761	0.28399	0.28520	0.28482	0.28586	2.269
	26 Hexane	0.03226	0.04464	0.03779	0.04373	0.04730	0.05196	0.04295	16.285
	27 Vinyl acetate	0.35171	0.36614	0.37795	0.38176	0.40080	0.40079	0.37986	5.083
	28 1,1-Dichloroethane	0.45332	0.47819	0.46358	0.45834	0.46474	0.47002	0.46470	1.880
	29 tert-Butyl Alcohol	0.01331	0.01333	0.01319	0.01314	0.01310	0.01194	0.01300	4.069
	30 2-Butanone	0.11668	0.10961	0.10749	0.10455	0.10560	0.09823	0.10703	5.692
M	31 1,2-Dichloroethene (total)	0.28426	0.29959	0.28958	0.28745	0.28781	0.28922	0.28965	1.802
	32 cis-1,2-dichloroethene	0.29176	0.30239	0.29155	0.29090	0.29042	0.29362	0.29344	1.539
	33 2,2-Dichloropropane	0.29731	0.29652	0.29457	0.29883	0.29998	0.29423	0.29691	0.769
	34 Bromochloromethane	0.13250	0.13515	0.13292	0.13539	0.13462	0.13547	0.13434	0.972
	35 Chloroform	0.44401	0.45246	0.43715	0.43755	0.43622	0.43833	0.44095	1.423

Sample Calculation

Tetra Tech NUS, Inc

Client Sample ID: PW-05 6-18"

GC/MS Semivolatiles

Lot-Sample #...:	C0I020508-014	**Work Order #...:**	L6HGF1AC	**Matrix.....:**	WATER
Date Sampled...:	09/09/10	**Date Received..:**	09/09/10	**MS Run #.....:**	
Prep Date.....:	09/13/10	**Analysis Date..:**	09/14/10		
Prep Batch #...:	0256315	**Analysis Time..:**	19:58		
Dilution Factor:	2.5	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	0.5 mL
Analyst ID.....:	045183	**Instrument ID..:**	71		
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,4-Dioxane	ND	5.0	ug/L	0.36
Naphthalene	ND	0.50	ug/L	0.035
Acenaphthylene	ND	0.50	ug/L	0.038
Acenaphthene	**0.44 J**	**0.50**	**ug/L**	**0.036**
Fluorene	**0.24 J**	**0.50**	**ug/L**	**0.054**
Phenanthrene	**0.80**	**0.50**	**ug/L**	**0.11**
Anthracene	**0.17 J**	**0.50**	**ug/L**	**0.038**
Fluoranthene	**2.1**	**0.50**	**ug/L**	**0.040**
Pyrene	**1.4**	**0.50**	**ug/L**	**0.039**
Benzo(a)anthracene	**0.48 J**	**0.50**	**ug/L**	**0.037**
Chrysene	**0.39 J**	**0.50**	**ug/L**	**0.035**
Benzo(b)fluoranthene	**2.6**	**0.50**	**ug/L**	**0.039**
Benzo(k)fluoranthene	**0.98**	**0.50**	**ug/L**	**0.14**
Benzo(a)pyrene	**0.23 J**	**0.50**	**ug/L**	**0.034**
Indeno(1,2,3-cd)pyrene	**0.98**	**0.50**	**ug/L**	**0.050**
Dibenzo(a,h)anthracene	ND	0.50	ug/L	0.039
Benzo(ghi)perylene	**0.82**	**0.50**	**ug/L**	**0.038**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	100	(23 - 112)
Terphenyl-d14	78	(10 - 132)
2-Fluorobiphenyl	105	(19 - 107)
2-Fluorophenol	95	(10 - 111)
Phenol-d5	89	(15 - 112)
2,4,6-Tribromophenol	95	(16 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Sample Calculation

Test America Pittsburgh

Semivolatile REPORT SW-846 Method 8270

Data file : \\pitsvr06\D\chem\71.i\s091410.b\S0914017.D
Lab Smp Id: l6hgf1ac Client Smp ID: PW-05 6-18"
Inj Date : 14-SEP-2010 19:58
Operator : 045183sab Inst ID: 71.i
Smp Info : c0i020508-014 9/13/10 h2o42 (0256315)
Misc Info : l6hgf1ac,s091410.b,l1b.m,4-42pahpd.sub
Comment :
Method : \\pitsvr06\D\chem\71.i\s091410.b\l1b.m
Meth Date : 20-Sep-2010 11:42 campisin Quant Type: ISTD
Cal Date : 27-AUG-2010 11:55 Cal File: S0827AP8.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 4-42pahpd.sub
Target Version: 4.14
Processing Host: PITPC-732

Concentration Formula: Amt * DF * Uf * Vt/(Vo * Vi)*1*gpc * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	500.000	Volume of final extract (uL)
Vo	200.000	Volume of sample extracted (mL)
Vi	2.000	Volume injected (uL)
gpc	1.000	GPC correction Factor
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 1	1,4-Dichlorobenzene-d4	152	3.972	3.966	(1.000)	141470	8.00000	
* 2	Naphthalene-d8	136	4.923	4.917	(1.000)	467271	8.00000	
* 3	Acenaphthene-d10	164	6.221	6.226	(1.000)	191392	8.00000	
* 4	Phenanthrene-d10	188	7.321	7.326	(1.000)	264068	8.00000	
* 5	Chrysene-d12	240	9.309	9.314	(1.000)	198910	8.00000	
* 6	Perylene-d12	264	10.372	10.393	(1.000)	211550	8.00000	
198	1,4-Dioxane	88	Compound Not Detected.					
51	Naphthalene	128	Compound Not Detected.					
62	2-Methylnaphthalene	142	Compound Not Detected.					
63	1-Methylnaphthalene	142	Compound Not Detected.					
79	Acenaphthylene	152	Compound Not Detected.					
82	Acenaphthene	153	6.242	6.247	(1.003)	9570	0.34877	0.43596
86	Dibenzofuran	168	Compound Not Detected.					
94	Fluorene	166	6.627	6.632	(1.065)	6211	0.19372	0.24215
111	Pentachlorophenol	265	Compound Not Detected.					
115	Phenanthrene	178	7.343	7.342	(1.003)	27035	0.63688	0.79610
116	Anthracene	178	7.375	7.385	(1.007)	5835	0.13981	0.17476
119	Carbazole	167	Compound Not Detected.					
123	Fluoranthene	202	8.230	8.235	(1.124)	42671	1.68483	2.1060

Sample Calculation

(2001 - 2272)

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 26-AUG-2010 06:32
End Cal Date : 26-AUG-2010 08:50
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\D\chem\71.i\s0826108270C.b\llb.m
Last Edit : 26-Aug-2010 12:24 bachas

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
78 2,6-Dinitrotoluene	+++++	0.23754	0.24866	0.26922	0.28087	0.29079						
	0.29462	0.28827					AVRG		0.27285		8.11604	
79 Acenaphthylene	1.41511	1.63534	1.67611	1.76369	1.89303	2.02711						
	2.07955	2.14389					AVRG		1.82923		13.73285	
80 1,2-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
81 3-Nitroaniline	+++++	0.25595	0.27507	0.29742	0.31646	0.31535						
	0.31457	0.31553					AVRG		0.29862		8.10602	
82 Acenaphthene	1.08571	1.05766	1.03037	1.08262	1.14118	1.23078						
	1.26172	1.28548					AVRG		1.14694		8.64845	
83 2,4-Dinitrophenol	+++++	+++++	0.13225	0.14820	0.16563	0.17202						
	0.18101	0.18597					AVRG		0.16418		12.47198	
84 Pentachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

2116

C0I020508

Sample Calculation

Tetra Tech NUS, Inc

Client Sample ID: PW-05 6-18"

GC Semivolatiles

Lot-Sample #...:	C0I020508-014	**Work Order #...:**	L6HGF1AA	**Matrix.....:**	WATER
Date Sampled...:	09/09/10	**Date Received..:**	09/09/10	**MS Run #.....:**	
Prep Date.....:	09/09/10	**Analysis Date..:**	09/14/10		
Prep Batch #...:	0252401	**Analysis Time..:**	00:46		
Dilution Factor:	1	**Initial Wgt/Vol:**	200 mL	**Final Wgt/Vol..:**	8 mL
Analyst ID.....:	001797	**Instrument ID..:**	U/V		
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	0.40	ug/L	0.10
Aroclor 1221	ND	0.40	ug/L	0.10
Aroclor 1232	ND	0.40	ug/L	0.12
Aroclor 1242	ND	0.40	ug/L	0.074
Aroclor 1248	ND	0.40	ug/L	0.091
Aroclor 1254	ND	0.40	ug/L	0.092
Aroclor 1260	**0.55**	**0.40**	**ug/L**	**0.054**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	98	(35 - 140)
Decachlorobiphenyl	96	(35 - 140)

Sample Calculation

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900475.D
Report Date: 14-Sep-2010 12:10

TestAmerica Pittsburgh

Data file : \\pitsvr06\d\chem\gc14.i\09130.b\Z0900475.D
Lab Smp Id: L6HGF1AA Client Smp ID: PW-05 6-18"
Inj Date : 14-SEP-2010 00:26
Operator : 01797 Inst ID: gc14.i
Smp Info : L6HGF1AA,09130.B
Misc Info : C0I020508-14
Comment : 8082 PCB ANALYSIS
Method : \\pitsvr06\d\chem\gc14.i\09130.b\yPCBB.m
Meth Date : 14-Sep-2010 10:34 gc14.i Quant Type: ESTD
Cal Date : 13-SEP-2010 16:58 Cal File: Z0900453.D
Als bottle: 29
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: all.sub
Target Version: 4.14 Sample Matrix: WATER

Concentration Formula: Amt * DF * Vt/Vo/Vi * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	8000.000	Volume of final extract (uL)
Vo	200.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected
Cpnd Variable		Local Compound Variable

				CONCENTRATIONS ON-COL	FINAL		
RT	EXP RT	DLT RT	RESPONSE	(ng)	(ug/L)	TARGET RANGE	RATIO
1 Aroclor-1221					CAS #: 11104-28-2		
Operator disabled compound identification.							
$ 2 Tetrachloro-m-xylene					CAS #: 877-09-8		
6.049	6.052	-0.003	467664	0.02179	0.87142		(R)
3 Aroclor-1232					CAS #: 11141-16-5		
Operator disabled compound identification.							
4 Aroclor-1016					CAS #: 12674-11-2		
Peaks not detected for Quant. or Qual. signal(s).							

Sample Calculation

Data File: \\pitsvr06\d\chem\gc14.i\09130.b\Z0900475.D
Report Date: 14-Sep-2010 12:10

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ug/L)	TARGET RANGE	RATIO
5 Aroclor-1242					CAS #: 53469-21-9		
Peaks not detected for Quant. or Qual. signal(s).							
6 Aroclor-1248					CAS #: 12672-29-6		
Peaks not detected for Quant. or Qual. signal(s).							
7 Aroclor-1254					CAS #: 11097-69-1		
Peaks not detected for Quant. or Qual. signal(s).							
8 Aroclor-1260					CAS #: 11096-82-5		
9.730	9.736	-0.006	30737	0.01830	0.73205	0.00- 0.00	0.00(a)
10.025	10.031	-0.006	43238	0.01965	0.78609	115.86- 115.86	0.00
10.237	10.243	-0.006	13135	0.00691	0.27656	136.91- 136.91	0.00
10.549	10.553	-0.004	24549	0.01226	0.49041	140.00- 140.00	0.00
11.028	11.032	-0.004	10757	0.01169	0.46742	128.33- 128.33	0.00
Average of Peak Concentrations =					0.55051		
9 Aroclor-1262					CAS #: 37324-23-5		
Operator disabled compound identification.							
10 Aroclor-1268					CAS #: 11100-14-4		
Operator disabled compound identification.							
$ 11 Decachlorobiphenyl					CAS #: 2051-24-3		
13.233	13.238	-0.005	273774	0.01949	0.77963		

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

Report Date : 14-Sep-2010 10:31

or Sample Calculation
HP6890147
MR-2

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 14:56
End Cal Date : 13-SEP-2010 19:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\yPCBB.m
Last Edit : 14-Sep-2010 10:31 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
(2)	+++++ / +++++	+++++	363258	+++++	+++++	+++++	363258	0.000	<-
(3)	+++++ / +++++	+++++	424154	+++++	+++++	+++++	424154	0.000	<-
(4)	+++++ / +++++	+++++	373486	+++++	+++++	+++++	373486	0.000	<-
(5)	+++++ / +++++	+++++	532860	+++++	+++++	+++++	532860	0.000	<-
7 Aroclor-1254(1)	+++++ / +++++	+++++	1034226	+++++	+++++	+++++	1034226	0.000	
(2)	+++++ / +++++	+++++	1631804	+++++	+++++	+++++	1631804	0.000	
(3)	+++++ / +++++	+++++	971890	+++++	+++++	+++++	971890	0.000	
(4)	+++++ / +++++	+++++	1234692	+++++	+++++	+++++	1234692	0.000	
(5)	+++++ / +++++	+++++	805378	+++++	+++++	+++++	805378	0.000	
8 Aroclor-1260(1)	1734860 / 2037200	1726240	1565694	1577573	1568475	1546408	1679493	10.500	
(2)	2294320 / 2563800	2260750	2068896	2063086	2057373	2092825	2200150	8.558	

Report Date : 14-Sep-2010 10:31

HP6890142 Sample Calculation
MR-2

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-SEP-2010 14:56
End Cal Date : 13-SEP-2010 19:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\pitsvr06\d\chem\gc14.i\09130.b\yPCBB.m
Last Edit : 14-Sep-2010 10:31 gc14.i
Curve Type : Average

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	0.01000 Level 7	RRF	% RSD	
(3)	1930800	1916195	1753108	1817863	1794160	1841906	2244300	1899762	8.667	
(4)	2166920	2081180	1876288	1839084	1802399	1769922	2480400	2002313	12.869	
(5)	980200	943145	864620	868243	835293	851732	1100600	920548	10.340	
9 Aroclor-1262(1)	+++++	+++++	2451212	+++++	+++++	+++++	+++++	2451212	0.000	
(2)	+++++	+++++	2161058	+++++	+++++	+++++	+++++	2161058	0.000	<-
(3)	+++++	+++++	4162070	+++++	+++++	+++++	+++++	4162070	0.000	<-
(4)	+++++	+++++	1769208	+++++	+++++	+++++	+++++	1769208	0.000	<-
(5)	+++++	+++++	2748096	+++++	+++++	+++++	+++++	2748096	0.000	<-
10 Aroclor-1268(1)	+++++	+++++	5197936	+++++	+++++	+++++	+++++	5197936	0.000	
(2)	+++++	+++++	4278186	+++++	+++++	+++++	+++++	4278186	0.000	<-
(3)	+++++	+++++	3794872	+++++	+++++	+++++	+++++	3794872	0.000	<-

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. MARTIN**	**DATE:**	**October 22, 2010**
FROM:	**MEGAN CARSON**	**COPIES:**	**DV FILE**
SUBJECT:	**INORGANIC DATA VALIDATION-SELECT METALS, TOC LOCKHEED MIDDLE RIVER CENTER SDG C0H250417**		

SAMPLES: 8/Sediment/

BOWLEYS QUARTERS-01	BOWLEYS QUARTERS-02
BOWLEYS QUARTERS-04	BOWLEYS QUARTERS-SS
MARSHY POINT-01	MARSHY POINT-02
MARSHY POINT-04	MARSHY POINT-SS

Overview

The sample set for Middle River Complex, SDG C0H250417, consists of eight (8) sediment environmental samples. This SDG contained one field duplicate pair: DHC-SW-VOC-DUP.

All sample were analyzed for select metals including antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc. Samples BOWLEYS QUARTERS-SS MARSHY POINT-SS were analyzed for total organic carbon (TOC). The samples were collected by Tetra Tech NUS on August 21st, 2010 and analyzed by Test America. Metals analyses were conducted using SW-846 method 6020. Mercury analyses were conducted using SW-846 method 7471ATOC analyses were conducted using method EPA Llyod Kahn.

The findings offered in this report are based upon a general review of all available data. The data review was based on data completeness, holding times, initial and continuing calibration verification results, laboratory method / preparation blank results, ICP interference results, laboratory control sample recoveries, matrix spike recoveries, laboratory duplicate results, detection limits and analyte quantitation.

Areas of concern with respect to data quality are listed below.

Major Problems – None.

Minor Problems-

- The following samples had percent solid <30%: BOWLEYS QUARTERS-SS and MARSHY POINT-SS. Positive results were qualified as estimated (J).

Notes

Positive results greater than the method detection limit but less than the reporting limit were qualified as estimated (J).

The following contaminants were detected in blanks at the following maximum concentrations:

Analyte	Maximum Concentration	Action Level
Antimony [1]	0.0038 mg/kg	0.019 mg/kg
Chromium [1]	0.036 mg/kg	0.18 mg/kg
Lead [1]	0.0078 mg/kg	0.039 mg/kg
Arsenic [2]	0.00022 mg/L	0.055 mg/kg
Selenium [2]	0.00078 mg/L	0.195 mg/kg
Thallium [2]	0.00004 mg/L	0.01 mg/kg

[1] Maximum concentration present in a preparation blank affecting samples in preparation batch 0245104.
[2] Maximum concentration present in a continuing calibration blank affecting all samples analyzed for select metals.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Sample aliquot and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. No validation action was warranted as sample results were all greater than the blank action levels.

The CRDL standard analyzed on 9/5/10 had a percent recovery >110% for arsenic. All samples were affected. All sample results were greater than 2X CRDL therefore no sample results were qualified.

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: Percent soild results for samples BOWLEYS QUARTERS-SS and MARSHY POINT-SS were <30% and resulted in qualification of all sample results.

The data for these analyses were reviewed with reference to Region III modifications to the "National Functional Guidelines for Inorganic Data Validation", April 1993. The text of this report has been formulated to address only those problem areas affecting data quality.

Megan Carson

Tetra Tech NUS
Megan Carson
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery Noncompliance
F	=	Lab Duplicate Imprecision
G	=	Field Duplicate Imprecision
H	=	Holding Time Exceedance
I	=	ICP Serial Dilution Noncompliance
J	=	GFAA PDS - GFAA MSA's r < 0.995
K	=	ICP Interference - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient r < 0.995
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02903	NSAMPLE	BOWLEYS QUARTERS-01			BOWLEYS QUARTERS-02			BOWLEYS QUARTERS-04			BOWLEYS QUARTERS-SS		
SDG: C0H250417	LAB_ID	C0H250417006			C0H250417007			C0H250417008			C0H250417005		
FRACTION: M	SAMP_DATE	8/21/2010			8/21/2010			8/21/2010			8/21/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	32.0			40.0			68.0			28.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.32			0.073	J	P	0.032	J	P	0.48	J	Y
ARSENIC		9.2			5			1.6			13.5	J	Y
BERYLLIUM		1.7			1			0.33			1.6	J	Y
CADMIUM		0.91			0.28			0.096			0.95	J	Y
CHROMIUM		33.2			23.1			8.9			39.3	J	Y
COPPER		54			15.6			4.9			110	J	Y
LEAD		75.1			14.2			4.3			104	J	Y
MERCURY		0.29			0.05			0.008	U		0.43	J	Y
NICKEL		42.3			18.7			6.6			44.2	J	Y
SELENIUM		2.5			1			0.42			2	J	Y
SILVER		0.24			0.064	J	P	0.026	J	P	0.59	J	Y
THALLIUM		0.33			0.18			0.061	J	P	0.24	J	Y
ZINC		209			61.1			23.1			327	J	Y

PROJ_NO: 02903	NSAMPLE	MARSHY POINT-01			MARSHY POINT-02			MARSHY POINT-04			MARSHY POINT-SS		
SDG: C0H250417	LAB_ID	C0H250417002			C0H250417003			C0H250417004			C0H250417001		
FRACTION: M	SAMP_DATE	8/21/2010			8/21/2010			8/21/2010			8/21/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	34.0			36.0			37.0			27.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.3			0.096	J	P	0.079	J	P	0.43	J	Y
ARSENIC		10.5			6.9			6.8			11.2	J	Y
BERYLLIUM		2			1.5			1.4			1.7	J	Y
CADMIUM		0.67			0.36			0.34			0.84	J	Y
CHROMIUM		37.6			33.2			32.9			36.3	J	Y
COPPER		39.9			16.2			14			67.1	J	Y
LEAD		45.2			18.7			18.6			67.1	J	Y
MERCURY		0.26			0.053			0.051			0.25	J	Y
NICKEL		40.4			27.6			27.3			46.8	J	Y
SELENIUM		2.4			1.3			1.1			2.1	J	Y
SILVER		0.17			0.078	J	P	0.07	J	P	0.47	J	Y
THALLIUM		0.39			0.21			0.19			0.27	J	Y
ZINC		167			95.9			94.7			248	J	Y

PROJ_NO: 02903	NSAMPLE	BOWLEYS QUARTERS-SS			MARSHY POINT-SS		
SDG: C0H250417	LAB_ID	C0H250417005			C0H250417001		
FRACTION: MISC	SAMP_DATE	8/21/2010			8/21/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM		
	UNITS	MG/KG			MG/KG		
	PCT_SOLIDS	28.0			27.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL ORGANIC CARBON		35200	J	Y	34300	J	Y

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-01

TOTAL Metals

Lot-Sample #...: C0H250417-006 **Matrix.....:** SOLID
Date Sampled...: 08/21/10 **Date Received..:** 08/24/10
% Moisture.....: 68

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0245015						
Mercury	**0.29**	**0.052**	**mg/kg**	**SW846 7471A**	**09/02/10**	**L53741AE**
		Dilution Factor: 0.5		Analysis Time..: 08:30	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0245008	MDL.....: 0.017	
Prep Batch #...: 0245104						
Silver	**0.24**	**0.16**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AF**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0062	
Arsenic	**9.2**	**0.16**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AG**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.029	
Beryllium	**1.7**	**0.16**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AH**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.012	
Cadmium	**0.91**	**0.16**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AJ**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.011	
Chromium	**33.2 J**	**0.32**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AK**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0097	
Copper	**54.0**	**0.32**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AL**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.052	
Nickel	**42.3**	**0.16**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AM**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.018	
Lead	**75.1 J**	**0.16**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AN**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0060	

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Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-01

TOTAL Metals

Lot-Sample #...: C0H250417-006 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	**0.32 J**	**0.32**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AP**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0041	
Selenium	2.5	**0.79**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AQ**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.080	
Thallium	**0.33**	**0.16**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AR**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0032	
Zinc	**209**	**0.79**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53741AT**
		Dilution Factor: 0.5		Analysis Time..: 13:36	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.10	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-02

TOTAL Metals

Lot-Sample #...: C0H250417-007 Matrix.....: SOLID
Date Sampled...: 08/21/10 Date Received..: 08/24/10
% Moisture.....: 60

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0245015						
Mercury	**0.050**	**0.041**	**mg/kg**	**SW846 7471A**	**09/02/10**	**L53761AE**
		Dilution Factor: 0.5		Analysis Time..: 08:35	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0245008	MDL.....: 0.013	
Prep Batch #...: 0245104						
Silver	**0.064 B**	**0.12**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53761AF**
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0048	
Arsenic	**5.0**	**0.12**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53761AG**
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.022	
Beryllium	**1.0**	**0.12**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53761AH**
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0093	
Cadmium	**0.28**	**0.12**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53761AJ**
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0087	
Chromium	**23.1 J**	**0.25**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53761AK**
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0075	
Copper	**15.6**	**0.25**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53761AL**
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.041	
Nickel	**18.7**	**0.12**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53761AM**
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.014	
Lead	**14.2 J**	**0.12**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53761AN**
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0047	

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Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-02

TOTAL Metals

Lot-Sample #...: C0H250417-007 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.073 B,J	0.25	mg/kg	SW846 6020	09/02-09/05/10	L53761AP
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0032	
Selenium	1.0	0.62	mg/kg	SW846 6020	09/02-09/05/10	L53761AQ
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.062	
Thallium	0.18	0.12	mg/kg	SW846 6020	09/02-09/05/10	L53761AR
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0025	
Zinc	61.1	0.62	mg/kg	SW846 6020	09/02-09/05/10	L53761AT
		Dilution Factor: 0.5		Analysis Time..: 13:40	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.080	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-04

TOTAL Metals

Lot-Sample #...: C0H250417-008 **Matrix.....:** SOLID
Date Sampled...: 08/21/10 **Date Received..:** 08/24/10
% Moisture.....: 32

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0245015						
Mercury	ND	0.024	mg/kg	SW846 7471A	09/02/10	L53771AE
		Dilution Factor: 0.5		Analysis Time..: 08:37	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0245008	MDL.....: 0.0080	
Prep Batch #...: 0245104						
Silver	**0.026 B**	**0.073**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53771AF**
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0029	
Arsenic	**1.6**	**0.073**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53771AG**
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.013	
Beryllium	**0.33**	**0.073**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53771AH**
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0055	
Cadmium	**0.096**	**0.073**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53771AJ**
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0051	
Chromium	**8.9 J**	**0.15**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53771AK**
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0045	
Copper	**4.9**	**0.15**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53771AL**
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.024	
Nickel	**6.6**	**0.073**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53771AM**
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0083	
Lead	**4.3 J**	**0.073**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53771AN**
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0028	

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Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-04

TOTAL Metals

Lot-Sample #...: C0H250417-008 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.032 B,J	0.15	mg/kg	SW846 6020	09/02-09/05/10	L53771AP
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0019	
Selenium	0.42	0.37	mg/kg	SW846 6020	09/02-09/05/10	L53771AQ
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.037	
Thallium	0.061 B	0.073	mg/kg	SW846 6020	09/02-09/05/10	L53771AR
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0015	
Zinc	23.1	0.37	mg/kg	SW846 6020	09/02-09/05/10	L53771AT
		Dilution Factor: 0.5		Analysis Time..: 13:44	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.047	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-SS

TOTAL Metals

Lot-Sample #...: C0H250417-005 Matrix.....: SOLID
Date Sampled...: 08/21/10 Date Received..: 08/24/10
% Moisture.....: 72

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0245015						
Mercury	**0.43**	**0.058**	**mg/kg**	**SW846 7471A**	**09/02/10**	**L53721AF**
		Dilution Factor: 0.5		Analysis Time..: 08:29	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0245008	MDL.....: 0.019	
Prep Batch #...: 0245104						
Silver	**0.59**	**0.18**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53721AG**
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0069	
Arsenic	**13.5**	**0.18**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53721AH**
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.032	
Beryllium	**1.6**	**0.18**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53721AJ**
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.013	
Cadmium	**0.95**	**0.18**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53721AK**
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.012	
Chromium	**39.3 J**	**0.35**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53721AL**
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.011	
Copper	**110**	**0.35**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53721AM**
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.058	
Nickel	**44.2**	**0.18**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53721AN**
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.020	
Lead	**104 J**	**0.18**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53721AP**
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0067	

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Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-SS

TOTAL Metals

Lot-Sample #...: C0H250417-005 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.48 J	0.35	mg/kg	SW846 6020	09/02-09/05/10	L53721AQ
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0046	
Selenium	2.0	0.88	mg/kg	SW846 6020	09/02-09/05/10	L53721AR
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.089	
Thallium	0.24	0.18	mg/kg	SW846 6020	09/02-09/05/10	L53721AT
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0035	
Zinc	327	0.88	mg/kg	SW846 6020	09/02-09/05/10	L53721AU
		Dilution Factor: 0.5		Analysis Time..: 13:31	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.11	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-01

TOTAL Metals

Lot-Sample #...: C0H250417-002 Matrix.....: SOLID
Date Sampled...: 08/21/10 Date Received..: 08/24/10
% Moisture.....: 66

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0245015						
Mercury	**0.26**	**0.048**	**mg/kg**	**SW846 7471A**	**09/02/10**	**L537W1AE**
		Dilution Factor: 0.5		Analysis Time..: 08:21	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0245008	MDL.....: 0.016	
Prep Batch #...: 0245104						
Silver	**0.17**	**0.15**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537W1AF**
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0057	
Arsenic	**10.5**	**0.15**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537W1AG**
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.026	
Beryllium	**2.0**	**0.15**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537W1AH**
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.011	
Cadmium	**0.67**	**0.15**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537W1AJ**
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.010	
Chromium	**37.6 J**	**0.29**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537W1AK**
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0089	
Copper	**39.9**	**0.29**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537W1AL**
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.048	
Nickel	**40.4**	**0.15**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537W1AM**
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.016	
Lead	**45.2 J**	**0.15**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537W1AN**
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0055	

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Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-01

TOTAL Metals

Lot-Sample #...: C0H250417-002 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.30 J	0.29	mg/kg	SW846 6020	09/02-09/05/10	L537W1AP
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0038	
Selenium	2.4	0.73	mg/kg	SW846 6020	09/02-09/05/10	L537W1AQ
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.073	
Thallium	0.39	0.15	mg/kg	SW846 6020	09/02-09/05/10	L537W1AR
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0029	
Zinc	167	0.73	mg/kg	SW846 6020	09/02-09/05/10	L537W1AT
		Dilution Factor: 0.5		Analysis Time..: 13:19	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.094	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-02

TOTAL Metals

Lot-Sample #...: C0H250417-003 Matrix.....: SOLID
Date Sampled...: 08/21/10 Date Received..: 08/24/10
% Moisture.....: 64

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0245015						
Mercury	**0.053**	**0.046**	**mg/kg**	**SW846 7471A**	**09/02/10**	**L53701AE**
		Dilution Factor: 0.5		Analysis Time..: 08:25	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0245008	MDL.....: 0.015	
Prep Batch #...: 0245104						
Silver	**0.078 B**	**0.14**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AF**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0054	
Arsenic	**6.9**	**0.14**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AG**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.025	
Beryllium	**1.5**	**0.14**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AH**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.010	
Cadmium	**0.36**	**0.14**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AJ**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0097	
Chromium	**33.2 J**	**0.28**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AK**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0084	
Copper	**16.2**	**0.28**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AL**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.046	
Nickel	**27.6**	**0.14**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AM**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.016	
Lead	**18.7 J**	**0.14**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AN**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0053	

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Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-02

TOTAL Metals

Lot-Sample #...: C0H250417-003 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	**0.096 B,J**	**0.28**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AP**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0036	
Selenium	**1.3**	**0.69**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AQ**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.069	
Thallium	**0.21**	**0.14**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AR**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0028	
Zinc	**95.9**	**0.69**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53701AT**
		Dilution Factor: 0.5		Analysis Time..: 13:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.090	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-04

TOTAL Metals

Lot-Sample #...: C0H250417-004 Matrix.....: SOLID
Date Sampled...: 08/21/10 Date Received..: 08/24/10
% Moisture.....: 63

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0245015						
Mercury	**0.051**	**0.044**	**mg/kg**	**SW846 7471A**	**09/02/10**	**L53711AE**
		Dilution Factor: 0.5		Analysis Time..: 08:27	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0245008	MDL.....: 0.015	
Prep Batch #...: 0245104						
Silver	**0.070 B**	**0.13**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AF**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0052	
Arsenic	**6.8**	**0.13**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AG**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.024	
Beryllium	**1.4**	**0.13**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AH**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.010	
Cadmium	**0.34**	**0.13**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AJ**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0094	
Chromium	**32.9 J**	**0.27**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AK**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0082	
Copper	**14.0**	**0.27**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AL**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.044	
Nickel	**27.3**	**0.13**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AM**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.015	
Lead	**18.6 J**	**0.13**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AN**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0051	

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Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-04

TOTAL Metals

Lot-Sample #...: C0H250417-004 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	**0.079 B,J**	**0.27**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AP**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0035	
Selenium	**1.1**	**0.67**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AQ**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.067	
Thallium	**0.19**	**0.13**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AR**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0027	
Zinc	**94.7**	**0.67**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L53711AT**
		Dilution Factor: 0.5		Analysis Time..: 13:27	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.087	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-SS

TOTAL Metals

Lot-Sample #...: C0H250417-001 Matrix.....: SOLID
Date Sampled...: 08/21/10 Date Received..: 08/24/10
% Moisture.....: 73

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0245015						
Mercury	**0.25**	**0.062**	**mg/kg**	**SW846 7471A**	**09/02/10**	**L537V1AF**
		Dilution Factor: 0.5		Analysis Time..: 08:19	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0245008	MDL.....: 0.021	
Prep Batch #...: 0245104						
Silver	**0.47**	**0.19**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537V1AG**
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0073	
Arsenic	**11.2**	**0.19**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537V1AH**
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.034	
Beryllium	**1.7**	**0.19**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537V1AJ**
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.014	
Cadmium	**0.84**	**0.19**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537V1AK**
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.013	
Chromium	**36.3 J**	**0.38**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537V1AL**
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.011	
Copper	**67.1**	**0.38**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537V1AM**
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.062	
Nickel	**46.8**	**0.19**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537V1AN**
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.021	
Lead	**67.1 J**	**0.19**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L537V1AP**
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0072	

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Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-SS

TOTAL Metals

Lot-Sample #...: C0H250417-001 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.43 J	0.38	mg/kg	SW846 6020	09/02-09/05/10	L537V1AQ
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0049	
Selenium	2.1	0.94	mg/kg	SW846 6020	09/02-09/05/10	L537V1AR
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.095	
Thallium	0.27	0.19	mg/kg	SW846 6020	09/02-09/05/10	L537V1AT
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.0038	
Zinc	248	0.94	mg/kg	SW846 6020	09/02-09/05/10	L537V1AU
		Dilution Factor: 0.5		Analysis Time..: 13:14	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0245070	MDL.....: 0.12	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech Middle River, MD

TOC

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	EPA Lloyd Kahn
Client Name:	Tetra Tech NUS, Inc	**Lot Number:**	C0H250417
Matrix:	SOLID		

Total Organic Carbon by Lloyd Kahn

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
MARSHY POINT-SS	C0H250417 001	L537V1AC	34300	mg/kg	2090	7690	2.04	8/31/2010 - 9/1/2010 16:54	0243229
BOWLEYS QUARTERS-SS	C0H250417 005	L53721AC	35200	mg/kg	1760	6460	1.83	8/31/2010 - 9/1/2010 17:09	0243229

APPENDIX C

SUPPORT DOCUMENTATION

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0H250417

Sample Receiving:
TestAmerica's Pittsburgh laboratory received samples on August 24, 2010. The coolers were received within the proper temperature range.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

GC/MS Semivolatiles:
Due to the concentration of target compounds detected and/or matrix, several samples were analyzed at a dilution.

All non-CCC compounds that have >15% RSD were evaluated to see if a better curve could be drawn using a quadratic curve. All compounds <30% RSD will use an average response factor curve if no visible improvement is accomplished using a quadratic curve. A quadratic curve will be used for a compound where it is determined to be the "best-fit" evaluation.

The continuing calibrations had the %D > 25% but were within expected performance range for these compounds.

PCBs:
There were no problems associated with the analysis.

Metals:
Several samples were over the instruments linear range for SEM zinc and required a dilution.

The serial dilution of sample SD-102-SS (total) was outside of the percent difference control limits for silver, beryllium, and antimony. The results were flagged with an "E" qualifier.

The method blanks had analytes detected at concentrations between the MDL and the reporting limit. The results were flagged with a "B" qualifier. Any sample associated with a method blank that had the same analyte detected had the result flagged with a "J" qualifier.

The matrix spike and matrix spike duplicate of sample SD-92-SS recovered outside of the control limits for antimony and lead.

The matrix spike and matrix spike duplicate of sample SD-102-SS recovered outside of the control limits for antimony.

Metals (cont):
The matrix spike of sample SS-102-SS recovered outside of the control limits for chromium and zinc.

For the matrix spike and matrix spike duplicate of sample SD-102-SS, lead recoveries were not calculated due to the concentration of analyte in the sample being >4 times the concentration of spike added.

General Chemistry:
There were no problems associated with the analysis.

METHODS SUMMARY

C0H250417

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
ICP-MS (6020)	SW846 6020	SW846 3050B
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	SW846 7471A
PCBs by SW-846 8082	SW846 8082	SW846 3541
Semivolatile Organics GCMS BNA 8270C	SW846 8270C	
Total Residue as Percent Solids	SM20 2540G	
TOC Lloyd Kahn Lloyd Kahn	EPA Lloyd Kahn	EPA Lloyd Kahn

References:

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

SM20 "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER", 20TH EDITION."

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

C0H250417

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L537V	001	MARSHY POINT-SS	08/21/10	15:20
L537W	002	MARSHY POINT-01	08/21/10	15:22
L5370	003	MARSHY POINT-02	08/21/10	15:24
L5371	004	MARSHY POINT-04	08/21/10	15:26
L5372	005	BOWLEYS QUARTERS-SS	08/21/10	15:45
L5374	006	BOWLEYS QUARTERS-01	08/21/10	15:47
L5376	007	BOWLEYS QUARTERS-02	08/21/10	15:49
L5377	008	BOWLEYS QUARTERS-04	08/21/10	15:51

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

HOLDTIME

SDG C0H250417

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
HG	MG/KG	MARSHY POINT-04	C0H250417004	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	BOWLEYS QUARTERS-0	C0H250417008	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	BOWLEYS QUARTERS-S	C0H250417005	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	BOWLEYS QUARTERS-0	C0H250417006	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	MARSHY POINT-01	C0H250417002	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	MARSHY POINT-02	C0H250417003	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	MARSHY POINT-SS	C0H250417001	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	BOWLEYS QUARTERS-0	C0H250417007	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
M	MG/KG	MARSHY POINT-04	C0H250417004	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	MARSHY POINT-02	C0H250417003	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	MARSHY POINT-01	C0H250417002	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	BOWLEYS QUARTERS-S	C0H250417005	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	BOWLEYS QUARTERS-0	C0H250417008	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	BOWLEYS QUARTERS-0	C0H250417007	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	BOWLEYS QUARTERS-0	C0H250417006	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
M	MG/KG	MARSHY POINT-SS	C0H250417001	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
TOC	MG/KG	MARSHY POINT-SS	C0H250417001	NM	08/21/2010	08/31/2010	09/01/2010	10	1	11
TOC	MG/KG	BOWLEYS QUARTERS-S	C0H250417005	NM	08/21/2010	08/31/2010	09/01/2010	10	1	11
SIM	UG/KG	BOWLEYS QUARTERS-S	C0H250417005	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	MARSHY POINT-SS	C0H250417001	SUR	08/21/2010	08/25/2010	08/27/2010	4	2	6
SIM	UG/KG	MARSHY POINT-SS	C0H250417001	NM	08/21/2010	08/25/2010	08/27/2010	4	2	6
SIM	UG/KG	MARSHY POINT-04	C0H250417004	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	MARSHY POINT-04	C0H250417004	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	MARSHY POINT-02	C0H250417003	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	MARSHY POINT-02	C0H250417003	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417006	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	MARSHY POINT-01	C0H250417002	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417006	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-S	C0H250417005	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417008	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417008	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417007	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417007	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5

C0H250417

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client: Tetra Tech	Project Manager: Mike Martin	Date: 8/21/10	Chain of Custody Number: 154236
Address: 20251 Century Blvd. Suite 200	Telephone Number (Area Code)/Fax Number: 301-528-3022 301-528-3050	Lab Number:	Page 1 of 1
City: Germantown; State: MD; Zip Code: 20874	Site Contact: Tony Romanovage	Lab Contact:	
Project Name and Location (State): MCR Sed. Sampling, middle River, MD	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: PP metals	PAHs	PCBs	TOC	Special Instructions/ Conditions of Receipt
Marshy Point-SS	8/21/10	1520			X		X						X	X	X	X	
Marshy Point-01		1522											X	X	X		
Marshy Point-02		1524											X	X	X		
Marshy Point-04		1526											X	X	X		
Bowleys Quarters-SS		1545											X	X	X	X	
Bowleys Quarters-01		1547											X	X	X		
Bowleys Quarters-02		1549											X	X	X		
Bowleys Quarters-04	8/21/10	1551			X		X						X	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By	Date: 8/23/10	Time: 1530	1. Received By	Date: 8/23/10	Time: 1530
2. Relinquished By	Date: 8/23/10	Time: 1630	2. Received By	Date:	Time:
3. Relinquished By	Date:	Time:	3. Received By	Date: 8/24/10	Time: 1015

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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(1 - 141)

Bowleys Quarters-SS

L5372 9/5/2010 1:31:50 PM

User Pre-dilution: 1.000

Run	Time	6Li	9Be	10B	11B	13C	23Na	25Mg	26Mg
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	13:32:33	86.178%	8.956	54.350	50.760	0.000	20510.000	22740.000	21720.000
2	13:33:16	88.020%	8.492	49.780	47.710	0.000	19840.000	21710.000	20900.000
3	13:33:59	87.594%	9.222	48.720	47.240	0.000	20100.000	22120.000	21100.000
x		87.264%	8.890	50.950	48.570	0.000	20150.000	22190.000	21240.000
σ		0.964%	0.370	2.995	1.911	0.000	338.200	518.100	430.100
%RSD		1.105	4.159	5.878	3.934	0.000	1.678	2.335	2.025
Run	**Time**	**27Al**	**28Si**	**37Cl**	**39K**	**43Ca**	**44Ca**	**45Sc**	**47Ti**
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	13:32:33	95330.000	2994.000	0.000	12170.000	8382.000	8504.000	81.983%	1125.000
2	13:33:16	91940.000	2939.000	0.000	12280.000	8680.000	8517.000	81.351%	1123.000
3	13:33:59	93100.000	2988.000	0.000	12390.000	8504.000	8562.000	80.725%	1125.000
x		93460.000	2974.000	0.000	12280.000	8522.000	8528.000	81.353%	1124.000
σ		1725.000	30.330	0.000	108.900	150.000	30.750	0.629%	1.195
%RSD		1.845	1.020	0.000	0.887	1.760	0.361	0.773	0.106
Run	**Time**	**51V**	**52Cr**	**55Mn**	**56Fe**	**57Fe**	**59Co**	**60Ni**	**63Cu**
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	13:32:33	248.800	221.300	3266.000	172300.000	165400.000	137.700	251.100	617.800
2	13:33:16	246.400	222.000	3292.000	172900.000	165800.000	136.000	249.000	618.300
3	13:33:59	249.400	225.200	3322.000	174900.000	168200.000	137.900	252.300	619.800
x		248.200	222.800	3293.000	173400.000	166400.000	137.200	250.800	618.600
σ		1.559	2.069	28.280	1394.000	1519.000	1.069	1.676	1.033
%RSD		0.628	0.929	0.859	0.804	0.913	0.779	0.668	0.167
Run	**Time**	**65Cu**	**66Zn**	**68Zn**	**75As**	**78Se**	**82Se**	**83Kr**	**88Sr**
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	13:32:33	624.900	1843.000	1835.000	76.030	4.721	10.860	0.000	160.100
2	13:33:16	621.500	1848.000	1847.000	76.040	4.222	11.950	0.000	160.600
3	13:33:59	626.200	1876.000	1864.000	76.810	3.509	11.890	0.000	161.900
x		624.200	1856.000	1849.000	76.290	4.151	11.570	0.000	160.800
σ		2.414	17.420	14.220	0.447	0.609	0.614	0.000	0.934
%RSD		0.387	0.939	0.769	0.585	14.670	5.303	0.000	0.581
Run	**Time**	**89Y**	**95Mo**	**98Mo**	**103Rh**	**107Ag**	**109Ag**	**111Cd**	**114Cd**
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	13:32:33	0.000	10.570	10.170	85.968%	3.487	3.211	5.672	5.103
2	13:33:16	0.000	10.400	10.140	86.997%	3.241	3.170	5.206	4.777
3	13:33:59	0.000	10.350	10.370	86.786%	3.316	3.305	5.222	4.727
x		0.000	10.440	10.220	86.584%	3.348	3.229	5.367	4.869
σ		0.000	0.112	0.124	0.543%	0.126	0.069	0.264	0.204
%RSD		0.000	1.068	1.211	0.628	3.767	2.142	4.926	4.198
Run	**Time**	**115In**	**118Sn**	**121Sb**	**123Sb**	**135Ba**	**137Ba**	**159Tb**	**165Ho**
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	13:32:33	90.881%	37.780	2.688	2.640	277.700	278.000	110.459%	112.273%
2	13:33:16	92.342%	37.290	2.746	2.625	278.000	277.700	111.884%	114.715%
3	13:33:59	92.276%	37.400	2.728	2.720	279.500	279.200	113.529%	115.332%
x		91.833%	37.490	2.720	2.662	278.400	278.300	111.957%	114.107%
σ		0.825%	0.258	0.030	0.051	0.949	0.774	1.537%	1.618%
%RSD		0.898	0.688	1.089	1.905	0.341	0.278	1.372	1.418
Run	**Time**	**203Tl**	**205Tl**	**206Pb**	**207Pb**	**208Pb**	**209Bi**		
		ppb	ppb	ppb	ppb	ppb	ppb		
1	13:32:33	1.347	1.352	591.800	587.100	587.900	100.620%		
2	13:33:16	1.337	1.346	589.100	581.400	584.300	102.840%		
3	13:33:59	1.333	1.347	593.100	586.900	587.800	104.015%		
x		1.339	1.348	591.300	585.100	586.700	102.492%		
σ		0.007	0.003	2.022	3.187	2.022	1.724%		
%RSD		0.538	0.225	0.342	0.545	0.345	1.682		

$$\frac{1856\,\mu g}{L} \times \frac{0.1\,L}{2.0\,g} \times \frac{1\,mg}{1000\,\mu g} \times \frac{1000\,g}{1\,Kg} \times \frac{1}{0.28\%S} = 331.42\,mg/Kg$$

reported as 327 mg/Kg

Test America Pittsburgh
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METHOD DETECTION LIMITS

Client: TETRA TECH **SDG No.:** C0H250417

	Analyte	Mass	MDL ug/L	CRQL ug/L
ICPMS		**MDL Date:**	6/6/2009	
	Antimony	121	0.026	2
	Arsenic	75	0.18	1
	Beryllium	9	0.075	1
	Cadmium	111	0.070	1
	Chromium	52	0.06	2
	Copper	65	0.33	2
	Lead	208	0.038	1
	Nickel	60	0.1	1
	Selenium	82	0.50	5
	Silver	107	0.04	1
	Thallium	205	0.020	1
	Zinc	66	0.65	5

TestAmerica Pittsburgh

Metals Data Reporting Form

Instrument Detection Limits

Instrument: CVAA **Units:** ppb

Element	Wavelength	Reporting Limit	MDL	Date of MDL
Mercury	253.700	0.2	0.011	3/23/2009

Test America Pittsburgh

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LINEAR RANGES

Client: TETRA TECH **SDG No.:** C0H250417

Contract: **Lab Code:** STL Pitt **Case No.:** **SAS No.:**

Instrument ID: ICPMS **Date:** 8/8/2010

Analyte	LDR ug/L
Antimony	20000
Arsenic	4500
Beryllium	9000
Cadmium	13500
Chromium	13500
Copper	20000
Lead	20000
Nickel	13500
Selenium	4500
Silver	2500
Thallium	13500
Zinc	20000

TestAmerica Pittsburgh

Metals Data Reporting Form

Linear Dynamic Ranges

Instrument: CVAA **Units:** ppb

Element	Wavelength /Mass	Linear Range	Date of Linear Range
Mercury	253.70	10	6/28/2010

TestAmerica Pittsburgh ~~Metals Preparation Log~~ Mercury WAH 9-2-10

Batch No. 0245015

v1.0.5 - Last Revised 12/30/2005

Method 7471A	Matrix Solid	Start Time -0430-0630	SDG -
Analyst william hoyle	Date -09-02-10	Lot Numbers	
MS Hg Working CAL		C0H250417	
Lab Lot # -MET4564-10			
Analyst Sign: [signature]			

Sample ID	Initial Wt/Vol g/mL	Final Vol mL	Comments
L5370	1.20g	100ml	
L5371			
L5372			
L5374			
L5376			WAH 9-2-10
L5377			
L537V			
L537W			
L537W S			1ml MET4564-10
L537W D	↓		↓
L6FCN B	1:20g DIH20		WAH 9-2-10
L6FCN C	100ml	↓	MET4574-10
			WAH 9-2-10

SAMPLE CODING: B-Blank C-Check L-Check Duplicate S-Matrix Spike D-Matrix Spike Duplicate X-Sample Duplicate

NOTE: Samples marked with an asterisk (*) required filtration after digestion and prior to analysis
Samples marked with a plus sign (+) required additional Conc.HNO3 in digestion process, brown fumes were observed

Reagents:
5.0ml KMnO4, MET4450-10, Stnds. Log
8.0ml K2S2O4, MET4490-10, Stnds. Log
6.0ml Clear. Sol., MET4496-10, Stnds. Log
Stannous Chloride, MET 4489-10, Stnds. Log
2.0ml HNO3, J11045, Mallinckrodt
5.0ml H2SO4, J04F08, Mallinckrodt

Hot Plate/Block Temp		Correction Factor	
#2	95°C	IP30	-1.0°C
		WAH	9-2-10

Minimum digestion times have been met (analyst initials):

Digestate(s)	Date	Time	(Received)	Analyst	Location	Date	Time	(Relinquished)	Analyst	Location
			WAH 9-2-10							

	Lot Number	Manufacturer	
Initial Digestion Vessel:	1005282	Env. Express	Pipet #: G10008
Final Digestion Vessel:	n/a	n/a	Balance #: P1856709
Filter Paper:	K11502821A	Whatman	Printed on: 02-Sep-10 6:11:23 AM

TestAmerica Pittsburgh — mercury ~~Metals~~ Preparation Log

Batch No. 0245021

WAH 9-2-10 v1.0.5 - Last Revised 12/30/2005

Method 7471A	Matrix Solid	Start Time -0430-0630	SDG -
Analyst william hoyle	Date -09-02-10	Lot Numbers C0H180458	
MS Hg Working CAL			
Lab Lot # -MET4564-10			
Analyst Sign: william c hoyle			

Sample ID	Initial Wt/Vol g/mL	Final Vol mL	Comments
L5QT2	1.20g	100ml	WAH 9-2-10
L5QT2 S	↓	↓	1ml MET4564-10
L5QT2 D	↓	↓	↓
L5QT3	↓	↓	↓
L5QT4	↓	↓	↓
L5QTV	↓	↓	WAH 9-2-10
L5QTW	↓	↓	↓
L5QTX	↓	↓	↓
L6FC4 B	1.20g DI H2O	↓	↓
L6FC4 C	100ml	↓	MET4575-10
			WAH 9-2-10

SAMPLE CODING: B-Blank C-Check L-Check Duplicate S-Matrix Spike D-Matrix Spike Duplicate X-Sample Duplicate

NOTE: Samples marked with an asterisk (*) required filtration after digestion and prior to analysis
Samples marked with a plus sign (+) required additional Conc.HNO3 in digestion process, brown fumes were observed

Reagents:
5.0ml KMnO4, MET4450-10, Stnds. Log
8.0ml K2S2O4, MET4490-10, Stnds. Log
6.0ml Clear. Sol., MET4496-10, Stnds. Log
Stannous Chloride, MET 4489-10, Stnds. Log
2.0ml HNO3, J11045, Mallinckrodt
5.0ml H2SO4, J04F08, Mallinckrodt

Minimum digestion times have been met (analyst initials):

Hot Plate/Block Temp	Correction Factor
#2 95°C	IP30 -1.0°C
WAH	9-2-10

Digestate(s)	Date	Time	(Received)	Analyst	Location	Date	Time	(Relinquished)	Analyst	Location
			WAH 9-2-10							

	Lot Number	Manufacturer
Initial Digestion Vessel:	1005282	Env. Express
Final Digestion Vessel:	n/a	n/a
Filter Paper:	K11502821A	Whatman

Pipet #: G10008
Balance #: P1856709
Printed on: 02-Sep-10 6:18:05 AM

TestAmerica Pittsburgh — Mercury ~~Metals~~ Preparation Log

Batch No. 0245023

WAH 9-2-10 v1.0.5 - Last Revised 12/30/2005

Method 7471A	Matrix Solid	Start Time -0430-0630	SDG -
Analyst william hoyle	Date -09-02-10	Lot Numbers A0H250486, C0H120570, C0H240535, C0H260569, C0H300426, C0H310563, C0I010410	
MS Hg Working CAL			
Lab Lot # -MET4564-10			
Analyst Sign: William a Hoyle			

Sample ID	Initial Wt/Vol g/mL	Final Vol mL	Comments
L53LE	0.6g	100ml	
L53LG			
L53LJ			
L53LM			WAH 9-2-10
L53LQ			
L53MJ			
L54RH			
L54RH S			1ml MET 4564-10
L54RH D			↓
L54TJ			
L54TL			
L54TN			
L54TR			
L5625			
L599K			
L5VW0			WAH 9-2-10
L6ACD			
L6AF4			
L6AHJ			
L6AHL			
L6DD3			
L6DX8	↓		
L6FC8 B	0.6g DI H2O		
L6FC8 C	100ml	↓	MET4576-10
			WAH 9-2-10

SAMPLE CODING: B-Blank C-Check L-Check Duplicate S-Matrix Spike D-Matrix Spike Duplicate X-Sample Duplicate

NOTE: Samples marked with an asterisk (*) required filtration after digestion and prior to analysis
Samples marked with a plus sign (+) required additional Conc.HNO3 in digestion process, brown fumes were observed

Reagents:
5.0ml KMnO4, MET4450-10, Stnds. Log
8.0ml K2S2O4, MET4490-10, Stnds. Log
6.0ml Clear. Sol., MET4496-10, Stnds. Log
Stannous Chloride, MET 4489-10, Stnds. Log
2.0ml HNO3, J11045, Mallinckrodt
5.0ml H2SO4, J04F08, Mallinckrodt

Hot Plate/Block Temp	Correction Factor
P3 95°C	IP31 -1.0°C
WAH	9-2-10

Minimum digestion times have been met (analyst initials):

Digestate(s)	Date	Time	(Received)	Analyst	Location	Date	Time	(Relinquished)	Analyst	Location
			WAH 9-2-10							

	Lot Number	Manufacturer
Initial Digestion Vessel:	1005282	Env. Express
Final Digestion Vessel:	n/a	n/a
Filter Paper:	K11502821A	Whatman

Pipet #: G10008
Balance #: P1856709
Printed on: 02-Sep-10 6:12:24 AM

TestAmerica Pittsburgh — Mercury ~~Metals~~ Preparation Log

WAH 9-2-10

Batch No. 0245024

v1.0.5 - Last Revised 12/30/2005

Method 7471A	Matrix Waste	Start Time -0430-0630	SDG -
Analyst william hoyle	Date -09-02-10	Lot Numbers	
MS Hg Working CAL		C0H300440, C0H310470	
Lab Lot # -MET4564-10			
Analyst Sign: William E Hoyle			

Sample ID	Initial Wt/Vol g/mL	Final Vol mL	Comments
L6AJC	0.6ml	100ml	
L6CPL	↓	↓	WAH 9-2-10
L6FDA B	0.6ml DI H2O	↓	
L6FDA C	100ml	↓	MET4577-10
L6FDA L	↓	↓	↓ 4578-10

WAH 9-2-10

SAMPLE CODING: B-Blank C-Check L-Check Duplicate S-Matrix Spike D-Matrix Spike Duplicate X-Sample Duplicate

NOTE: Samples marked with an asterisk (*) required filtration after digestion and prior to analysis
Samples marked with a plus sign (+) required additional Conc.HNO3 in digestion process, brown fumes were observed

Reagents:
5.0ml KMnO4, MET4450-10, Stnds. Log
8.0ml K2S2O4, MET4490-10, Stnds. Log
6.0ml Clear. Sol., MET4496-10, Stnds. Log
Stannous Chloride, MET 4489-10, Stnds. Log
2.0ml HNO3, J11045, Mallinckrodt
5.0ml H2SO4, J04F08, Mallinckrodt

Hot Plate/Block Temp		Correction Factor	
#4	95°C	IP33	-1.0°C
WAH	9-2-10		

Minimum digestion times have been met (analyst initials):

Digestate(s)	Date	Time	(Received)	Analyst	Location	Date	Time	(Relinquished)	Analyst	Location
			WAH 9-2-10							

	Lot Number	Manufacturer	Pipet #: G10008
Initial Digestion Vessel:	1005282	Env. Express	Balance #: P1856709
Final Digestion Vessel:	n/a	n/a	Printed on: 02-Sep-10 6:12:54 AM
Filter Paper:	K11502821A	Whatman	

TestAmerica [illegible]sburgh

Mercury Digestion Log v2 8/11/08

Method(s) 747/A

Logbook ID: MT35[illegible]

Digestion Start Time: 04:30 | Digestion End Time: 06:30 | Filter Paper Manufacturer / Lot#: K/1592821A WHATMAN | Balance ID: P/856709

	Sample ID	Batch	Date Received	Prep Date	Prepared by	Wt/ Volume	Sample Type	Run Date	Comments
1.	STD0	N/A	N/A	9-2-10	WAH	100ml	WATER	9-2-10	N/A
2.	STD1								MET 4566-10
3.	STD2								4567-10
4.	STD3								4568-10
5.	STD4								4569-10
6.	STD5								4570-10
7.	ICV								4571-10
8.	ICB								N/A
9.	CRA/RLV								MET 4572-10
10.	CCV								4573-10
11.	CCB								N/A
12.									
13.									
14.									
15.									
16.									
17.									
18.									
19.					WAH	9-2-10			
20.									
21.									
22.									
23.									
24.									
25.									

Reagents	Volume (mL)	Reference Number	
HNO3	2.0ml	MALLINCKRODT	J11045
H2SO4	5.0ml		J04F08
KMNO4	5.0ml	MET 4450-10	
K2S2O4	8.0ml	4490-10	
NaCL NH2OH Additional volumes indicated per sample as necessary	6.0ml	4486-10	
Stannous Chloride	N/A	4489-10	

Hot Block Number: #1 JP29 4.0°C

Hot Block Temperature: 95 °C

Waterbath temperature:

Thermometer ID:

Extract(s) (record line # from above)	Date	Time	Extract(s) Received	Analyst	Location	Date	Time	Extract(s) Relinquished	Analyst	Location
			WAH 9-2-10							

printed on: 28-Jun-10 6:32:17 AM

*-Sample required filtration step after digestion

(3001 - 3246)

3243

COH250417

TestAmerica Pittsburgh — Metals Preparation Log

Batch No. 0245104

v1.0.5 - Last Revised 12/30/2005

Method 6020 Soil	Matrix Solid	Start Time 0950	SDG
Analyst Caitlyn Haluck	Date 9/2/10	Lot Numbers C0H170507, C0H250417	
MS TAPITT-MS-A, TAPITT-MS-C, TAPITT-MS-ICPMS			
Lab Lot # -met3707-10, met4267-10, met2846-10			
Analyst Sign: Caitlyn Haluck			

Sample ID	Initial Wt/Vol g/mL	Final Vol mL	Comments
L5370	2.0g	100mL	
L5371			
L5372			
L5374			CH 9.2.10
L5376			
L5377			
L537V			
L537W			
L5N14			+1.0mL MSA, MS-C, MS-ICP
L5N14 S			↓
L5N14 D			9.2.10 CH
L6FJV B	2.0g chips		+1.0mL MS-A, MS-C, MS-ICP
L6FJV C			
			9.2.10 CH

SAMPLE CODING: B-Blank C-Check L-Check Duplicate S-Matrix Spike D-Matrix Spike Duplicate X-Sample Duplicate

NOTE: Samples marked with an asterisk (*) required filtration after digestion and prior to analysis
Samples marked with a plus sign (+) required additional Conc.HNO3 in digestion process, brown fumes were observed

Hot Plate/Block Temp	Correction Factor
#10 194°C	±0.0°C

Reagents:
5 ml Optima Conc HNO3, 6901 J08N59, JT Baker
10 ml 1:1 Optima HNO3, MET 4487-10, Stds. Log
10ml Opt. Conc. HCl, V078 J02N57, Mallinckrodt
10 ml 30% H2O2, 3408 H47A18, Mallinckrodt

Minimum digestion times have been met (analyst initials): CH

Digestate(s)	Date	Time	(Received)	Analyst	Location	Date	Time	(Relinquished)	Analyst	Location
All above	9.2.10	1300	CH	Prep		9-2-10	1430	CH		AA
All Above	9-5-10	0905	WRE		AA	9-6-10	1450	WRE		AA

	Lot Number	Manufacturer
Initial Digestion Vessel:	1005282	Environmental Express
Final Digestion Vessel:	100504	Corning
Filter Paper:	K11597490	Whatman

Pipet #: 03F95602
Balance #: P1856710
Printed on: 02-Sep-10 10:52:48 AM

Date: 9/2/10

MET-154-0245104

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: C0H250417 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: C0I020000-015 **Prep Batch #...:** 0245015						
Mercury	ND	0.016	mg/kg	SW846 7471A	09/02/10	L6FCN1AA
		Dilution Factor: 0.5				
		Analysis Time..: 08:15		Analyst ID.....: 031043	Instrument ID..: HGH	
MB Lot-Sample #: C0I020000-104 **Prep Batch #...:** 0245104						
Antimony	**0.0038 B**	**0.10**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L6FJV1AX**
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	
Arsenic	ND	0.050	mg/kg	SW846 6020	09/02-09/05/10	L6FJV1AD
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	
Beryllium	ND	0.050	mg/kg	SW846 6020	09/02-09/05/10	L6FJV1AF
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	
Cadmium	ND	0.050	mg/kg	SW846 6020	09/02-09/05/10	L6FJV1AH
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	
Chromium	**0.036 B**	**0.10**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L6FJV1AK**
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	
Copper	ND	0.10	mg/kg	SW846 6020	09/02-09/05/10	L6FJV1AL
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	
Lead	**0.0078 B**	**0.050**	**mg/kg**	**SW846 6020**	**09/02-09/05/10**	**L6FJV1AU**
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	
Nickel	ND	0.050	mg/kg	SW846 6020	09/02-09/05/10	L6FJV1AT
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	
Selenium	ND	0.25	mg/kg	SW846 6020	09/02-09/05/10	L6FJV1AV
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: C0H250417 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	0.050	mg/kg	SW846 6020	09/02-09/05/10	L6FJV1AA
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	
Thallium	ND	0.050	mg/kg	SW846 6020	09/02-09/05/10	L6FJV1AW
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	
Zinc	ND	0.25	mg/kg	SW846 6020	09/02-09/05/10	L6FJV1A1
		Dilution Factor: 0.5				
		Analysis Time..: 12:28		Analyst ID.....: 400149	Instrument ID..: ICP	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C0H250417 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: C0I020000-015 **Prep Batch #...:** 0245015					
Mercury	99	(80 - 120)	SW846 7471A	09/02/10	L6FCN1AC
		Dilution Factor: 0.5	Analysis Time..: 08:17	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA			
LCS Lot-Sample#: C0I020000-104 **Prep Batch #...:** 0245104					
Silver	98	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1A2
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Arsenic	95	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1A4
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Beryllium	96	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1A6
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Cadmium	98	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1A8
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Chromium	96	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1CA
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Copper	104	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1CC
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Nickel	102	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1CJ
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Lead	106	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1CK
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Selenium	99	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1CL
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C0H250417 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Thallium	103	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1CM
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Antimony	96	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1CN
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Zinc	104	(80 - 120)	SW846 6020	09/02-09/05/10	L6FJV1CQ
		Dilution Factor: 0.5	Analysis Time..: 12:33	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C0H250417 **Matrix.....:** SOLID
Date Sampled...: 08/11/10 **Date Received..:** 08/17/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: C0H170507-007 **Prep Batch #...:** 0245104 Not our Sample						**% Moisture.....:** 61	
Antimony	49 N	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141D0
	49 N	(75 - 125)	0.73	(0-20)	SW846 6020	09/02-09/05/10	L5N141D1
		Dilution Factor: 0.5					
		Analysis Time..: 12:48		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0245070					
Arsenic	92	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141CU
	94	(75 - 125)	0.54	(0-20)	SW846 6020	09/02-09/05/10	L5N141CV
		Dilution Factor: 0.5					
		Analysis Time..: 12:48		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0245070					
Beryllium	86	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141C0
	88	(75 - 125)	2.3	(0-20)	SW846 6020	09/02-09/05/10	L5N141C1
		Dilution Factor: 0.5					
		Analysis Time..: 12:48		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0245070					
Cadmium	89	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141C4
	91	(75 - 125)	2.2	(0-20)	SW846 6020	09/02-09/05/10	L5N141C5
		Dilution Factor: 0.5					
		Analysis Time..: 12:48		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0245070					
Chromium	98	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141C8
	107	(75 - 125)	3.4	(0-20)	SW846 6020	09/02-09/05/10	L5N141C9
		Dilution Factor: 0.5					
		Analysis Time..: 12:48		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0245070					
Copper	91	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141DA
	94	(75 - 125)	1.9	(0-20)	SW846 6020	09/02-09/05/10	L5N141DC
		Dilution Factor: 0.5					
		Analysis Time..: 12:48		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0245070					
Lead	NC	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141DR
	NC	(75 - 125)		(0-20)	SW846 6020	09/02-09/05/10	L5N141DT
		Dilution Factor: 0.5					
		Analysis Time..: 12:48		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0245070					

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C0H250417 **Matrix.....:** SOLID
Date Sampled...: 08/11/10 **Date Received..:** 08/17/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Nickel	90	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141DP
	92	(75 - 125)	2.0	(0-20)	SW846 6020	09/02-09/05/10	L5N141DQ
		Dilution Factor: 0.5					
		Analysis Time..: 12:48			Instrument ID..: ICPMS2	Analyst ID.....: 400149	
		MS Run #.....: 0245070					
Selenium	99	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141DU
	93	(75 - 125)	3.6	(0-20)	SW846 6020	09/02-09/05/10	L5N141DV
		Dilution Factor: 0.5					
		Analysis Time..: 12:48			Instrument ID..: ICPMS2	Analyst ID.....: 400149	
		MS Run #.....: 0245070					
Silver	88	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141CP
	90	(75 - 125)	1.9	(0-20)	SW846 6020	09/02-09/05/10	L5N141CQ
		Dilution Factor: 0.5					
		Analysis Time..: 12:48			Instrument ID..: ICPMS2	Analyst ID.....: 400149	
		MS Run #.....: 0245070					
Thallium	102	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141DW
	95	(75 - 125)	6.7	(0-20)	SW846 6020	09/02-09/05/10	L5N141DX
		Dilution Factor: 0.5					
		Analysis Time..: 12:48			Instrument ID..: ICPMS2	Analyst ID.....: 400149	
		MS Run #.....: 0245070					
Zinc	96	(75 - 125)			SW846 6020	09/02-09/05/10	L5N141D4
	101	(75 - 125)	1.5	(0-20)	SW846 6020	09/02-09/05/10	L5N141D5
		Dilution Factor: 0.5					
		Analysis Time..: 12:48			Instrument ID..: ICPMS2	Analyst ID.....: 400149	
		MS Run #.....: 0245070					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

NC The recovery and/or RPD were not calculated.

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C0H250417 **Matrix.....:** SOLID
Date Sampled...: 08/21/10 **Date Received..:** 08/24/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: C0H250417-002 **Prep Batch #...:** 0245015							
						% Moisture.....: 66	
Mercury	122	(75 - 125)			SW846 7471A	09/02/10	L537W1AU
	112	(75 - 125)	4.5	(0-20)	SW846 7471A	09/02/10	L537W1AV

Dilution Factor: 0.5
Analysis Time..: 08:22 Instrument ID..: HGHYDRA Analyst ID.....: 031043
MS Run #.....: 0245008

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

Sample List

9-7-10

9/5/10

No	Label	Type	Weight	Rack	Row	Col	Height
1	STD1 MET4520-10 INT STD	Blank	1.000	0	1	1	155
2	STD2X MET4059-10	Fully Quant Standard	1.000	0	1	2	155
3	STD3X MET4060-10	Fully Quant Standard	1.000	0	1	3	155
4	ICV1 MET4061-10	QC Sample	1.000	0	1	5	155
5	ICB1	QC Sample	1.000	0	1	9	155
6	CRI MET4062-10	QC Sample	1.000	0	1	6	155
7	ICSA MET4063-10	QC Sample	1.000	0	1	7	155
8	ICSAB MET3848-10	QC Sample	1.000	0	1	8	155
9	CCV1-1 MET4282-10	QC Sample	1.000	0	1	4	155
10	CCB1	QC Sample	1.000	0	1	9	155
11	L5X2W/10	Unknown	1.000	1	1	2	155
12	L5X2WP50	Unknown	1.000	1	1	3	155
13	L50X4/100	Unknown	1.000	1	1	4	155
14	L50X5	Unknown	1.000	1	1	5	155
15	L50X6	Unknown	1.000	1	1	6	155
16	L6FJVB	Unknown	1.000	1	1	7	155
17	L6FJVC	Unknown	1.000	1	1	8	155
18	L5N14	Unknown	1.000	1	1	9	155
19	L5N14P5	Unknown	1.000	1	1	10	155
20	L5N14S	Unknown	1.000	1	1	11	155
21	CCV1-2	QC Sample	1.000	0	1	4	155
22	CCB2	QC Sample	1.000	0	1	9	155
23	L5N14D	Unknown	1.000	1	1	12	155
24	L537V	Unknown	1.000	1	2	1	155
25	L537W	Unknown	1.000	1	2	2	155
26	L5370	Unknown	1.000	1	2	3	155
27	L5371	Unknown	1.000	1	2	4	155
28	L5372	Unknown	1.000	1	2	5	155
29	L5374	Unknown	1.000	1	2	6	155
30	L5376	Unknown	1.000	1	2	7	155
31	L5377	Unknown	1.000	1	2	8	155
32	L6A4QCF	Unknown	1.000	1	2	9	155
33	CCV1-3	QC Sample	1.000	0	1	4	155
34	CCB3	QC Sample	1.000	0	1	9	155
35	L6A4QBF	Unknown	1.000	1	2	10	155
36	L5436F	Unknown	1.000	1	2	11	155
37	L5436P5F	Unknown	1.000	1	2	12	155
38	L5436SF	Unknown	1.000	1	3	1	155
39	L5436DF	Unknown	1.000	2	4	5	155
40	L544HF	Unknown	1.000	1	3	2	155
41	L544LF	Unknown	1.000	1	3	3	155
42	L545NF	Unknown	1.000	1	3	4	155
43	L545QF	Unknown	1.000	1	3	5	155
44	L5740F	Unknown	1.000	1	3	6	155
45	CCV1-4	QC Sample	1.000	0	1	4	155
46	CCB4	QC Sample	1.000	0	1	9	155
47	L5742F	Unknown	1.000	1	3	7	155
48	L5746F	Unknown	1.000	1	3	8	155
49	L5747F	Unknown	1.000	1	3	9	155
50	L5748F	Unknown	1.000	1	3	10	155
51	L575AF	Unknown	1.000	1	3	11	155
52	L575CF	Unknown	1.000	1	3	12	155
53	L575DF	Unknown	1.000	1	4	1	155
54	L575EF	Unknown	1.000	1	4	2	155
55	L575FF	Unknown	1.000	1	4	3	155
56	L575HF	Unknown	1.000	1	4	4	155
57	CCV1-5	QC Sample	1.000	0	1	4	155
58	CCB5	QC Sample	1.000	0	1	9	155
59	L575KF	Unknown	1.000	1	4	5	155
60	L58C0F	Unknown	1.000	1	4	6	155
61	L58C1F	Unknown	1.000	1	4	7	155
62	L6D4DB	Unknown	1.000	1	4	8	155
63	L6D4DC	Unknown	1.000	1	4	9	155
64	L5436	Unknown	1.000	1	4	10	155
65	L5436P5	Unknown	1.000	1	4	11	155
66	L5436S	Unknown	1.000	1	4	12	155
67	L5436D	Unknown	1.000	1	5	1	155

Test America Pittsburgh

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ICP-MS Tune

Lab Name: Test America Pittsburgh Contract:

Lab Code: STL Pitt Case No.: NRAS No.: SDG NO.: C0H250417

ICP-MS Instrument ID: ICPMS Date: 9/5/2010

Element - Mass	Avg. Measured Mass (amu)	Avg. Peak Width at 5% Peak Height (amu)	%RSD
Be_9	9.06218	0.73000	2.3900
Mg_24	23.955041	0.61000	1.1730
Mg_25	24.93583	0.61000	2.3330
Mg_26	25.93259	0.61000	2.3400
Co_59	58.903189	0.69000	1.0720
In_113	112.974404	0.73000	1.7580
In_115	114.97387	0.73000	0.8100
Ce_140	139.995441	0.75000	0.1430
Pb_206	206.044457	0.65000	0.5200
Pb_207	207.045876	0.67000	0.5420
Pb_208	208.046639	0.67000	0.4160

Comments:

Test America Pittsburgh

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH **SDG No.:** C0H250417

Initial Calibration Source: Inorganic **Instrument:** ICPMS

Continuing Calibration Source: HIPUR

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV1			**ICV1 MET4061-10**						
	Antimony	0.0801	0.0800	100.1	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Arsenic	0.0805	0.0800	100.6	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Beryllium	0.0800	0.0800	100.0	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Cadmium	0.0778	0.0800	97.2	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Chromium	0.0774	0.0800	96.7	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Copper	0.0813	0.0800	101.6	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Lead	0.0780	0.0800	97.5	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Nickel	0.0797	0.0800	99.6	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Selenium	0.0804	0.0800	100.5	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Silver	0.0778	0.0800	97.2	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Thallium	0.0811	0.0800	101.4	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
	Zinc	0.0823	0.0800	102.9	90.0 - 110.0	MS	9/5/2010	11:25	M00905A, gen
CCV1			**CCV1-1 MET4282-10**						
	Antimony	0.0964	0.1000	96.4	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Arsenic	0.1006	0.1000	100.6	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Beryllium	0.1031	0.1000	103.1	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Cadmium	0.0993	0.1000	99.3	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Chromium	0.0963	0.1000	96.3	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Copper	0.1014	0.1000	101.4	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Lead	0.1046	0.1000	104.6	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Nickel	0.1003	0.1000	100.3	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Selenium	0.1008	0.1000	100.8	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Silver	0.0988	0.1000	98.8	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Thallium	0.1046	0.1000	104.6	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen
	Zinc	0.1043	0.1000	104.3	90.0 - 110.0	MS	9/5/2010	11:53	M00905A, gen

Test America Pittsburgh

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH **SDG No.:** C0H250417

Initial Calibration Source: Inorganic **Instrument:** ICPMS

Continuing Calibration Source: HIPUR

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV2			CCV1-2						
	Antimony	0.0943	0.1000	94.3	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Arsenic	0.0998	0.1000	99.8	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Beryllium	0.0996	0.1000	99.6	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Cadmium	0.0994	0.1000	99.4	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Chromium	0.0978	0.1000	97.8	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Copper	0.1025	0.1000	102.5	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Lead	0.1041	0.1000	104.1	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Nickel	0.1019	0.1000	101.9	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Selenium	0.1014	0.1000	101.4	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Silver	0.1013	0.1000	101.3	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Thallium	0.1039	0.1000	103.9	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
	Zinc	0.1045	0.1000	104.5	90.0 - 110.0	MS	9/5/2010	12:56	M00905A, gen
CCV3			CCV1-3						
	Antimony	0.0945	0.1000	94.5	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Arsenic	0.1011	0.1000	101.1	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Beryllium	0.0980	0.1000	98.0	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Cadmium	0.0988	0.1000	98.8	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Chromium	0.0976	0.1000	97.6	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Copper	0.1039	0.1000	103.9	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Lead	0.1057	0.1000	105.7	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Nickel	0.1044	0.1000	104.4	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Selenium	0.1020	0.1000	102.0	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Silver	0.0992	0.1000	99.2	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Thallium	0.1053	0.1000	105.3	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen
	Zinc	0.1071	0.1000	107.1	90.0 - 110.0	MS	9/5/2010	13:56	M00905A, gen

Test America Pittsburgh
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CRDL STANDARD FOR AA & ICP

Client: TETRA TECH

SDG No.: C0H250417

ICPMS Standard Source: HIPUR

Instrument: ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL1			**CRI MET4062-10**						
	Antimony	0.00196	0.00200	98.0	50 - 150	MS	9/5/2010	11:37	M00905A,
	Arsenic	0.00119	0.00100	119.0	50 - 150	MS	9/5/2010	11:37	M00905A,
	Beryllium	0.00092	0.00100	92.0	50 - 150	MS	9/5/2010	11:37	M00905A,
	Cadmium	0.00100	0.00100	100.0	50 - 150	MS	9/5/2010	11:37	M00905A,
	Chromium	0.00190	0.00200	95.0	50 - 150	MS	9/5/2010	11:37	M00905A,
	Copper	0.00197	0.00200	98.5	50 - 150	MS	9/5/2010	11:37	M00905A,
	Lead	0.00102	0.00100	102.0	50 - 150	MS	9/5/2010	11:37	M00905A,
	Nickel	0.00098	0.00100	98.0	50 - 150	MS	9/5/2010	11:37	M00905A,
	Selenium	0.00526	0.00500	105.2	50 - 150	MS	9/5/2010	11:37	M00905A,
	Silver	0.00106	0.00100	106.0	50 - 150	MS	9/5/2010	11:37	M00905A,
	Thallium	0.00109	0.00100	109.0	50 - 150	MS	9/5/2010	11:37	M00905A,
	Zinc	0.00496	0.00500	99.2	50 - 150	MS	9/5/2010	11:37	M00905A,

Test America Pittsburgh

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: TETRA TECH **SDG No.:** C0H250417

Instrument: ICPMS

Sample ID	Analyte	Result mg/L	Acceptance Limit	Conc Qual	MDL	CRQL	M	Analysis Date	Analysis Time	Run
ICB1			ICB1							
	Antimony	0.00004	+/-0.00200	J	0.00003	0.00200	MS	9/5/2010	11:33	M00905A, ge
	Arsenic	0.00012	+/-0.00100	U	0.00018	0.00100	MS	9/5/2010	11:33	M00905A, ge
	Beryllium	0.00001	+/-0.00100	U	0.00008	0.00100	MS	9/5/2010	11:33	M00905A, ge
	Cadmium	-0.00005	+/-0.00100	U	0.00007	0.00100	MS	9/5/2010	11:33	M00905A, ge
	Chromium	-0.00006	+/-0.00200	U	0.00006	0.00200	MS	9/5/2010	11:33	M00905A, ge
	Copper	-0.00019	+/-0.00200	U	0.00033	0.00200	MS	9/5/2010	11:33	M00905A, ge
	Lead	-0.00005	+/-0.00100	J	0.00004	0.00100	MS	9/5/2010	11:33	M00905A, ge
	Nickel	-0.00003	+/-0.00100	U	0.00011	0.00100	MS	9/5/2010	11:33	M00905A, ge
	Selenium	0.00041	+/-0.00500	U	0.00050	0.00500	MS	9/5/2010	11:33	M00905A, ge
	Silver	0.00001	+/-0.00100	U	0.00004	0.00100	MS	9/5/2010	11:33	M00905A, ge
	Thallium	0.00000	+/-0.00100	U	0.00002	0.00100	MS	9/5/2010	11:33	M00905A, ge
	Zinc	0.00003	+/-0.00500	U	0.00065	0.00500	MS	9/5/2010	11:33	M00905A, ge
CCB1			CCB1							
	Antimony	0.00023	+/-0.00200	J	0.00003	0.00200	MS	9/5/2010	12:00	M00905A, ge
	Arsenic	0.00008	+/-0.00100	U	0.00018	0.00100	MS	9/5/2010	12:00	M00905A, ge
	Beryllium	0.00000	+/-0.00100	U	0.00008	0.00100	MS	9/5/2010	12:00	M00905A, ge
	Cadmium	-0.00003	+/-0.00100	U	0.00007	0.00100	MS	9/5/2010	12:00	M00905A, ge
	Chromium	-0.00005	+/-0.00200	U	0.00006	0.00200	MS	9/5/2010	12:00	M00905A, ge
	Copper	-0.00016	+/-0.00200	U	0.00033	0.00200	MS	9/5/2010	12:00	M00905A, ge
	Lead	-0.00005	+/-0.00100	J	0.00004	0.00100	MS	9/5/2010	12:00	M00905A, ge
	Nickel	-0.00001	+/-0.00100	U	0.00011	0.00100	MS	9/5/2010	12:00	M00905A, ge
	Selenium	0.00030	+/-0.00500	U	0.00050	0.00500	MS	9/5/2010	12:00	M00905A, ge
	Silver	0.00001	+/-0.00100	U	0.00004	0.00100	MS	9/5/2010	12:00	M00905A, ge
	Thallium	0.00001	+/-0.00100	U	0.00002	0.00100	MS	9/5/2010	12:00	M00905A, ge
	Zinc	0.00003	+/-0.00500	U	0.00065	0.00500	MS	9/5/2010	12:00	M00905A, ge

Test America Pittsburgh

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: TETRA TECH

SDG No.: C0H250417

Instrument: ICPMS

Sample ID	Analyte	Result mg/L	Acceptance Limit	Conc Qual	MDL	CRQL	M	Analysis Date	Analysis Time	Run
CCB2			CCB2							
	Antimony	0.00026	+/-0.00200	J	0.00003	0.00200	MS	9/5/2010	13:03	M00905A, ge
	Arsenic	0.00017	+/-0.00100	U	0.00018	0.00100	MS	9/5/2010	13:03	M00905A, ge
	Beryllium	0.00001	+/-0.00100	U	0.00008	0.00100	MS	9/5/2010	13:03	M00905A, ge
	Cadmium	-0.00005	+/-0.00100	U	0.00007	0.00100	MS	9/5/2010	13:03	M00905A, ge
	Chromium	-0.00003	+/-0.00200	U	0.00006	0.00200	MS	9/5/2010	13:03	M00905A, ge
	Copper	-0.00021	+/-0.00200	U	0.00033	0.00200	MS	9/5/2010	13:03	M00905A, ge
	Lead	0.00000	+/-0.00100	U	0.00004	0.00100	MS	9/5/2010	13:03	M00905A, ge
	Nickel	-0.00002	+/-0.00100	U	0.00011	0.00100	MS	9/5/2010	13:03	M00905A, ge
	Selenium	0.00073	+/-0.00500	J	0.00050	0.00500	MS	9/5/2010	13:03	M00905A, ge
	Silver	0.00000	+/-0.00100	U	0.00004	0.00100	MS	9/5/2010	13:03	M00905A, ge
	Thallium	0.00003	+/-0.00100	J	0.00002	0.00100	MS	9/5/2010	13:03	M00905A, ge
	Zinc	0.00007	+/-0.00500	U	0.00065	0.00500	MS	9/5/2010	13:03	M00905A, ge
CCB3			CCB3							
	Antimony	0.00034	+/-0.00200	J	0.00003	0.00200	MS	9/5/2010	14:03	M00905A, ge
	Arsenic	0.00022	+/-0.00100	J	0.00018	0.00100	MS	9/5/2010	14:03	M00905A, ge
	Beryllium	0.00001	+/-0.00100	U	0.00008	0.00100	MS	9/5/2010	14:03	M00905A, ge
	Cadmium	-0.00003	+/-0.00100	U	0.00007	0.00100	MS	9/5/2010	14:03	M00905A, ge
	Chromium	0.00000	+/-0.00200	U	0.00006	0.00200	MS	9/5/2010	14:03	M00905A, ge
	Copper	-0.00019	+/-0.00200	U	0.00033	0.00200	MS	9/5/2010	14:03	M00905A, ge
	Lead	-0.00001	+/-0.00100	U	0.00004	0.00100	MS	9/5/2010	14:03	M00905A, ge
	Nickel	0.00005	+/-0.00100	U	0.00011	0.00100	MS	9/5/2010	14:03	M00905A, ge
	Selenium	0.00078	+/-0.00500	J	0.00050	0.00500	MS	9/5/2010	14:03	M00905A, ge
	Silver	0.00000	+/-0.00100	U	0.00004	0.00100	MS	9/5/2010	14:03	M00905A, ge
	Thallium	0.00004	+/-0.00100	J	0.00002	0.00100	MS	9/5/2010	14:03	M00905A, ge
	Zinc	0.00006	+/-0.00500	U	0.00065	0.00500	MS	9/5/2010	14:03	M00905A, ge

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INTERFERENCE CHECK SAMPLE

Client: TETRA TECH **SDG No.:** C0H250417

ICS Source: EPA **Instrument ID:** ICPMS

Sample ID Analyte	WL/Mass	Result mg/L	Qual	True Value mg/L	% Recovery	Acceptance Window	Analysis Date	Analysis Time	Run Number
ICSA MET4063-10									
Antimony	121Sb	0.00044				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Arsenic	75As	0.00037				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Beryllium	9Be	0.00015				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Cadmium	111Cd	0.00082				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Chromium	52Cr	-0.00004				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Copper	65Cu	0.00275				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Lead	208Pb	0.00035				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Nickel	60Ni	0.00132				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Selenium	82Se	0.00052				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Silver	107Ag	0.00020				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Thallium	205Tl	0.00027				0.0 - 0.0	9/5/2010	11:41	M00905A, g
Zinc	66Zn	0.00486				0.0 - 0.0	9/5/2010	11:41	M00905A, g
ICSAB MET3848-10									
Antimony	121Sb	0.02013		0.02000	100.6	80 - 120%	9/5/2010	11:46	M00905A, g
Arsenic	75As	0.02085		0.02000	104.2	80 - 120%	9/5/2010	11:46	M00905A, g
Beryllium	9Be	0.01886		0.02000	94.3	80 - 120%	9/5/2010	11:46	M00905A, g
Cadmium	111Cd	0.02018		0.02000	100.9	80 - 120%	9/5/2010	11:46	M00905A, g
Chromium	52Cr	0.01857		0.02000	92.8	80 - 120%	9/5/2010	11:46	M00905A, g
Copper	65Cu	0.02264		0.02000	113.2	80 - 120%	9/5/2010	11:46	M00905A, g
Lead	208Pb	0.02065		0.02000	103.2	80 - 120%	9/5/2010	11:46	M00905A, g
Nickel	60Ni	0.02036		0.02000	101.8	80 - 120%	9/5/2010	11:46	M00905A, g
Selenium	82Se	0.05026		0.05000	100.5	80 - 120%	9/5/2010	11:46	M00905A, g
Silver	107Ag	0.01949		0.02000	97.4	80 - 120%	9/5/2010	11:46	M00905A, g
Thallium	205Tl	0.02033		0.02000	101.6	80 - 120%	9/5/2010	11:46	M00905A, g
Zinc	66Zn	0.02588		0.02500	103.5	80 - 120%	9/5/2010	11:46	M00905A, g

William a Hoyle 9-2-10

TEST2 Folder: G00902A Page 1793
08:07:46 02 Sep 2010 Protocol: hgppb

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: ICV6-1 Seq: 8 08:07:46 02 Sep 10 HG

Hg 2.39 ppb 12866 MET4571-10

*** Sample ID: ICB1 Seq: 9 08:09:22 02 Sep 10 HG

Hg -.006 ppb 59

*** Sample ID: CRA/RLV Seq: 10 08:10:58 02 Sep 10 HG

Hg .192 ppb 1122 MET4572-10

*** Sample ID: CCV6-1 Seq: 11 08:12:34 02 Sep 10 HG

Hg 4.98 ppb 26742 MET4573-10

*** Sample ID: CCB1 Seq: 12 08:14:10 02 Sep 10 HG

Hg -.009 ppb 43

*** Sample ID: L6FCNB Seq: 13 08:15:59 02 Sep 10 HG

Hg .005 ppb 122

*** Sample ID: L6FCNC Seq: 14 08:17:46 02 Sep 10 HG

Hg 2.47 ppb 13298 MET4574-10

*** Sample ID: L537V Seq: 15 08:19:25 02 Sep 10 HG

Hg .809 ppb 4420

*** Sample ID: L537W Seq: 16 08:21:02 02 Sep 10 HG

Hg 1.06 ppb 5751

*** Sample ID: L537WS Seq: 17 08:22:43 02 Sep 10 HG SP.REC. 122%

Hg 2.28 ppb 12268

*** Sample ID: L537WD Seq: 18 08:24:21 02 Sep 10 HG SP.REC. 112%

Hg 2.18 ppb 11779

Line Conc. Units SD/RSD 1 2 3 4 5

*** Sample ID: L5370 Seq: 19 08:25:58 02 Sep 10 HG

Hg .232 ppb 1336

*** Sample ID: L5371 Seq: 20 08:27:37 02 Sep 10 HG

Hg .227 ppb 1310

*** Sample ID: L5372 Seq: 21 08:29:14 02 Sep 10 HG

Hg 1.46 ppb 7914

*** Sample ID: L5374 Seq: 22 08:30:51 02 Sep 10 HG

Hg 1.10 ppb 5996

*** Sample ID: CCV6-2 Seq: 23 08:32:29 02 Sep 10 HG

Hg 5.00 ppb 26818

*** Sample ID: CCB2 Seq: 24 08:34:11 02 Sep 10 HG

Hg -.020 ppb -14

*** Sample ID: L5376 Seq: 25 08:35:59 02 Sep 10 HG

Hg .242 ppb 1389

*** Sample ID: L5377 Seq: 26 08:37:47 02 Sep 10 HG

Hg .101 ppb 631

*** Sample ID: L6FC4B Seq: 27 08:40:16 02 Sep 10 HG

Hg .010 ppb 148

*** Sample ID: L6FC4C Seq: 28 08:41:57 02 Sep 10 HG

Hg 2.41 ppb 13009

MET 4575-10

*** Sample ID: L5QTV Seq: 29 08:43:37 02 Sep 10 HG

Hg 120. ppb 642808

VOID

VOID
OVER RANGE
WILL RERUN
FURTHER DILUTION
WAH
9-2-10

TestAmerica Pittsburgh

Metals Data Reporting Form

Initial Calibration Verification Standar

Instrument: CVAA **Units:** ug/L

Chart Number: G00902A.PRN **Acceptable Range:** 90% - 110%

Standard Source: Ultra **Standard ID:** MET4571-10

Element	WL/ Mass	True Conc	ICV6-1 9/2/2010 8:07 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	2.5	2.39	**95.6**								

5.11.0

Form 2A Equivalent

TestAmerica Pittsburgh

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA **Units:** ug/L

Chart Number: G00902A.PRN **Acceptable Range:** 80% - 120%

Standard Source: Inorganic Ventures **Standard ID:** MET4573-10

Element	WL/ Mass	True Conc	CCV6-1 9/2/2010 8:12 AM Found	% Rec	CCV6-2 9/2/2010 8:32 AM Found	% Rec	CCV6-3 9/2/2010 8:54 AM Found	% Rec	CCV6-4 9/2/2010 9:15 AM X Found	% Rec	X CCV6-5 9/2/2010 9:36 AM Found	% Rec
Mercury	253.7	5.0	4.98	**99.6**	5.00	**100.0**	4.96	**99.2**	5.00	**100.0**	4.97	**99.4**

TestAmerica Pittsburgh

Metals Data Reporting Form

Contract Required Detection Limit Standard

Instrument: CVAA **Units:** ug/L

Chart Number: G00902A.PRN **Acceptable Range:** 50% - 150%

Standard Source: Ultra **Standard ID:** MET4572-10

Element	WL/ Mass	True Conc	CRA/RLV 9/2/2010 8:10 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	0.2	0.19	**96.0**								

TestAmerica Pittsburgh

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: G00902A.PRN

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	ICB1 9/2/2010 8:09 AM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	0.2	0.0	U								

5.11.0

U Result is less than the MDL

B Result is between MDL and RL

Form 3 Equivalent

TestAmerica Pittsburgh

Metals Data Reporting Form

Continuing Calibration Blank Result

Instrument: CVAA **Units:** ug/L

Chart Number: G00902A.PRN

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB1 9/2/2010 8:14 AM Found	Q	CCB2 9/2/2010 8:34 AM Found	Q	CCB3 9/2/2010 8:56 AM Found	Q	CCB4 9/2/2010 9:17 AM Found	Q	CCB5 9/2/2010 9:38 AM Found	Q
Mercury	253.7	0.2	0.0	U	**0.0**	**B**	0.0	U	0.0	U	0.0	U

5.11.0

U Result is less than the MDL

B Result is between MDL and RL

Form 3 Equivalent

Tetra Tech Middle River, MD

TOC

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	EPA Lloyd Kahn
Client Name:	Tetra Tech NUS, Inc	**Report ID:**	C0H250417
Matrix:	SOLID	**Date/Time Received:**	8/31/2010 10:00:00AM

Client Sample ID	Sample Number	Workorder	Result	Units	Reporting Limit	Prep Date-Analysis Date/Time	QC Batch	RPD / Limit (%)
INTRA-LAB QC	001 DUP	L6A7X1CC	87500	mg/kg	5080	8/31/2010 - 9/1/2010 18:50	0243229	9.4 / 20
BLK - C0H310000229B	229 MB	L6CF71AA	ND	mg/kg	2000	8/31/2010 - 9/1/2010 16:11	0243229	

Tetra Tech Middle River, MD

TOC

Lab Name: TESTAMERICA PITTSBURGH **Method:** EPA Lloyd Kahn

Client Name: Tetra Tech NUS, Inc **Lot Number:** C0H310000

Matrix: SOLID **Date/Time Received:** 8/31/2010 10:00:00AM

Client Sample ID	QC Sample Type	Workorder	Recovery (%)	Control Limits (%)	Prep Date - Analysis Date/Time	QC Batch	RPD / Limit (%)
CHECK SAMPLE	LCS	L6CF71AC	105	75 - 125	8/31/2010 - 9/1/2010 16:25	0243229	3.0 / 20
DUPLICATE CHECK	LCSD	L6CF71AD	102	75 - 125	8/31/2010 - 9/1/2010 16:40	0243229	3.0 / 20
LAB MS/MSD	MS	L6A7X1A9	108	75 - 125	8/31/2010 - 9/1/2010 18:07	0243229	17 / 20
LAB MS/MSD	MSD	L6A7X1CA	61 N	75 - 125	8/31/2010 - 9/1/2010 17:52	0243229	17 / 20

Not GW Sample

	A	B	C	D	E	I	J	K	L	M
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12	Sample	Data File	Date	Time	Weight	Conc. %	Avg Conc. mg/kg	RPD %	Higher Weight	Dilution Factor
13	CCB	A090110012	09/01/2010	15:39	20	0.0000				
14	CCV	A090110013	09/01/2010	15:47	100	1.0514				
15	L6CF71AA	A090110014	09/01/2010	16:11	10	0.0000	0.00	0.0000	10	2.0000
16	L6CF71AA	A090110015	09/01/2010	16:18	10	0.0000				
17	L6CF71AC	A090110016	09/01/2010	16:25	10.1	2.4580	23980.87	4.9992	10.1	1.9802
18	L6CF71AC	A090110017	09/01/2010	16:32	9.5	2.3381				
19	L6CF71AD	A090110018	09/01/2010	16:40	10.8	2.3687	23279.08	3.5017	10.8	1.8519
20	L6CF71AD	A090110019	09/01/2010	16:47	10.4	2.2871				
21	L537V1AC	A090110020	09/01/2010	16:54	9.4	0.9156	9090.07	1.4434	9.8	2.0408
22	L537V1AC	A090110021	09/01/2010	17:01	9.8	0.9024				
23	L53721AC	A090110022	09/01/2010	17:09	10.5	1.0061	9962.87	1.9758	10.9	1.8349
24	L53721AC	A090110023	09/01/2010	17:16	10.9	0.9864				
25	L583V1AA	A090110024	09/01/2010	17:23	10.4	0.6125	6312.58	-5.9344	10.5	1.9048
26	L583V1AA	A090110025	09/01/2010	17:30	10.5	0.6508				
27	L6A7X1A6	A090110026	09/01/2010	17:38	10.6	3.5381	36329.36	-5.2225	10.6	1.8868
28	L6A7X1A6	A090110027	09/01/2010	17:45	10.5	3.7278				
29	L6A7X1CA	A090110028	09/01/2010	17:52	10.8	5.0613	50557.44	0.2197	10.8	1.8519
30	L6A7X1CA	A090110029	09/01/2010	17:59	9.7	5.0502				
31	L6A7X1A9	A090110030	09/01/2010	18:07	10.8	4.9226	60035.28	-36.0099	10.8	1.8519
32	L6A7X1A9	A090110031	09/01/2010	18:14	9.5	7.0845				
33	RINSE	A090110032	09/01/2010	18:21	1	0.0000				
34	RINSE	A090110033	09/01/2010	18:28	1	0.0000				
35	CCB	A090110034	09/01/2010	18:36	20	0.0000				
36	CCV	A090110035	09/01/2010	18:43	100	0.9185				
37	L6A7X1CC	A090110036	09/01/2010	18:50	10.4	3.3700	33075.83	3.7713	10.4	1.9231
38	L6A7X1CC	A090110037	09/01/2010	18:57	10.3	3.2452				
39	L6A8A1AH	A090110038	09/01/2010	19:05	10.7	2.6262	26011.60	1.9245	10.7	1.8692
40	L6A8A1AH	A090110039	09/01/2010	19:12	10.7	2.5761				
41	L6A8C1AH	A090110040	09/01/2010	19:19	10.2	4.2790	43423.62	-2.9176	10.9	1.8349
42	L6A8C1AH	A090110041	09/01/2010	19:26	10.9	4.4057				
43	L6A8D1AH	A090110042	09/01/2010	19:34	11.1	3.2645	34947.49	-13.1757	11.1	1.8018
44	L6A8D1AH	A090110043	09/01/2010	19:41	11.1	3.7250				
45	L6A8F1A6	A090110044	09/01/2010	19:48	9.6	4.4986	45370.35	-1.6964	10.1	1.9802
46	L6A8F1A6	A090110045	09/01/2010	19:55	10.1	4.5755				
47	L6A8J1AH	A090110046	09/01/2010	20:03	10.9	4.6803	47254.94	-1.9140	10.9	1.8349
48	L6A8J1AH	A090110047	09/01/2010	20:10	10.6	4.7707				
49	L6A8K1A6	A090110048	09/01/2010	20:17	9.6	1.5292	16074.32	-9.7285	9.6	2.0833
50	L6A8K1A6	A090110049	09/01/2010	20:24	9.5	1.6856				
51	L6A8M1AH	A090110050	09/01/2010	20:32	10.7	3.5592	36665.42	-5.8532	11.2	1.7857
52	L6A8M1AH	A090110051	09/01/2010	20:39	11.2	3.7788				
53	L6A8P1AU	A090110052	09/01/2010	20:46	11.9	1.5092	13562.76	22.5470	11.9	1.6807
54	L6A8P1AU	A090110053	09/01/2010	20:53	11.7	1.2034				
55	RINSE	A090110054	09/01/2010	21:01	1	0.0000				
56	RINSE	A090110055	09/01/2010	21:08	1	0.0000				
57	CCB	A090110056	09/01/2010	21:15	20	0.0000				
58	CCV	A090110057	09/01/2010	21:22	100	0.9913				
59	L6A8Q1AU	A090110058	09/01/2010	21:30	9.9	2.2205	22317.28	-1.0080	9.9	2.0202
60	L6A8Q1AU	A090110059	09/01/2010	21:37	9.4	2.2430				
61	L6A8R1A6	A090110060	09/01/2010	21:44	10.1	1.5325	21250.04	-55.7665	10.1	1.9802
62	L6A8R1A6	A090110061	09/01/2010	21:51	9.1	2.7175				
63	RINSE	A090110062	09/01/2010	21:59	1	0.0000				
64	RINSE	A090110063	09/01/2010	22:06	1	0.0000				
65	CCB	A090110064	09/01/2010	22:13	20	0.0000				
66	CCV	A090110065	09/01/2010	22:20	100	0.9541				

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lloyd Kahn Sequence Log

Analyst: wesoloskim
Location: Pittsburgh

C0H250417

CCV STD# WC0649-10 LCS STD# WC3685-10 Prep Date 8/31/2010 Batch# 0243229

Sample ID	# Hold	Weight mg	Sample ID	#	Weight mg	Sample ID	#	Weight mg
:CB			C0H310411-1S	18	9.5 + 9.9	C0H310411-9		11.9
:CV			C0H310411-1X		10.4	C0H310411-9		11.2
:0H310000-229B			C0H310411-1X		10.3	C0H310411-10		9.9
:0H310000-229B			CCB			C0H310411-10	40	9.4
:0H310000-229C		10.1	CCV 2nd			C0H310411-11	41	10.1
:0H310000-229C		9.5	C0H310411-2	23	10.2	C0H310411-11	42	9.1
:0H310000-229L		10.8	C0H310411-2		10.2	CCB		
:0H310000-229L		10.4	C0H310411-3		10.2	CCV		
:0H250417-1		9.4	C0H310411-3	26	10.9			
0H250417-1		9.8	C0H310411-4		11.1			
0H250417-5		10.5	C0H310411-4	28	11.1			
0H250417-5		10.9	C0H310411-5		9.6			
0H280435-2		10.4	C0H310411-5		10.1			
0H280435-2		10.5	C0H310411-6		10.9			
0H310411-1		10.6	C0H310411-6	32	10.6			
0H310411-1		10.5	C0H310411-7		9.6			
0H310411-1D		10.8 + 10.5	C0H310411-7		9.5			
0H310411-1D	16	9.7 + 10.3	C0H310411-8		10.2			
0H310411-1S	17	10.8 + 9.5	C0H310411-8	36	11.2			

4150

(4001 - 4152)

Date Printed: 8/31/2010 1:18:48PM

Tetra Tech Middle River, MD

Percent Solids

Lab Name: TESTAMERICA PITTSBURGH
Client Name: Tetra Tech NUS, Inc
Matrix: SOLID

Method: SM20 2540G
Lot Number: C0H250417

NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
MARSHY POINT-SS	C0H250417 001	L537V1AA	26.5	%	0.0	1.0	1	8/27/2010 - 8/28/2010 09:01	0239123
MARSHY POINT-01	C0H250417 002	L537W1AA	34.4	%	0.0	1.0	1	8/27/2010 - 8/28/2010 09:01	0239123
MARSHY POINT-02	C0H250417 003	L53701AA	36.2	%	0.0	1.0	1	8/27/2010 - 8/28/2010 09:01	0239123
MARSHY POINT-04	C0H250417 004	L53711AA	37.4	%	0.0	1.0	1	8/27/2010 - 8/28/2010 09:01	0239123
BOWLEYS QUARTERS-SS	C0H250417 005	L53721AA	28.3	%	0.0	1.0	1	8/27/2010 - 8/28/2010 09:01	0239123
BOWLEYS QUARTERS-01	C0H250417 006	L53741AA	31.5	%	0.0	1.0	1	8/27/2010 - 8/28/2010 09:01	0239123
BOWLEYS QUARTERS-02	C0H250417 007	L53761AA	40.4	%	0.0	1.0	1	8/27/2010 - 8/28/2010 09:01	0239123
BOWLEYS QUARTERS-04	C0H250417 008	L53771AA	68.2	%	0.0	1.0	1	8/27/2010 - 8/28/2010 09:01	0239123

Tetra Tech Middle River, MD

Percent Solids

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	SM20 2540G
Client Name:	Tetra Tech NUS, Inc	**Report ID:**	C0H250417
Matrix:	SOLID	**Date/Time Received:**	8/19/2010 9:30:00AM

Client Sample ID	Sample Number	Workorder	Result	Units	Reporting Limit	Prep Date-Analysis Date/Time	QC Batch	RPD / Limit (%)
INTRA-LAB QC	001 DUP	L5V9G1AF	99.8	%	1.0	8/27/2010 - 8/28/2010 09:01	0239123	0.16 / 20

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. MARTIN**	**DATE:**	**OCTOBER 1, 2010**
FROM:	**A. COGNETTI**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- PAH/PCBs**
MIDDLE RIVER CENTER
FULL REVIEW
SAMPLE DELIVERY GROUP (SDG) - C0H250417

SAMPLES: 8/Sediment/PAH/PCB

Bowleys Quarters-01	Bowleys Quarters-02	Bowleys Quarter-04
Bowleys Quarter-SS	Marshy Point-01	Marshy Point-02
Marshy Point-04	Marshy Point-SS	

Overview

The sample set for Middle River Center, SDG C0H250417, consists of eight (8) environmental sediment samples. The samples were analyzed for polycyclic aromatic hydrocarbons (PAH) and polychlorinated biphenyls (PCBs).

The samples were collected on August 21, 2010 and analyzed by Test America. PAH analyses were conducted in accordance with SW-846 Method 8270C and PCBs Method 8082 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, initial and continuing calibration results, laboratory method blank results, surrogate spike recoveries, internal standard recoveries, matrix spike/ matrix spike duplicate recoveries, laboratory control standard recoveries, detection limits, compound quantitation and compound identification. Areas of concern with respect to data quality are listed below.

Major- None.

Minor

- The percent solids were less than 30% in samples Bowleys Quarter-SS and Marshy Point-SS. Positive and nondetected results were qualified as estimated (J) and (UJ), respectively.

Notes

The continuing calibration percent difference for indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene were greater than the 20% quality control limit but less than 50% on August 27, 2010 @ 5:56. No action was taken on the nondetected indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene results.

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: The percent solids were less than 30% in samples Bowleys Quarter-SS and Marshy Point-SS.

The data for these analyses were reviewed with reference to Region III modifications to U.S. EPA National Functional Guidelines for Organic Data Validation (Sept. 1994). The text of this report has been formulated to address only those problem areas affecting data quality.

Ann Cognetti

Tetra Tech NUS
Ann Cognetti
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02903	NSAMPLE	BOWLEYS QUARTERS-01			BOWLEYS QUARTERS-02			BOWLEYS QUARTERS-04			BOWLEYS QUARTERS-SS		
SDG: C0H250417	LAB_ID	C0H250417006			C0H250417007			C0H250417008			C0H250417005		
FRACTION: PAH	SAMP_DATE	8/21/2010			8/21/2010			8/21/2010			8/21/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	32.0			40.0			68.0			28.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ACENAPHTHENE		5.1	U		3.9	U		2.3	U		5.7	UJ	Y
ACENAPHTHYLENE		29	J	P	4.7	U		2.8	U		6.7	UJ	Y
ANTHRACENE		47	J	P	4	U		2.4	U		29	J	PY
BENZO(A)ANTHRACENE		70			5.1	U		3.1	U		53	J	PY
BENZO(A)PYRENE		74			4.1	U		2.4	U		49	J	PY
BENZO(B)FLUORANTHENE		110			6.5	U		3.8	U		96	J	Y
BENZO(G,H,I)PERYLENE		110			4.1	U		2.4	U		93	J	Y
BENZO(K)FLUORANTHENE		11	U		8.3	U		4.9	U		12	UJ	Y
CHRYSENE		63			4.9	U		2.9	U		68	J	Y
DIBENZO(A,H)ANTHRACENE		5.9	U		4.6	U		2.7	U		6.5	UJ	Y
FLUORANTHENE		200			4.4	U		2.6	U		140	J	Y
FLUORENE		51	J	P	5.4	U		3.2	U		23	J	PY
INDENO(1,2,3-CD)PYRENE		110			4.2	U		2.5	U		110	J	Y
NAPHTHALENE		110			3.5	U		2.1	U		51	J	PY
PHENANTHRENE		140			6.5	U		3.9	U		82	J	Y
PYRENE		130			4.2	U		2.5	U		100	J	Y

PROJ_NO: 02903	NSAMPLE	MARSHY POINT-01			MARSHY POINT-02			MARSHY POINT-04			MARSHY POINT-SS		
SDG: C0H250417	LAB_ID	C0H250417002			C0H250417003			C0H250417004			C0H250417001		
FRACTION: PAH	SAMP_DATE	8/21/2010			8/21/2010			8/21/2010			8/21/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	34.0			36.0			37.0			27.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ACENAPHTHENE		4.6	U		4.4	U		4.3	U		6	UJ	Y
ACENAPHTHYLENE		5.5	U		5.3	U		5.1	U		7.2	UJ	Y
ANTHRACENE		15	J	P	4.5	U		4.4	U		18	J	PY
BENZO(A)ANTHRACENE		20	J	P	5.8	U		5.6	U		24	J	PY
BENZO(A)PYRENE		4.8	U		4.6	U		4.5	U		6.3	UJ	Y
BENZO(B)FLUORANTHENE		7.6	U		7.2	U		7	U		30	J	PY
BENZO(G,H,I)PERYLENE		4.8	U		4.6	U		4.4	U		6.3	UJ	Y
BENZO(K)FLUORANTHENE		9.7	U		9.3	U		9	U		13	UJ	Y
CHRYSENE		21	J	P	5.5	U		5.3	U		32	J	PY
DIBENZO(A,H)ANTHRACENE		5.4	U		5.1	U		5	U		7	UJ	Y
FLUORANTHENE		61			4.9	U		4.8	U		67	J	Y
FLUORENE		13	J	P	6.1	U		5.9	U		8.3	UJ	Y
INDENO(1,2,3-CD)PYRENE		5	U		4.7	U		4.6	U		6.5	UJ	Y
NAPHTHALENE		42	J	P	4	U		3.8	U		50	J	PY
PHENANTHRENE		57			7.3	U		7.1	U		54	J	PY
PYRENE		37	J	P	4.7	U		4.5	U		49	J	PY

PROJ_NO: 02903	NSAMPLE	BOWLEYS QUARTERS-01			BOWLEYS QUARTERS-02			BOWLEYS QUARTERS-04			BOWLEYS QUARTERS-SS		
SDG: C0H250417	LAB_ID	C0H250417006			C0H250417007			C0H250417008			C0H250417005		
FRACTION: PEST/PCB	SAMP_DATE	8/21/2010			8/21/2010			8/21/2010			8/21/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	32.0			40.0			68.0			28.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016		3.9	U		3.1	U		1.8	U		4.4	UJ	Y
AROCLOR-1221		5	U		3.9	U		2.3	U		5.6	UJ	Y
AROCLOR-1232		4.5	U		3.5	U		2.1	U		5	UJ	Y
AROCLOR-1242		4.3	U		3.4	U		2	U		4.8	UJ	Y
AROCLOR-1248		2.5	U		1.9	U		1.2	U		2.8	UJ	Y
AROCLOR-1254		3.8	U		2.9	U		1.7	U		4.2	UJ	Y
AROCLOR-1260		3.8	U		2.9	U		1.7	U		4.2	UJ	Y

PROJ_NO: 02903	NSAMPLE	MARSHY POINT-01			MARSHY POINT-02			MARSHY POINT-04			MARSHY POINT-SS		
SDG: C0H250417	LAB_ID	C0H250417002			C0H250417003			C0H250417004			C0H250417001		
FRACTION: PEST/PCB	SAMP_DATE	8/21/2010			8/21/2010			8/21/2010			8/21/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	34.0			36.0			37.0			27.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016		3.6	U		3.4	U		3.3	U		4.7	UJ	Y
AROCLOR-1221		4.6	U		4.4	U		4.2	U		6	UJ	Y
AROCLOR-1232		4.1	U		3.9	U		3.7	U		5.4	UJ	Y
AROCLOR-1242		3.9	U		3.8	U		3.6	U		5.1	UJ	Y
AROCLOR-1248		2.3	U		2.2	U		2.1	U		3	UJ	Y
AROCLOR-1254		3.4	U		3.3	U		3.1	U		4.5	UJ	Y
AROCLOR-1260		3.4	U		3.3	U		3.1	U		4.5	UJ	Y

Appendix B

Results as Reported by the Laboratory

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-01

GC/MS Semivolatiles

Lot-Sample #...:	C0H250417-006	Work Order #...:	L53741AC	Matrix.....:	SOLID
Date Sampled...:	08/21/10 15:47	Date Received..:	08/24/10 10:15	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date..:	08/26/10		
Prep Batch #...:	0237335	Analysis Time..:	14:50		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	68	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	**110**	**53**	**ug/kg**	**4.6**
Acenaphthylene	**29 J**	**53**	**ug/kg**	**6.1**
Acenaphthene	ND	53	ug/kg	5.1
Fluorene	**51 J**	**53**	**ug/kg**	**7.0**
Phenanthrene	**140**	**53**	**ug/kg**	**8.4**
Anthracene	**47 J**	**53**	**ug/kg**	**5.2**
Fluoranthene	**200**	**53**	**ug/kg**	**5.7**
Pyrene	**130**	**53**	**ug/kg**	**5.4**
Benzo(a)anthracene	**70**	**53**	**ug/kg**	**6.6**
Chrysene	**63**	**53**	**ug/kg**	**6.3**
Benzo(b)fluoranthene	**110**	**53**	**ug/kg**	**8.3**
Benzo(k)fluoranthene	ND	53	ug/kg	11
Benzo(a)pyrene	**74**	**53**	**ug/kg**	**5.3**
Indeno(1,2,3-cd)pyrene	**110**	**53**	**ug/kg**	**5.5**
Dibenzo(a,h)anthracene	ND	53	ug/kg	5.9
Benzo(ghi)perylene	**110**	**53**	**ug/kg**	**5.3**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	104	(27 - 110)
Terphenyl-d14	93	(21 - 130)
2-Fluorobiphenyl	99	(28 - 108)
2-Fluorophenol	94	(28 - 107)
Phenol-d5	105	(30 - 112)
2,4,6-Tribromophenol	93	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-02

GC/MS Semivolatiles

Lot-Sample #...:	C0H250417-007	**Work Order #...:**	L53761AC	**Matrix.....:**	SOLID
Date Sampled...:	08/21/10 15:49	**Date Received..:**	08/24/10 10:15	**MS Run #.....:**	
Prep Date.....:	08/25/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0237335	**Analysis Time..:**	15:10		
Dilution Factor:	2.49	**Initial Wgt/Vol:**	30.1 g	**Final Wgt/Vol..:**	0.5 mL
% Moisture.....:	60	**Analyst ID.....:**	007062	**Instrument ID..:**	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	41	ug/kg	3.5
Acenaphthylene	ND	41	ug/kg	4.7
Acenaphthene	ND	41	ug/kg	3.9
Fluorene	ND	41	ug/kg	5.4
Phenanthrene	ND	41	ug/kg	6.5
Anthracene	ND	41	ug/kg	4.0
Fluoranthene	ND	41	ug/kg	4.4
Pyrene	ND	41	ug/kg	4.2
Benzo(a)anthracene	ND	41	ug/kg	5.1
Chrysene	ND	41	ug/kg	4.9
Benzo(b)fluoranthene	ND	41	ug/kg	6.5
Benzo(k)fluoranthene	ND	41	ug/kg	8.3
Benzo(a)pyrene	ND	41	ug/kg	4.1
Indeno(1,2,3-cd)pyrene	ND	41	ug/kg	4.2
Dibenzo(a,h)anthracene	ND	41	ug/kg	4.6
Benzo(ghi)perylene	ND	41	ug/kg	4.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	78	(27 - 110)
Terphenyl-d14	67	(21 - 130)
2-Fluorobiphenyl	73	(28 - 108)
2-Fluorophenol	68	(28 - 107)
Phenol-d5	78	(30 - 112)
2,4,6-Tribromophenol	74	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-04

GC/MS Semivolatiles

Lot-Sample #...:	C0H250417-008	**Work Order #...:**	L53771AC	**Matrix.....:**	SOLID
Date Sampled...:	08/21/10 15:51	**Date Received..:**	08/24/10 10:15	**MS Run #.....:**	
Prep Date.....:	08/25/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0237335	**Analysis Time..:**	15:30		
Dilution Factor:	2.5	**Initial Wgt/Vol:**	30 g	**Final Wgt/Vol..:**	0.5 mL
% Moisture.....:	32	**Analyst ID.....:**	007062	**Instrument ID..:**	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	25	ug/kg	2.1
Acenaphthylene	ND	25	ug/kg	2.8
Acenaphthene	ND	25	ug/kg	2.3
Fluorene	ND	25	ug/kg	3.2
Phenanthrene	ND	25	ug/kg	3.9
Anthracene	ND	25	ug/kg	2.4
Fluoranthene	ND	25	ug/kg	2.6
Pyrene	ND	25	ug/kg	2.5
Benzo(a)anthracene	ND	25	ug/kg	3.1
Chrysene	ND	25	ug/kg	2.9
Benzo(b)fluoranthene	ND	25	ug/kg	3.8
Benzo(k)fluoranthene	ND	25	ug/kg	4.9
Benzo(a)pyrene	ND	25	ug/kg	2.4
Indeno(1,2,3-cd)pyrene	ND	25	ug/kg	2.5
Dibenzo(a,h)anthracene	ND	25	ug/kg	2.7
Benzo(ghi)perylene	ND	25	ug/kg	2.4

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	67	(27 - 110)
Terphenyl-d14	64	(21 - 130)
2-Fluorobiphenyl	69	(28 - 108)
2-Fluorophenol	62	(28 - 107)
Phenol-d5	73	(30 - 112)
2,4,6-Tribromophenol	72	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-SS

GC/MS Semivolatiles

Lot-Sample #...:	C0H250417-005	Work Order #...:	L53721AD	Matrix.....:	SOLID
Date Sampled...:	08/21/10 15:45	Date Received..:	08/24/10 10:15	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date..:	08/26/10		
Prep Batch #...:	0237335	Analysis Time..:	14:30		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	72	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	**51 J**	**59**	**ug/kg**	**5.1**
Acenaphthylene	ND	59	ug/kg	6.7
Acenaphthene	ND	59	ug/kg	5.7
Fluorene	**23 J**	**59**	**ug/kg**	**7.8**
Phenanthrene	**82**	**59**	**ug/kg**	**9.4**
Anthracene	**29 J**	**59**	**ug/kg**	**5.8**
Fluoranthene	**140**	**59**	**ug/kg**	**6.3**
Pyrene	**100**	**59**	**ug/kg**	**6.0**
Benzo(a)anthracene	**53 J**	**59**	**ug/kg**	**7.4**
Chrysene	**68**	**59**	**ug/kg**	**7.0**
Benzo(b)fluoranthene	**96**	**59**	**ug/kg**	**9.3**
Benzo(k)fluoranthene	ND	59	ug/kg	12
Benzo(a)pyrene	**49 J**	**59**	**ug/kg**	**5.9**
Indeno(1,2,3-cd)pyrene	**110**	**59**	**ug/kg**	**6.1**
Dibenzo(a,h)anthracene	ND	59	ug/kg	6.5
Benzo(ghi)perylene	**93**	**59**	**ug/kg**	**5.9**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	70	(27 - 110)
Terphenyl-d14	64	(21 - 130)
2-Fluorobiphenyl	67	(28 - 108)
2-Fluorophenol	61	(28 - 107)
Phenol-d5	69	(30 - 112)
2,4,6-Tribromophenol	69	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-01

GC/MS Semivolatiles

Lot-Sample #...:	C0H250417-002	Work Order #...:	L537W1AC	Matrix.....:	SOLID
Date Sampled...:	08/21/10 15:22	Date Received..:	08/24/10 10:15	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date..:	08/26/10		
Prep Batch #...:	0237335	Analysis Time..:	13:31		
Dilution Factor:	2.48	Initial Wgt/Vol:	30.2 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	66	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	**42 J**	**48**	**ug/kg**	**4.1**
Acenaphthylene	ND	48	ug/kg	5.5
Acenaphthene	ND	48	ug/kg	4.6
Fluorene	**13 J**	**48**	**ug/kg**	**6.3**
Phenanthrene	**57**	**48**	**ug/kg**	**7.7**
Anthracene	**15 J**	**48**	**ug/kg**	**4.7**
Fluoranthene	**61**	**48**	**ug/kg**	**5.1**
Pyrene	**37 J**	**48**	**ug/kg**	**4.9**
Benzo(a)anthracene	**20 J**	**48**	**ug/kg**	**6.0**
Chrysene	**21 J**	**48**	**ug/kg**	**5.7**
Benzo(b)fluoranthene	ND	48	ug/kg	7.6
Benzo(k)fluoranthene	ND	48	ug/kg	9.7
Benzo(a)pyrene	ND	48	ug/kg	4.8
Indeno(1,2,3-cd)pyrene	ND	48	ug/kg	5.0
Dibenzo(a,h)anthracene	ND	48	ug/kg	5.4
Benzo(ghi)perylene	ND	48	ug/kg	4.8

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	82	(27 - 110)
Terphenyl-d14	70	(21 - 130)
2-Fluorobiphenyl	74	(28 - 108)
2-Fluorophenol	73	(28 - 107)
Phenol-d5	82	(30 - 112)
2,4,6-Tribromophenol	72	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-02

GC/MS Semivolatiles

Lot-Sample #...:	C0H250417-003	**Work Order #...:**	L53701AC	**Matrix.....:**	SOLID
Date Sampled...:	08/21/10 15:24	**Date Received..:**	08/24/10 10:15	**MS Run #.....:**	
Prep Date.....:	08/25/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0237335	**Analysis Time..:**	13:51		
Dilution Factor:	2.5	**Initial Wgt/Vol:**	30 g	**Final Wgt/Vol..:**	0.5 mL
% Moisture.....:	64	**Analyst ID.....:**	007062	**Instrument ID..:**	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	46	ug/kg	4.0
Acenaphthylene	ND	46	ug/kg	5.3
Acenaphthene	ND	46	ug/kg	4.4
Fluorene	ND	46	ug/kg	6.1
Phenanthrene	ND	46	ug/kg	7.3
Anthracene	ND	46	ug/kg	4.5
Fluoranthene	ND	46	ug/kg	4.9
Pyrene	ND	46	ug/kg	4.7
Benzo(a)anthracene	ND	46	ug/kg	5.8
Chrysene	ND	46	ug/kg	5.5
Benzo(b)fluoranthene	ND	46	ug/kg	7.2
Benzo(k)fluoranthene	ND	46	ug/kg	9.3
Benzo(a)pyrene	ND	46	ug/kg	4.6
Indeno(1,2,3-cd)pyrene	ND	46	ug/kg	4.7
Dibenzo(a,h)anthracene	ND	46	ug/kg	5.1
Benzo(ghi)perylene	ND	46	ug/kg	4.6

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	68	(27 - 110)
Terphenyl-d14	60	(21 - 130)
2-Fluorobiphenyl	62	(28 - 108)
2-Fluorophenol	55	(28 - 107)
Phenol-d5	61	(30 - 112)
2,4,6-Tribromophenol	64	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-04

GC/MS Semivolatiles

Lot-Sample #...:	C0H250417-004	Work Order #...:	L53711AC	Matrix.....:	SOLID
Date Sampled...:	08/21/10 15:26	Date Received..:	08/24/10 10:15	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date..:	08/26/10		
Prep Batch #...:	0237335	Analysis Time..:	14:10		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	63	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	45	ug/kg	3.8
Acenaphthylene	ND	45	ug/kg	5.1
Acenaphthene	ND	45	ug/kg	4.3
Fluorene	ND	45	ug/kg	5.9
Phenanthrene	ND	45	ug/kg	7.1
Anthracene	ND	45	ug/kg	4.4
Fluoranthene	ND	45	ug/kg	4.8
Pyrene	ND	45	ug/kg	4.5
Benzo(a)anthracene	ND	45	ug/kg	5.6
Chrysene	ND	45	ug/kg	5.3
Benzo(b)fluoranthene	ND	45	ug/kg	7.0
Benzo(k)fluoranthene	ND	45	ug/kg	9.0
Benzo(a)pyrene	ND	45	ug/kg	4.5
Indeno(1,2,3-cd)pyrene	ND	45	ug/kg	4.6
Dibenzo(a,h)anthracene	ND	45	ug/kg	5.0
Benzo(ghi)perylene	ND	45	ug/kg	4.4

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	77	(27 - 110)
Terphenyl-d14	66	(21 - 130)
2-Fluorobiphenyl	71	(28 - 108)
2-Fluorophenol	69	(28 - 107)
Phenol-d5	78	(30 - 112)
2,4,6-Tribromophenol	69	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-SS

GC/MS Semivolatiles

Lot-Sample #...:	C0H250417-001	Work Order #...:	L537V1AD	Matrix.....:	SOLID
Date Sampled...:	08/21/10 15:20	Date Received..:	08/24/10 10:15	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date..:	08/27/10		
Prep Batch #...:	0237335	Analysis Time..:	14:14		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	73	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	**50 J**	**63**	**ug/kg**	**5.4**
Acenaphthylene	ND	63	ug/kg	7.2
Acenaphthene	ND	63	ug/kg	6.0
Fluorene	ND	63	ug/kg	8.3
Phenanthrene	**54 J**	**63**	**ug/kg**	**10**
Anthracene	**18 J**	**63**	**ug/kg**	**6.1**
Fluoranthene	**67**	**63**	**ug/kg**	**6.7**
Pyrene	**49 J**	**63**	**ug/kg**	**6.4**
Benzo(a)anthracene	**24 J**	**63**	**ug/kg**	**7.9**
Chrysene	**32 J**	**63**	**ug/kg**	**7.5**
Benzo(b)fluoranthene	**30 J**	**63**	**ug/kg**	**9.9**
Benzo(k)fluoranthene	ND	63	ug/kg	13
Benzo(a)pyrene	ND	63	ug/kg	6.3
Indeno(1,2,3-cd)pyrene	ND	63	ug/kg	6.5
Dibenzo(a,h)anthracene	ND	63	ug/kg	7.0
Benzo(ghi)perylene	ND	63	ug/kg	6.3

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	81	(27 - 110)
Terphenyl-d14	71	(21 - 130)
2-Fluorobiphenyl	78	(28 - 108)
2-Fluorophenol	71	(28 - 107)
Phenol-d5	79	(30 - 112)
2,4,6-Tribromophenol	68	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-01

GC Semivolatiles

Lot-Sample #...:	C0H250417-006	Work Order #...:	L53741AD	Matrix.....:	SOLID
Date Sampled...:	08/21/10	Date Received...:	08/24/10	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date...:	09/03/10		
Prep Batch #...:	0237336	Analysis Time...:	01:56		
Dilution Factor:	0.5	Initial Wgt/Vol:	15 g	Final Wgt/Vol...:	10 mL
% Moisture.....:	68	Analyst ID.....:	402360	Instrument ID...:	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	26	ug/kg	3.9
Aroclor 1221	ND	26	ug/kg	5.0
Aroclor 1232	ND	26	ug/kg	4.5
Aroclor 1242	ND	26	ug/kg	4.3
Aroclor 1248	ND	26	ug/kg	2.5
Aroclor 1254	ND	26	ug/kg	3.8
Aroclor 1260	ND	26	ug/kg	3.8

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	96	(35 - 140)
Decachlorobiphenyl	84	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-02

GC Semivolatiles

Lot-Sample #...:	C0H250417-007	Work Order #...:	L53761AD	Matrix.....:	SOLID
Date Sampled....:	08/21/10	Date Received...:	08/24/10	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date...:	09/03/10		
Prep Batch #...:	0237336	Analysis Time...:	02:17		
Dilution Factor:	0.5	Initial Wgt/Vol:	15 g	Final Wgt/Vol...:	10 mL
% Moisture.....:	60	Analyst ID.....:	402360	Instrument ID...:	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	21	ug/kg	3.1
Aroclor 1221	ND	21	ug/kg	3.9
Aroclor 1232	ND	21	ug/kg	3.5
Aroclor 1242	ND	21	ug/kg	3.4
Aroclor 1248	ND	21	ug/kg	1.9
Aroclor 1254	ND	21	ug/kg	2.9
Aroclor 1260	ND	21	ug/kg	2.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	103	(35 - 140)
Decachlorobiphenyl	88	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-04

GC Semivolatiles

Lot-Sample #...:	C0H250417-008	Work Order #...:	L53771AD	Matrix.....:	SOLID
Date Sampled...:	08/21/10	Date Received..:	08/24/10	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date..:	09/03/10		
Prep Batch #...:	0237336	Analysis Time..:	02:37	Final Wgt/Vol...:	10 mL
Dilution Factor:	0.5	Initial Wgt/Vol:	15 g	Instrument ID...:	S/T
% Moisture.....:	32	Analyst ID.....:	402360		
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	12	ug/kg	1.8
Aroclor 1221	ND	12	ug/kg	2.3
Aroclor 1232	ND	12	ug/kg	2.1
Aroclor 1242	ND	12	ug/kg	2.0
Aroclor 1248	ND	12	ug/kg	1.2
Aroclor 1254	ND	12	ug/kg	1.7
Aroclor 1260	ND	12	ug/kg	1.7

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	98	(35 - 140)
Decachlorobiphenyl	86	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-SS

GC Semivolatiles

Lot-Sample #...:	C0H250417-005	Work Order #...:	L53721AE	Matrix.....:	SOLID
Date Sampled....:	08/21/10	Date Received..:	08/24/10	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date..:	09/03/10		
Prep Batch #....:	0237336	Analysis Time..:	01:36		
Dilution Factor:	0.5	Initial Wgt/Vol:	15.1 g	Final Wgt/Vol..:	10 mL
% Moisture.....:	72	Analyst ID.....:	402360	Instrument ID..:	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	29	ug/kg	4.4
Aroclor 1221	ND	29	ug/kg	5.6
Aroclor 1232	ND	29	ug/kg	5.0
Aroclor 1242	ND	29	ug/kg	4.8
Aroclor 1248	ND	29	ug/kg	2.8
Aroclor 1254	ND	29	ug/kg	4.2
Aroclor 1260	ND	29	ug/kg	4.2

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	97	(35 - 140)
Decachlorobiphenyl	82	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-01

GC Semivolatiles

Lot-Sample #...:	C0H250417-002	Work Order #...:	L537W1AD	Matrix.....:	SOLID
Date Sampled...:	08/21/10	Date Received..:	08/24/10	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date..:	09/03/10		
Prep Batch #...:	0237336	Analysis Time..:	00:35		
Dilution Factor:	0.5	Initial Wgt/Vol:	15 g	Final Wgt/Vol...:	10 mL
% Moisture.....:	66	Analyst ID.....:	402360	Instrument ID..:	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	24	ug/kg	3.6
Aroclor 1221	ND	24	ug/kg	4.6
Aroclor 1232	ND	24	ug/kg	4.1
Aroclor 1242	ND	24	ug/kg	3.9
Aroclor 1248	ND	24	ug/kg	2.3
Aroclor 1254	ND	24	ug/kg	3.4
Aroclor 1260	ND	24	ug/kg	3.4

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	102	(35 - 140)
Decachlorobiphenyl	88	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-02

GC Semivolatiles

Lot-Sample #....:	C0H250417-003	Work Order #....:	L53701AD	Matrix.....:	SOLID
Date Sampled....:	08/21/10	Date Received...:	08/24/10	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date...:	09/03/10		
Prep Batch #....:	0237336	Analysis Time...:	00:55		
Dilution Factor:	0.5	Initial Wgt/Vol:	15 g	Final Wgt/Vol...:	10 mL
% Moisture.....:	64	Analyst ID.....:	402360	Instrument ID...:	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	23	ug/kg	3.4
Aroclor 1221	ND	23	ug/kg	4.4
Aroclor 1232	ND	23	ug/kg	3.9
Aroclor 1242	ND	23	ug/kg	3.8
Aroclor 1248	ND	23	ug/kg	2.2
Aroclor 1254	ND	23	ug/kg	3.3
Aroclor 1260	ND	23	ug/kg	3.3

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	98	(35 - 140)
Decachlorobiphenyl	83	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-04

GC Semivolatiles

Lot-Sample #....:	C0H250417-004	Work Order #....:	L53711AD	Matrix.....:	SOLID
Date Sampled....:	08/21/10	Date Received...:	08/24/10	MS Run #.....:	
Prep Date.....:	08/25/10	Analysis Date...:	09/03/10		
Prep Batch #....:	0237336	Analysis Time...:	01:16		
Dilution Factor:	0.49	Initial Wgt/Vol:	15.2 g	Final Wgt/Vol...:	10 mL
% Moisture.....:	63	Analyst ID.....:	402360	Instrument ID..:	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	22	ug/kg	3.3
Aroclor 1221	ND	22	ug/kg	4.2
Aroclor 1232	ND	22	ug/kg	3.7
Aroclor 1242	ND	22	ug/kg	3.6
Aroclor 1248	ND	22	ug/kg	2.1
Aroclor 1254	ND	22	ug/kg	3.1
Aroclor 1260	ND	22	ug/kg	3.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	99	(35 - 140)
Decachlorobiphenyl	85	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: MARSHY POINT-SS

GC Semivolatiles

Lot-Sample #....: C0H250417-001	Work Order #....: L537V1AE	Matrix.....: SOLID
Date Sampled....: 08/21/10	Date Received...: 08/24/10	MS Run #.....:
Prep Date.....: 08/25/10	Analysis Date...: 09/03/10	
Prep Batch #....: 0237336	Analysis Time...: 00:14	
Dilution Factor: 0.5	Initial Wgt/Vol: 15 g	Final Wgt/Vol...: 10 mL
% Moisture.....: 73	Analyst ID.....: 402360	Instrument ID...: S/T
	Method.....: SW846 8082	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	31	ug/kg	4.7
Aroclor 1221	ND	31	ug/kg	6.0
Aroclor 1232	ND	31	ug/kg	5.4
Aroclor 1242	ND	31	ug/kg	5.1
Aroclor 1248	ND	31	ug/kg	3.0
Aroclor 1254	ND	31	ug/kg	4.5
Aroclor 1260	ND	31	ug/kg	4.5

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	107	(35 - 140)
Decachlorobiphenyl	92	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Appendix C

Support Documentation

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0H250417

Sample Receiving:
TestAmerica's Pittsburgh laboratory received samples on August 24, 2010. The coolers were received within the proper temperature range.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

GC/MS Semivolatiles:
Due to the concentration of target compounds detected and/or matrix, several samples were analyzed at a dilution.

All non-CCC compounds that have >15% RSD were evaluated to see if a better curve could be drawn using a quadratic curve. All compounds <30% RSD will use an average response factor curve if no visible improvement is accomplished using a quadratic curve. A quadratic curve will be used for a compound where it is determined to be the "best-fit" evaluation.

The continuing calibrations had the %D > 25% but were within expected performance range for these compounds.

PCBs:
There were no problems associated with the analysis.

Metals:
Several samples were over the instruments linear range for SEM zinc and required a dilution.

The serial dilution of sample SD-102-SS (total) was outside of the percent difference control limits for silver, beryllium, and antimony. The results were flagged with an "E" qualifier.

The method blanks had analytes detected at concentrations between the MDL and the reporting limit. The results were flagged with a "B" qualifier. Any sample associated with a method blank that had the same analyte detected had the result flagged with a "J" qualifier.

The matrix spike and matrix spike duplicate of sample SD-92-SS recovered outside of the control limits for antimony and lead.

The matrix spike and matrix spike duplicate of sample SD-102-SS recovered outside of the control limits for antimony.

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0H250417

Metals (cont):
The matrix spike of sample SS-102-SS recovered outside of the control limits for chromium and zinc.

For the matrix spike and matrix spike duplicate of sample SD-102-SS, lead recoveries were not calculated due to the concentration of analyte in the sample being >4 times the concentration of spike added.

General Chemistry:
There were no problems associated with the analysis.

COH250417

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes☐ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client: Tetra Tech	Project Manager: Mike Martin	Date: 8/21/10	Chain of Custody Number: 154236
Address: 20251 Century Blvd. Suite 200	Telephone Number (Area Code)/Fax Number: 301-528-3022 301-528-3050	Lab Number:	Page 1 of 1
City: Germantown; State: MD; Zip Code: 20874	Site Contact: Tony Appiavage	Lab Contact:	Analysis (Attach list if more space is needed)
Project Name and Location (State): MCR Sed. Sampling, Middle River, MD	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	PP metals	PAHs	PCBs	TOC	Special Instructions/ Conditions of Receipt
Marshy Point-SS	8/21/10	1520			X		X						X	X	X	X	
Marshy Point-01		1522											X	X	X		
Marshy Point-02		1524											X	X	X		
Marshy Point-04		1526											X	X	X		
Bowley's Quarters-SS		1545											X	X	X	X	
Bowley's Quarters-01		1547											X	X	X		
Bowley's Quarters-02	↓	1549											X	X	X		
Bowley's Quarters-04	8/21/10	1551			X		X						X	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By	Date: 8/23/10	Time: 1530	1. Received By	Date: 8/23/10	Time: 1530
2. Relinquished By	Date: 8/23/10	Time: 1630	2. Received By	Date:	Time:
3. Relinquished By	Date:	Time:	3. Received By	Date: 8/24/10	Time: 1015

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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(1 - 141)

TestAmerica Pittsburgh

Cooler Receipt Form

Client: Tetra Tech NUS Project: _____ Quote: 86823

Cooler Rec'd & Opened for Temp. Check on: 8/24/10

Coolers Opened and Unpacked on: 8/25/10 By: PRF (Signature)

TestAmerica Pittsburgh Lot Number: COH250417

		Yes	No	NA
1.	Were custody seals on the outside of the cooler?	✓		
	If YES, how many and where? Quantity 1 Location front			
	Were signatures and date correct?	✓		
2.	Were custody papers included inside the cooler?	✓		
3.	Were custody papers properly filled out (ink, signed, match labels)?	✓		
4.	Did you sign the custody papers in the appropriate place?	✓		
5.	Was shippers packing slip attached to this form?	✓		
6.	Were packing materials used?	✓		
	If YES, what type? Bubble Wrap			
7.	Were the samples received within the acceptable temperature range?	✓		
8.	Were the samples appropriately preserved?			✓
9.	Were all bottles sealed in separate plastic bags?	✓		
10.	Did all bottles arrive in good condition (unbroken)?	✓		
11.	Were all bottle labels complete (sample ID, preservatives, etc.)?	✓		
12.	Did all bottle labels and/or tags agree with custody papers?	✓		
13.	Were correct bottles used for tests indicated?	✓		
14.	Were all VOA vials checked for the presence of air bubbles?			✓
15.	Was a sufficient amount of sample sent in each bottle?	✓		

16. Samples received by: FEDEX UPS CLIENT DROP-OFF OTHER DHL US CARGO

Explain any discrepancies: _____

Level 2 Review _____

Was contacted on _____ by _____ to resolve discrepancies.

Rev. 1, 01/20/2010
X:\Forms\Cooler Receipt Form_updated 102010.DOC

Cooler Receipt Form

TestAmerica Pittsburgh

P: Preserved

UP: Unpreserved

Sample ID	TMET PH<2	DMET PH<2	HG PH<2	NUT(1) PH<2	CN PH≥12	OG TPHC PH<2	PHEN PH<2	SULF PH≥12	TOC PH<2	TOX PH<2	VOA P/UP	brass PH<2			

(1) "NUT" could include sample bottles for: ammonia, chemical oxygen demand, nitrate/nitrite, TKN, or total phosphorus

Comments: _____

_____

_____

Cooler Number	Temperature*	Thermometer ID
1	4.6°	9
2	4.1°	4
3	3.8°	9

Sample	Lot Number**

*Acceptable Temperature Range: 4°C ± 2°C

**Please use an asterisk if bottle lot number was covered by the label

If samples required preservation in the laboratory, the following lot number(s) was/were used:

Nitric Acid _____ Hydrochloric Acid _____

Sulfuric Acid _____ Sodium Hydroxide _____

METHODS SUMMARY

C0H250417

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
ICP-MS (6020)	SW846 6020	SW846 3050B
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	SW846 7471A
PCBs by SW-846 8082	SW846 8082	SW846 3541
Semivolatile Organics GCMS BNA 8270C	SW846 8270C	
Total Residue as Percent Solids	SM20 2540G	
TOC Lloyd Kahn Lloyd Kahn	EPA Lloyd Kahn	EPA Lloyd Kahn

References:

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

SM20 "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER", 20TH EDITION."

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

C0H250417

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L537V	001	MARSHY POINT-SS	08/21/10	15:20
L537W	002	MARSHY POINT-01	08/21/10	15:22
L5370	003	MARSHY POINT-02	08/21/10	15:24
L5371	004	MARSHY POINT-04	08/21/10	15:26
L5372	005	BOWLEYS QUARTERS-SS	08/21/10	15:45
L5374	006	BOWLEYS QUARTERS-01	08/21/10	15:47
L5376	007	BOWLEYS QUARTERS-02	08/21/10	15:49
L5377	008	BOWLEYS QUARTERS-04	08/21/10	15:51

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

SDG C0H250417

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
HG	MG/KG	MARSHY POINT-04	C0H250417004	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	BOWLEYS QUARTERS-0	C0H250417008	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	BOWLEYS QUARTERS-S	C0H250417005	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	BOWLEYS QUARTERS-0	C0H250417006	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	MARSHY POINT-01	C0H250417002	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	MARSHY POINT-02	C0H250417003	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	MARSHY POINT-SS	C0H250417001	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
HG	MG/KG	BOWLEYS QUARTERS-0	C0H250417007	NM	08/21/2010	09/02/2010	09/02/2010	12	0	12
M	MG/KG	MARSHY POINT-04	C0H250417004	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	MARSHY POINT-02	C0H250417003	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	MARSHY POINT-01	C0H250417002	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	BOWLEYS QUARTERS-S	C0H250417005	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	BOWLEYS QUARTERS-0	C0H250417008	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	BOWLEYS QUARTERS-0	C0H250417007	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
M	MG/KG	BOWLEYS QUARTERS-0	C0H250417006	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
M	MG/KG	MARSHY POINT-SS	C0H250417001	NM	08/21/2010	09/02/2010	09/05/2010	12	3	15
TOC	MG/KG	MARSHY POINT-SS	C0H250417001	NM	08/21/2010	08/31/2010	09/01/2010	10	1	11
TOC	MG/KG	BOWLEYS QUARTERS-S	C0H250417005	NM	08/21/2010	08/31/2010	09/01/2010	10	1	11
SIM	UG/KG	BOWLEYS QUARTERS-S	C0H250417005	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	MARSHY POINT-SS	C0H250417001	SUR	08/21/2010	08/25/2010	08/27/2010	4	2	6
SIM	UG/KG	MARSHY POINT-SS	C0H250417001	NM	08/21/2010	08/25/2010	08/27/2010	4	2	6
SIM	UG/KG	MARSHY POINT-04	C0H250417004	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	MARSHY POINT-04	C0H250417004	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	MARSHY POINT-02	C0H250417003	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	MARSHY POINT-02	C0H250417003	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417006	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	MARSHY POINT-01	C0H250417002	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417006	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-S	C0H250417005	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417008	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417008	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417007	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
SIM	UG/KG	BOWLEYS QUARTERS-0	C0H250417007	NM	08/21/2010	08/25/2010	08/26/2010	4	1	5

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
SIM	UG/KG	MARSHY POINT-01	C0H250417002	SUR	08/21/2010	08/25/2010	08/26/2010	4	1	5
PCB	UG/KG	MARSHY POINT-02	C0H250417003	NM	08/21/2010	08/25/2010	09/03/2010	4	9	13
PCB	UG/KG	BOWLEYS QUARTERS-0	C0H250417006	NM	08/21/2010	08/25/2010	09/03/2010	4	9	13
PCB	UG/KG	BOWLEYS QUARTERS-0	C0H250417007	NM	08/21/2010	08/25/2010	09/03/2010	4	9	13
PCB	UG/KG	BOWLEYS QUARTERS-0	C0H250417008	NM	08/21/2010	08/25/2010	09/03/2010	4	9	13
PCB	UG/KG	MARSHY POINT-01	C0H250417002	NM	08/21/2010	08/25/2010	09/03/2010	4	9	13
PCB	UG/KG	MARSHY POINT-04	C0H250417004	NM	08/21/2010	08/25/2010	09/03/2010	4	9	13
PCB	UG/KG	MARSHY POINT-SS	C0H250417001	NM	08/21/2010	08/25/2010	09/03/2010	4	9	13
PCB	UG/KG	BOWLEYS QUARTERS-S	C0H250417005	NM	08/21/2010	08/25/2010	09/03/2010	4	9	13

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.:

Lab File ID: F0813DF1 DFTPP Injection Date: 08/13/10

Instrument ID: 722 DFTPP Injection Time: 0531

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	38.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	54.6
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	56.5
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.6
275	10.0 - 30.0% of mass 198	23.6
365	Greater than 1.0% of mass 198	2.76
441	Present, but less than mass 443	8.3
442	40.0 - 100.0% of mass 198	48.5
443	17.0 - 23.0% of mass 442	10.0 (20.7)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD2	SSTD2	F08130C2	08/13/10	0608
02	SSTD4	SSTD4	F08130C3	08/13/10	0629
03	SSTD10	SSTD10	F08130C4	08/13/10	0650
04	SSTD20	SSTD20	F08130C5	08/13/10	0710
05	SSTD40	SSTD40	F08130C6	08/13/10	0731
06	SSTD60	SSTD60	F08130C7	08/13/10	0752
07	SSTD80	SSTD80	F08130C8	08/13/10	0813
08	SSTD.4	SSTD.4	F08130C9	08/13/10	0833
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
51 Naphthalene	1.10269	1.08618	1.08403	1.08350	1.08384	1.03955						
	0.99767	0.98385					AVRG		1.05766		4.26789	
52 4-Chloroaniline	0.38925	0.38592	0.41569	0.41419	0.42872	0.41722						
	0.41156	0.42032					AVRG		0.41036		3.65070	
221 Caprolactam	+++++	0.07035	0.08206	0.08502	0.09636	0.09269						
	0.08174	0.09486					AVRG		0.08615		10.70160	
53 a,a-Dimethyl-phenethylamine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
54 2,6-Dichlorophenol	0.27364	0.29280	0.30639	0.29342	0.30151	0.30174						
	0.30035	0.30572					AVRG		0.29694		3.58740	
55 Hexachloropropene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
56 Hexachlorobutadiene	0.19771	0.19968	0.19559	0.20171	0.20800	0.20738						
	0.20524	0.20827					AVRG		0.20295		2.44617	

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
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Quant Method : ISTD
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Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
76 Dimethylphthalate	1.28704	1.23362	1.28226	1.25449	1.24854	1.28400						
	1.22647	1.22649					AVRG		1.25536		2.07191	
77 m-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
78 2,6-Dinitrotoluene	0.20774	0.23474	0.28842	0.28463	0.30209	0.30126						
	0.29777	0.31020					AVRG		0.27836		13.24025	
79 Acenaphthylene	1.51990	1.66239	1.72300	1.72107	1.72059	1.76238						
	1.67971	1.66383					AVRG		1.68161		4.39021	
80 1,2-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
81 3-Nitroaniline	0.21885	0.27642	0.30757	0.30844	0.31292	0.33000						
	0.31502	0.33465					AVRG		0.30049		12.42710	
82 Acenaphthene	1.16162	1.15942	1.19765	1.18471	1.16034	1.20575						
	1.16139	1.16463					AVRG		1.17444		1.60260	

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
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Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
90 Zinophos	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
91 2,3,5,6-Tetrachlorophenol	1893	11452	32279	63752	131436	244781						
	440826	549898					QUAD	0.06015	3.08544	-0.09866	0.99974	
92 2-Naphthylamine	4911	23832	47302	107555	187866	287361						
	401421	468448					QUAD	0.04383	1.55646	0.55338	0.99786	
93 Diethylphthalate	1.11505	1.18859	1.33059	1.25721	1.20435	1.21916						
	1.16207	1.19250					AVRG		1.20869		5.32078	
94 Fluorene	1.27641	1.30091	1.32166	1.30249	1.32078	1.39553						
	1.34378	1.35132					AVRG		1.32651		2.77359	
95 4-Chlorophenyl-phenylether	0.61028	0.60849	0.64260	0.64846	0.63932	0.68754						
	0.67633	0.69516					AVRG		0.65102		5.06321	
96 4-Nitroaniline	0.19402	0.29069	0.30558	0.30369	0.32343	0.33078						
	0.31208	0.31930					AVRG		0.29745		14.66833	

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
115 Phenanthrene	1.12791	1.12353	1.15165	1.15045	1.15488	1.11190						
	1.17256	1.13300					AVRG		1.14073		1.74637	
116 Anthracene	1.04804	1.13791	1.18867	1.17561	1.21249	1.16055						
	1.14286	1.09410					AVRG		1.14503		4.63162	
117 Dinoseb	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
118 Disulfoton	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
119 Carbazole	0.95652	1.03105	1.03947	1.02044	1.05215	1.01886						
	0.96425	0.99047					AVRG		1.00915		3.47433	
120 Di-n-Butylphthalate	1.03392	1.17914	1.24874	1.25819	1.34244	1.26949						
	1.24036	1.23563					AVRG		1.22599		7.32120	
121 4-Nitroquinoline 1-oxide	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
122 Methapyrilene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
123 Fluoranthene	1.01536	1.14862	1.14047	1.09907	1.18313	1.14698						
	1.09291	1.11490					AVRG		1.11768		4.54401	
124 Benzidine	2328	9886	34574	97253	179112	307693						
	484456	682853					QUAD	0.00840	3.17671	-0.00076	0.99889	
125 Pyrene	1.31593	1.33451	1.37368	1.36146	1.28464	1.25122						
	1.23822	1.16368					AVRG		1.29042		5.47434	
126 Aramite 1	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
M 191 Aramite, total	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
127 Aramite 2	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
135 3,3'-Dichlorobenzidine	0.30727	0.33735	0.36346	0.40115	0.41940	0.41856						
	0.42122	0.42615					AVRG		0.38682		11.69500	
136 Benzo(a)Anthracene	1.13091	1.10635	1.14343	1.13241	1.13667	1.11677						
	1.09331	1.08696					AVRG		1.11835		1.87535	
137 Chrysene	1.09063	1.10294	1.13267	1.16112	1.16230	1.12571						
	1.11104	1.07708					AVRG		1.12044		2.77111	
138 4,4'-Methylene bis(o-chloroan	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
139 bis(2-ethylhexyl)Phthalate	0.62066	0.77968	0.80532	0.82390	0.85603	0.84347						
	0.85254	0.83865					AVRG		0.80253		9.69853	
140 Di-n-octylphthalate	1.17345	1.29869	1.39458	1.46405	1.49397	1.53895						
	1.51083	1.49902					AVRG		1.42169		8.90439	
141 Benzo(b)fluoranthene	1.16890	1.13652	1.29405	1.19298	1.27494	1.40242						
	1.28843	1.44649					AVRG		1.27559		8.55423	

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	60.0000 Level 7	80.0000 Level 8	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
216 Dinocap 3	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
144 Hexachlorophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
145 Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
146 Benzo(a)pyrene	0.90255	0.98512	1.03941	1.08936	1.10207	1.12387	1.11027	1.12765	AVRG		1.06004		7.53306	
148 3-Methylcholanthrene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
149 Indeno(1,2,3-cd)pyrene	8363	48521	110240	257850	597382	1130240	1754986	2457605	QUAD	0.06967	0.80308	-0.00381	0.99987	
150 Dibenz(a,h)anthracene	5706	37818	90997	208964	499792	947917	1487491	2133011	QUAD	0.07149	0.98253	-0.00999	0.99987	

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
151 Benzo(g,h,i)perylene	6506	43950	102836	225588	526534	972719						
	1484860	2090048					QUAD	0.04777	0.93309	-0.00390	0.99984	
204 Benzenethiol	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
205 1-Methylnaphthalene	0.65042	0.68295	0.68135	0.67309	0.69042	0.67697						
	0.66289	0.67977					AVRG		0.67473		1.87604	
206 Kepone	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
207 6-Methylchrysene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
208 Dibenzo(a,h)acridine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
209 Dibenz(a,j)acridine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.:

Lab File ID: F0826DF1 DFTPP Injection Date: 08/26/10

Instrument ID: 722 DFTPP Injection Time: 0422

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	42.7
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	58.9
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	56.2
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.4
275	10.0 - 30.0% of mass 198	23.1
365	Greater than 1.0% of mass 198	2.71
441	Present, but less than mass 443	7.6
442	40.0 - 100.0% of mass 198	44.3
443	17.0 - 23.0% of mass 442	9.0 (20.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD4	SSTD4	F08260C1	08/26/10	0438
02	INTRA-LAB BL	L54X01AA	F0826021	08/26/10	1212
03	INTRA-LAB CH	L54X01AC	F0826022	08/26/10	1232
04	INTRA-LAB CH	L54X01AD	F0826023	08/26/10	1252
05	MARSHY POINT	L537W1AC	F0826025	08/26/10	1331
06	MARSHY POINT	L53701AC	F0826026	08/26/10	1351
07	MARSHY POINT	L53711AC	F0826027	08/26/10	1410
08	BOWLEYS QUAR	L53721AD	F0826028	08/26/10	1430
09	BOWLEYS QUAR	L53741AC	F0826029	08/26/10	1450
10	BOWLEYS QUAR	L53761AC	F0826030	08/26/10	1510
11	BOWLEYS QUAR	L53771AC	F0826031	08/26/10	1530
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 722.i
Lab File ID: F08260C1.D
Analysis Type:
Lab Sample ID: sstd4
Method: \\PITSVR06\d\chem\722.i\082610.b\LL.m

Injection Date: 26-AUG-2010 04:38
Init. Cal. Date(s): 13-AUG-2010 18-AUG-2010
Init. Cal. Times: 06:08 02:51
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
198 1,4-Dioxane	0.29106	0.21937	0.21937	0.010	24.63111	25.00000	Averaged	
220 Benzaldehyde	4.00000	3.56440	0.70827	0.010	10.88989	25.00000	Quadratic	
10 N-Nitrosodimethylamine	0.74398	0.86253	0.86253	0.010	-15.93540	25.00000	Averaged	
9 Pyridine	1.27436	1.34569	1.34569	0.010	-5.59670	25.00000	Averaged	
16 Methyl methanesulfonate	0.68235	0.66477	0.66477	0.010	2.57575	25.00000	Averaged	
21 Aniline	1.70284	1.71727	1.71727	0.010	-0.84754	25.00000	Averaged	
22 Phenol	1.79600	1.80739	1.80739	0.010	-0.63423	20.00000	Averaged	
23 bis(2-Chloroethyl)ether	1.28128	1.41426	1.41426	0.010	-10.37810	25.00000	Averaged	
24 2-Chlorophenol	1.42311	1.49243	1.49243	0.010	-4.87104	25.00000	Averaged	
26 1,3-Dichlorobenzene	1.63940	1.68362	1.68362	0.010	-2.69690	25.00000	Averaged	
27 1,4-Dichlorobenzene	1.65413	1.75605	1.75605	0.010	-6.16125	20.00000	Averaged	
28 1,2-Dichlorobenzene	1.57008	1.67213	1.67213	0.010	-6.49975	25.00000	Averaged	
227 Indene	2.43306	2.57225	2.57225	0.010	-5.72072	25.00000	Averaged	
29 Benzyl Alcohol	0.82797	0.56667	0.56667	0.010	31.55926	25.00000	Averaged	<-
30 2-Methylphenol	1.24095	1.21947	1.21947	0.010	1.73092	25.00000	Averaged	
31 2,2'-oxybis(1-Chloropropane	1.24125	1.34229	1.34229	0.010	-8.13992	25.00000	Averaged	
37 Acetophenone	1.87656	1.88629	1.88629	0.010	-0.51864	25.00000	Averaged	
32 N-Nitroso-di-n-propylamine	0.95005	0.99657	0.99657	0.050	-4.89604	25.00000	Averaged	
192 4-Methylphenol	1.27846	1.28038	1.28038	0.010	-0.15078	25.00000	Averaged	
34 Hexachloroethane	0.63096	0.70117	0.70117	0.010	-11.12688	25.00000	Averaged	
35 Nitrobenzene	0.39916	0.43613	0.43613	0.010	-9.26093	25.00000	Averaged	
36 N-Nitrosopyrrolidine	0.59099	0.55677	0.55677	0.010	5.78933	25.00000	Averaged	
41 Isophorone	0.64436	0.68903	0.68903	0.010	-6.93214	25.00000	Averaged	
42 2-Nitrophenol	0.19994	0.20858	0.20858	0.010	-4.31868	20.00000	Averaged	
43 2,4-Dimethylphenol	0.35681	0.39223	0.39223	0.010	-9.92506	25.00000	Averaged	
44 bis(2-Chloroethoxy)methane	0.39803	0.40306	0.40306	0.010	-1.26554	25.00000	Averaged	
48 2,4-Dichlorophenol	0.29499	0.29652	0.29652	0.010	-0.51944	20.00000	Averaged	
49 Benzoic Acid	10.00000	15.68866	0.06081	0.010	-56.88664	25.00000	Quadratic	<-
50 1,2,4-Trichlorobenzene	0.34075	0.34770	0.34770	0.010	-2.03945	25.00000	Averaged	
51 Naphthalene	1.05766	1.10688	1.10688	0.010	-4.65286	25.00000	Averaged	
52 4-Chloroaniline	0.41036	0.40903	0.40903	0.010	0.32275	25.00000	Averaged	
54 2,6-Dichlorophenol	0.29694	0.29055	0.29055	0.010	2.15364	25.00000	Averaged	
56 Hexachlorobutadiene	0.20295	0.20387	0.20387	0.010	-0.45700	20.00000	Averaged	
221 Caprolactam	0.08615	0.09906	0.09906	0.010	-14.98407	25.00000	Averaged	
59 4-Chloro-3-Methylphenol	0.29657	0.31279	0.31279	0.010	-5.47027	20.00000	Averaged	
62 2-Methylnaphthalene	0.70006	0.69632	0.69632	0.010	0.53326	25.00000	Averaged	
205 1-Methylnaphthalene	0.67473	0.69046	0.69046	0.010	-2.33137	25.00000	Averaged	
64 Hexachlorocyclopentadiene	4.00000	3.54839	0.24775	0.050	11.29021	25.00000	Quadratic	
65 1,2,4,5-Tetrachlorobenzene	0.52207	0.59800	0.59800	0.010	-14.54542	25.00000	Averaged	
66 2,4,6-Trichlorophenol	0.37985	0.36771	0.36771	0.010	3.19543	20.00000	Averaged	
67 2,4,5-Trichlorophenol	0.38378	0.40392	0.40392	0.010	-5.24635	25.00000	Averaged	
222 1,1'-Biphenyl	1.51728	1.62512	1.62512	0.010	-7.10750	25.00000	Averaged	

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 722.i Injection Date: 26-AUG-2010 04:38
Lab File ID: F08260C1.D Init. Cal. Date(s): 13-AUG-2010 18-AUG-2010
Analysis Type: Init. Cal. Times: 06:08 02:51
Lab Sample ID: sstd4 Quant Type: ISTD
Method: \\PITSVR06\d\chem\722.i\082610.b\LL.m

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
70 2-Chloronaphthalene	1.18811	1.24632	1.24632	0.010	-4.89920	25.00000	Averaged	
73 2-Nitroaniline	0.32323	0.36796	0.36796	0.010	-13.83895	25.00000	Averaged	
76 Dimethylphthalate	1.25536	1.26783	1.26783	0.010	-0.99329	25.00000	Averaged	
78 2,6-Dinitrotoluene	0.27836	0.28086	0.28086	0.010	-0.90048	25.00000	Averaged	
79 Acenaphthylene	1.68161	1.80399	1.80399	0.010	-7.27728	25.00000	Averaged	
81 3-Nitroaniline	0.30049	0.32137	0.32137	0.010	-6.94954	25.00000	Averaged	
82 Acenaphthene	1.17444	1.21224	1.21224	0.010	-3.21873	20.00000	Averaged	
83 2,4-Dinitrophenol	10.00000	11.21070	0.08132	0.050	-12.10695	25.00000	Quadratic	
85 4-Nitrophenol	0.18122	0.19313	0.19313	0.050	-6.57064	25.00000	Averaged	
86 Dibenzofuran	1.61951	1.66657	1.66657	0.010	-2.90584	25.00000	Averaged	
87 2,4-Dinitrotoluene	0.36497	0.40016	0.40016	0.010	-9.64261	25.00000	Averaged	
91 2,3,5,6-Tetrachlorophenol	4.00000	4.36155	0.31601	0.010	-9.03866	25.00000	Quadratic	
88 2,3,4,6-Tetrachlorophenol	0.30399	0.32989	0.32989	0.010	-8.52191	25.00000	Averaged	
92 2-Naphthylamine	4.00000	2.84497	0.37557	0.010	28.87567	25.00000	Quadratic	<-
93 Diethylphthalate	1.20869	1.33234	1.33234	0.010	-10.22975	25.00000	Averaged	
94 Fluorene	1.32661	1.33120	1.33120	0.010	-0.34613	25.00000	Averaged	
95 4-Chlorophenyl-phenylether	0.65102	0.65158	0.65158	0.010	-0.08558	25.00000	Averaged	
96 4-Nitroaniline	0.29745	0.33642	0.33642	0.010	-13.10294	25.00000	Averaged	
98 4,6-Dinitro-2-methylphenol	10.00000	9.68527	0.11221	0.010	3.14732	25.00000	Quadratic	
99 N-Nitrosodiphenylamine	0.58848	0.59104	0.59104	0.010	-0.43614	20.00000	Averaged	
100 1,2-Diphenylhydrazine	0.88846	0.91987	0.91987	0.010	-3.53610	25.00000	Averaged	
106 4-Bromophenyl-phenylether	0.23031	0.22244	0.22244	0.010	3.41999	25.00000	Averaged	
107 Hexachlorobenzene	0.22539	0.21234	0.21234	0.010	5.78785	25.00000	Averaged	
223 Atrazine	0.11077	0.07679	0.07679	0.010	30.67644	25.00000	Averaged	<-
111 Pentachlorophenol	10.00000	11.11779	0.14215	0.025	-11.17794	20.00000	Quadratic	
115 Phenanthrene	1.14073	1.17190	1.17190	0.010	-2.73188	25.00000	Averaged	
116 Anthracene	1.14503	1.21723	1.21723	0.010	-6.30580	25.00000	Averaged	
119 Carbazole	1.00915	1.11806	1.11806	0.010	-10.79255	25.00000	Averaged	
120 Di-n-Butylphthalate	1.22599	1.36258	1.36258	0.010	-11.14179	25.00000	Averaged	
123 Fluoranthene	1.11768	1.25034	1.25034	0.010	-11.86867	20.00000	Averaged	
124 Benzidine	++++	++++	0.00000	0.010	++++	25.00000	Quadratic	<-
125 Pyrene	1.29042	1.21927	1.21927	0.010	5.51326	25.00000	Averaged	
131 Butylbenzylphthalate	0.57769	0.47445	0.47445	0.010	17.87082	25.00000	Averaged	
135 3,3'-Dichlorobenzidine	0.38682	0.41379	0.41379	0.010	-6.97092	25.00000	Averaged	
136 Benzo(a)Anthracene	1.11835	1.23532	1.23532	0.010	-10.45883	25.00000	Averaged	
137 Chrysene	1.12044	1.15024	1.15024	0.010	-2.66007	25.00000	Averaged	
139 bis(2-ethylhexyl)Phthalate	0.80253	0.80236	0.80236	0.010	0.02174	25.00000	Averaged	
140 Di-n-octylphthalate	1.42169	1.31458	1.31458	0.010	7.53425	20.00000	Averaged	
141 Benzo(b)fluoranthene	1.27559	1.22384	1.22384	0.010	4.05695	25.00000	Averaged	
142 Benzo(k)fluoranthene	1.35972	1.40863	1.40863	0.010	-3.59768	25.00000	Averaged	
143 7,12-dimethylbenz[a]anthrac	0.59548	0.56091	0.56091	0.010	5.80670	25.00000	Averaged	
146 Benzo(a)pyrene	1.06004	1.04929	1.04929	0.010	1.01428	20.00000	Averaged	

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 722.i
Lab File ID: F08260C1.D
Analysis Type:
Lab Sample ID: sstd4
Method: \\PITSVR06\d\chem\722.i\082610.b\LL.m

Injection Date: 26-AUG-2010 04:38
Init. Cal. Date(s): 13-AUG-2010 18-AUG-2010
Init. Cal. Times: 06:08 02:51
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
149 Indeno(1,2,3-cd)pyrene	4.00000	4.29535	1.16687	0.010	-7.38363	25.00000	Quadratic
150 Dibenz(a,h)anthracene	4.00000	4.26805	0.94500	0.010	-6.70124	25.00000	Quadratic
151 Benzo(g,h,i)perylene	4.00000	4.23123	1.03350	0.010	-5.78068	25.00000	Quadratic
$ 154 Nitrobenzene-d5	0.39484	0.40705	0.40705	0.010	-3.09210	25.00000	Averaged
$ 155 2-Fluorobiphenyl	1.33044	1.40491	1.40491	0.010	-5.59702	25.00000	Averaged
$ 156 Terphenyl-d14	0.85341	0.79757	0.79757	0.010	6.54310	25.00000	Averaged
$ 157 Phenol-d5	1.62031	1.72368	1.72368	0.010	-6.37926	25.00000	Averaged
$ 158 2-Fluorophenol	1.30430	1.27616	1.27616	0.010	2.15735	25.00000	Averaged
$ 159 2,4,6-Tribromophenol	0.08713	0.08223	0.08223	0.010	5.61901	25.00000	Averaged
$ 186 2-Chlorophenol-d4	1.44482	1.61726	1.61726	0.010	-11.93504	25.00000	Averaged
$ 187 1,2-Dichlorobenzene-d4	1.00580	1.05695	1.05695	0.010	-5.08605	25.00000	Averaged

SW846 8270C METHOD BLANK SUMMARY

BLANK WORKORDER NO.: L54X01AA

Lab Name: TestAmerica Laboratories, Inc.

Lab Code: TALPIT

SDG Number:

Lab File ID: F0826021.

Lot Number: C0H250417

Date Analyzed: 08/26/10

Time Analyzed: 12:12

Matrix: SOLID

Date Extracted: 08/25/10

GC Column: HP5MS ID: .25

Extraction Method:

Instrument ID: 722

Level: (low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	MARSHY POINT-SS	L537V1AD	F0827023.	08/27/10	14:14
02	MARSHY POINT-01	L537W1AC	F0826025.	08/26/10	13:31
03	MARSHY POINT-02	L53701AC	F0826026.	08/26/10	13:51
04	MARSHY POINT-04	L53711AC	F0826027.	08/26/10	14:10
05	BOWLEYS QUARTERS-SS	L53721AD	F0826028.	08/26/10	14:30
06	BOWLEYS QUARTERS-01	L53741AC	F0826029.	08/26/10	14:50
07	BOWLEYS QUARTERS-02	L53761AC	F0826030.	08/26/10	15:10
08	BOWLEYS QUARTERS-04	L53771AC	F0826031.	08/26/10	15:30
09	CHECK SAMPLE	L54X01AC C	F0826022.	08/26/10	12:32
10	DUPLICATE CHECK	L54X01AD L	F0826023.	08/26/10	12:52
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COMMENTS:

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: C0H250417	**Work Order #...:** L54X01AA	**Matrix.....:** SOLID
MB Lot-Sample #: C0H250000-335		
	Prep Date.....: 08/25/10	**Analysis Time..:** 12:12
Analysis Date..: 08/26/10	**Prep Batch #...:** 0237335	**Final Wgt/Vol..:** 0.5 mL
Dilution Factor: 0.5	**Initial Wgt/Vol:** 30 g	**Instrument ID..:** 722
	Analyst ID.....: 007062	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Naphthalene	ND	3.4	ug/kg	SW846 8270C
Acenaphthylene	ND	3.4	ug/kg	SW846 8270C
Acenaphthene	ND	3.4	ug/kg	SW846 8270C
Fluorene	ND	3.4	ug/kg	SW846 8270C
Phenanthrene	ND	3.4	ug/kg	SW846 8270C
Anthracene	ND	3.4	ug/kg	SW846 8270C
Fluoranthene	ND	3.4	ug/kg	SW846 8270C
Pyrene	ND	3.4	ug/kg	SW846 8270C
Benzo(a)anthracene	ND	3.4	ug/kg	SW846 8270C
Chrysene	ND	3.4	ug/kg	SW846 8270C
Benzo(b)fluoranthene	ND	3.4	ug/kg	SW846 8270C
Benzo(k)fluoranthene	ND	3.4	ug/kg	SW846 8270C
Benzo(a)pyrene	ND	3.4	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	3.4	ug/kg	SW846 8270C
Dibenzo(a,h)anthracene	ND	3.4	ug/kg	SW846 8270C
Benzo(ghi)perylene	ND	3.4	ug/kg	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	72	(27 - 110)
Terphenyl-d14	69	(21 - 130)
2-Fluorobiphenyl	66	(28 - 108)
2-Fluorophenol	66	(28 - 107)
Phenol-d5	74	(30 - 112)
2,4,6-Tribromophenol	68	(21 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.:

Lab File ID: F0827DF1 DFTPP Injection Date: 08/27/10

Instrument ID: 722 DFTPP Injection Time: 0523

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	38.3
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	53.9
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	54.7
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	25.4
365	Greater than 1.0% of mass 198	2.34
441	Present, but less than mass 443	8.3
442	40.0 - 100.0% of mass 198	45.9
443	17.0 - 23.0% of mass 442	9.3 (20.2)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD4	SSTD4	F08270C2	08/27/10	0556
02	MARSHY POINT	L537V1AD	F0827023	08/27/10	1414
03					
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Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 722.i
Lab File ID: F08270C2.D
Analysis Type:
Lab Sample ID: sstd4
Method: \\PITSVR06\d\chem\722.i\082710.b\LL.m

Injection Date: 27-AUG-2010 05:56
Init. Cal. Date(s): 13-AUG-2010 18-AUG-2010
Init. Cal. Times: 06:08 02:51
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
198 1,4-Dioxane	0.29106	0.24495	0.24495	0.010	15.84170	25.00000	Averaged	
220 Benzaldehyde	4.00000	4.81626	1.12540	0.010	-20.40660	25.00000	Quadratic	
10 N-Nitrosodimethylamine	0.74398	0.80680	0.80680	0.010	-8.44421	25.00000	Averaged	
9 Pyridine	1.27436	1.25035	1.25035	0.010	1.88465	25.00000	Averaged	
16 Methyl methanesulfonate	0.68235	0.70428	0.70428	0.010	-3.21383	25.00000	Averaged	
21 Aniline	1.70284	2.08219	2.08219	0.010	-22.27707	25.00000	Averaged	
22 Phenol	1.79600	1.81576	1.81576	0.010	-1.10028	20.00000	Averaged	
23 bis(2-Chloroethyl)ether	1.28128	1.38499	1.38499	0.010	-8.09433	25.00000	Averaged	
24 2-Chlorophenol	1.42311	1.54546	1.54546	0.010	-8.59747	25.00000	Averaged	
26 1,3-Dichlorobenzene	1.63940	1.61999	1.61999	0.010	1.18441	25.00000	Averaged	
27 1,4-Dichlorobenzene	1.65413	1.67035	1.67035	0.010	-0.98066	20.00000	Averaged	
28 1,2-Dichlorobenzene	1.57008	1.58825	1.58825	0.010	-1.15683	25.00000	Averaged	
227 Indene	2.43306	2.50633	2.50633	0.010	-3.01148	25.00000	Averaged	
29 Benzyl Alcohol	0.82797	0.59053	0.59053	0.010	28.67724	25.00000	Averaged	<-
30 2-Methylphenol	1.24095	1.36668	1.36668	0.010	-10.13175	25.00000	Averaged	
31 2,2'-oxybis(1-Chloropropane	1.24125	1.29156	1.29156	0.010	-4.05278	25.00000	Averaged	
37 Acetophenone	1.87656	1.94089	1.94089	0.010	-3.42824	25.00000	Averaged	
32 N-Nitroso-di-n-propylamine	0.95005	1.01302	1.01302	0.050	-6.62824	25.00000	Averaged	
192 4-Methylphenol	1.27846	1.21576	1.21576	0.010	4.90402	25.00000	Averaged	
34 Hexachloroethane	0.63096	0.66749	0.66749	0.010	-5.78950	25.00000	Averaged	
35 Nitrobenzene	0.39916	0.42402	0.42402	0.010	-6.22645	25.00000	Averaged	
36 N-Nitrosopyrrolidine	0.59099	0.58790	0.58790	0.010	0.52303	25.00000	Averaged	
41 Isophorone	0.64436	0.66555	0.66555	0.010	-3.28931	25.00000	Averaged	
42 2-Nitrophenol	0.19994	0.19731	0.19731	0.010	1.31571	20.00000	Averaged	
43 2,4-Dimethylphenol	0.35681	0.36346	0.36346	0.010	-1.86400	25.00000	Averaged	
44 bis(2-Chloroethoxy)methane	0.39803	0.40503	0.40503	0.010	-1.76062	25.00000	Averaged	
48 2,4-Dichlorophenol	0.29499	0.29021	0.29021	0.010	1.61989	20.00000	Averaged	
49 Benzoic Acid	10.00000	2.28313	0.00886	0.010	77.16867	25.00000	Quadratic	<-
50 1,2,4-Trichlorobenzene	0.34075	0.35278	0.35278	0.010	-3.52804	25.00000	Averaged	
51 Naphthalene	1.05766	1.08223	1.08223	0.010	-2.32291	25.00000	Averaged	
52 4-Chloroaniline	0.41036	0.42177	0.42177	0.010	-2.78097	25.00000	Averaged	
54 2,6-Dichlorophenol	0.29694	0.29020	0.29020	0.010	2.27055	25.00000	Averaged	
56 Hexachlorobutadiene	0.20295	0.20511	0.20511	0.010	-1.06552	20.00000	Averaged	
221 Caprolactam	0.08615	0.06838	0.06838	0.010	20.63507	25.00000	Averaged	
59 4-Chloro-3-Methylphenol	0.29657	0.28975	0.28975	0.010	2.29803	20.00000	Averaged	
62 2-Methylnaphthalene	0.70006	0.71512	0.71512	0.010	-2.15218	25.00000	Averaged	
205 1-Methylnaphthalene	0.67473	0.71096	0.71096	0.010	-5.36918	25.00000	Averaged	
64 Hexachlorocyclopentadiene	4.00000	4.36913	0.32098	0.050	-9.22827	25.00000	Quadratic	
65 1,2,4,5-Tetrachlorobenzene	0.52207	0.59510	0.59510	0.010	-13.98975	25.00000	Averaged	
66 2,4,6-Trichlorophenol	0.37985	0.34490	0.34490	0.010	9.19978	20.00000	Averaged	
67 2,4,5-Trichlorophenol	0.38378	0.34546	0.34546	0.010	9.98518	25.00000	Averaged	
222 1,1'-Biphenyl	1.51728	1.52908	1.52908	0.010	-0.77770	25.00000	Averaged	

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 722.i
Lab File ID: F08270C2.D
Analysis Type:
Lab Sample ID: sstd4
Method: \\PITSVR06\d\chem\722.i\082710.b\LL.m

Injection Date: 27-AUG-2010 05:56
Init. Cal. Date(s): 13-AUG-2010 18-AUG-2010
Init. Cal. Times: 06:08 02:51
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
70 2-Chloronaphthalene	1.18811	1.14480	1.14480	0.010	3.64559	25.00000	Averaged	
73 2-Nitroaniline	0.32323	0.30590	0.30590	0.010	5.36154	25.00000	Averaged	
76 Dimethylphthalate	1.25536	1.13140	1.13140	0.010	9.87432	25.00000	Averaged	
78 2,6-Dinitrotoluene	0.27836	0.26549	0.26549	0.010	4.62172	25.00000	Averaged	
79 Acenaphthylene	1.68161	1.78587	1.78587	0.010	-6.19969	25.00000	Averaged	
81 3-Nitroaniline	0.30049	0.28113	0.28113	0.010	6.44222	25.00000	Averaged	
82 Acenaphthene	1.17444	1.17956	1.17956	0.010	-0.43642	20.00000	Averaged	
83 2,4-Dinitrophenol	10.00000	9.18906	0.05333	0.050	8.10937	25.00000	Quadratic	
85 4-Nitrophenol	0.18122	0.16473	0.16473	0.050	9.10228	25.00000	Averaged	
86 Dibenzofuran	1.61951	1.60890	1.60890	0.010	0.65564	25.00000	Averaged	
87 2,4-Dinitrotoluene	0.36497	0.35246	0.35246	0.010	3.42707	25.00000	Averaged	
91 2,3,5,6-Tetrachlorophenol	4.00000	3.91739	0.27967	0.010	2.06528	25.00000	Quadratic	
88 2,3,4,6-Tetrachlorophenol	0.30399	0.29294	0.29294	0.010	3.63540	25.00000	Averaged	
92 2-Naphthylamine	4.00000	6.81243	0.89538	0.010	-70.31077	25.00000	Quadratic	<-
93 Diethylphthalate	1.20869	1.11821	1.11821	0.010	7.48552	25.00000	Averaged	
94 Fluorene	1.32661	1.28698	1.28698	0.010	2.98753	25.00000	Averaged	
95 4-Chlorophenyl-phenylether	0.65102	0.63128	0.63128	0.010	3.03337	25.00000	Averaged	
96 4-Nitroaniline	0.29745	0.27682	0.27682	0.010	6.93361	25.00000	Averaged	
98 4,6-Dinitro-2-methylphenol	10.00000	8.49917	0.09488	0.010	15.00831	25.00000	Quadratic	
99 N-Nitrosodiphenylamine	0.58848	0.55036	0.55036	0.010	6.47714	20.00000	Averaged	
100 1,2-Diphenylhydrazine	0.88846	0.92114	0.92114	0.010	-3.67907	25.00000	Averaged	
106 4-Bromophenyl-phenylether	0.23031	0.22775	0.22775	0.010	1.11109	25.00000	Averaged	
107 Hexachlorobenzene	0.22539	0.21779	0.21779	0.010	3.37397	25.00000	Averaged	
223 Atrazine	0.11077	0.19995	0.19995	0.010	-80.50974	25.00000	Averaged	<-
111 Pentachlorophenol	10.00000	10.35656	0.13039	0.025	-3.56559	20.00000	Quadratic	
115 Phenanthrene	1.14073	1.15904	1.15904	0.010	-1.60508	25.00000	Averaged	
116 Anthracene	1.14503	1.14570	1.14570	0.010	-0.05887	25.00000	Averaged	
119 Carbazole	1.00915	1.01177	1.01177	0.010	-0.25938	25.00000	Averaged	
120 Di-n-Butylphthalate	1.22599	1.09338	1.09338	0.010	10.81661	25.00000	Averaged	
123 Fluoranthene	1.11768	1.09159	1.09159	0.010	2.33442	20.00000	Averaged	
124 Benzidine	4.00000	3.74207	0.28921	0.010	6.44835	25.00000	Quadratic	
125 Pyrene	1.29042	1.33729	1.33729	0.010	-3.63219	25.00000	Averaged	
131 Butylbenzylphthalate	0.57769	0.40379	0.40379	0.010	30.10269	25.00000	Averaged	<-
135 3,3'-Dichlorobenzidine	0.38682	0.36693	0.36693	0.010	5.14179	25.00000	Averaged	
136 Benzo(a)Anthracene	1.11835	1.08646	1.08646	0.010	2.85152	25.00000	Averaged	
137 Chrysene	1.12044	1.12527	1.12527	0.010	-0.43110	25.00000	Averaged	
139 bis(2-ethylhexyl)Phthalate	0.80253	0.79393	0.79393	0.010	1.07133	25.00000	Averaged	
140 Di-n-octylphthalate	1.42169	1.33731	1.33731	0.010	5.93557	20.00000	Averaged	
141 Benzo(b)fluoranthene	1.27559	1.17639	1.17639	0.010	7.77689	25.00000	Averaged	
142 Benzo(k)fluoranthene	1.35972	1.26833	1.26833	0.010	6.72080	25.00000	Averaged	
143 7,12-dimethylbenz[a]anthrac	0.59548	0.55087	0.55087	0.010	7.49231	25.00000	Averaged	
146 Benzo(a)pyrene	1.06004	0.94485	0.94485	0.010	10.86656	20.00000	Averaged	

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 722.i
Lab File ID: F08270C2.D
Analysis Type:
Lab Sample ID: sstd4
Method: \\PITSVR06\d\chem\722.i\082710.b\LL.m

Injection Date: 27-AUG-2010 05:56
Init. Cal. Date(s): 13-AUG-2010 18-AUG-2010
Init. Cal. Times: 06:08 02:51
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
149 Indeno(1,2,3-cd)pyrene	4.00000	5.12719	1.42743	0.010	-28.17986	25.00000	Quadratic	<-
150 Dibenz(a,h)anthracene	4.00000	4.95477	1.12159	0.010	-23.86920	25.00000	Quadratic	
151 Benzo(g,h,i)perylene	4.00000	4.67248	1.15227	0.010	-16.81196	25.00000	Quadratic	
$ 154 Nitrobenzene-d5	0.39484	0.39442	0.39442	0.010	0.10775	25.00000	Averaged	
$ 155 2-Fluorobiphenyl	1.33044	1.27306	1.27306	0.010	4.31301	25.00000	Averaged	
$ 156 Terphenyl-d14	0.85341	0.83456	0.83456	0.010	2.20912	25.00000	Averaged	
$ 157 Phenol-d5	1.62031	1.63349	1.63349	0.010	-0.81328	25.00000	Averaged	
$ 158 2-Fluorophenol	1.30430	1.13233	1.13233	0.010	13.18450	25.00000	Averaged	
$ 159 2,4,6-Tribromophenol	0.08713	0.07625	0.07625	0.010	12.48241	25.00000	Averaged	
$ 186 2-Chlorophenol-d4	1.44482	1.50598	1.50598	0.010	-4.23333	25.00000	Averaged	
$ 187 1,2-Dichlorobenzene-d4	1.00580	1.03553	1.03553	0.010	-2.95606	25.00000	Averaged	

SW846 8270C SURROGATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H250417

Extraction: XXA4F4201

	CLIENT ID.	SRG01	SRG02	SRG03	SRG04	SRG05	SRG06	TOT OUT
01	MARSHY POINT-SS	81	71	78	71	79	68	00
02	MARSHY POINT-01	82	70	74	73	82	72	00
03	MARSHY POINT-02	68	60	62	55	61	64	00
04	MARSHY POINT-04	77	66	71	69	78	69	00
05	BOWLEYS QUARTERS-SS	70	64	67	61	69	69	00
06	BOWLEYS QUARTERS-01	104	93	99	94	105	93	00
07	BOWLEYS QUARTERS-02	78	67	73	68	78	74	00
08	BOWLEYS QUARTERS-04	67	64	69	62	73	72	00
09	METHOD BLK. L54X01AA	72	69	66	66	74	68	00
10	LCS L54X01AC	73	67	71	69	74	72	00
11	LCSD L54X01AD	76	72	75	72	77	78	00

SURROGATES		QC LIMITS
SRG01	= Nitrobenzene-d5	(27-110)
SRG02	= Terphenyl-d14	(21-130)
SRG03	= 2-Fluorobiphenyl	(28-108)
SRG04	= 2-Fluorophenol	(28-107)
SRG05	= Phenol-d5	(30-112)
SRG06	= 2,4,6-Tribromophenol	(21-116)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8270C CHECK SAMPLE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H250000 WO #: L54X01AC
BATCH: 0237335

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENT. (ug/kg)	% REC	QC LIMITS REC	QUAL
Phenol	333	215	65	39- 105	
2-Chlorophenol	333	236	71	40- 105	
1,4-Dichlorobenzene	333	222	67	41- 101	
N-Nitrosodi-n-propylamine	333	232	70	42- 108	
1,2,4-Trichlorobenzene	333	223	67	41- 105	
4-Chloro-3-methylphenol	333	226	68	43- 110	
Acenaphthene	333	221	66	42- 104	
4-Nitrophenol	333	239	72	27- 131	
2,4-Dinitrotoluene	333	259	78	48- 118	
Pentachlorophenol	333	214	64	18- 125	
Pyrene	333	199	60	39- 113	
4-Methylphenol	667	442	66	43- 107	
Hexachloroethane	333	229	69	40- 102	
Naphthalene	333	224	67	42- 104	
4-Bromophenyl phenyl ethe	333	205	61	43- 111	
Butyl benzyl phthalate	333	221	66	40- 117	

NOTES(S):

Values outside of QC limits

pike Recovery: 0 out of 16 outside limits

OMMENTS:

SW846 8270C CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H250000 WO #: L54X01AD
BATCH: 0237335

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENT. (ug/kg)	% REC	QC LIMITS REC	QUAL
4-Bromophenyl phenyl ethe	333	242	73	43- 111	
Butyl benzyl phthalate	333	248	74	40- 117	
Phenol	333	233	70	39- 105	
2-Chlorophenol	333	256	77	40- 105	
1,4-Dichlorobenzene	333	246	74	41- 101	
N-Nitrosodi-n-propylamine	333	252	76	42- 108	
1,2,4-Trichlorobenzene	333	242	73	41- 105	
4-Chloro-3-methylphenol	333	259	78	43- 110	
Acenaphthene	333	242	72	42- 104	
4-Nitrophenol	333	280	84	27- 131	
2,4-Dinitrotoluene	333	286	86	48- 118	
Pentachlorophenol	333	239	72	18- 125	
Pyrene	333	224	67	39- 113	
4-Methylphenol	667	482	72	43- 107	
Hexachloroethane	333	251	75	40- 102	
Naphthalene	333	246	74	42- 104	

NOTES(S):

Values outside of QC limits

Spike Recovery: 0 out of 16 outside limits

COMMENTS:

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.: C0H250417

Lab File ID (Standard): F08260C1 Date Analyzed: 08/26/10

Instrument ID: 722 Time Analyzed: 0438

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	60610	4.25	222764	5.27	118257	6.65
	UPPER LIMIT	121220	4.75	445528	5.77	236514	7.15
	LOWER LIMIT	30305	3.75	111382	4.77	59129	6.15
	CLIENT SAMPLE NO.						
01	INTRA-LAB BL	68061	4.25	248933	5.26	141580	6.63
02	INTRA-LAB CH	63155	4.25	236737	5.26	131310	6.63
03	INTRA-LAB CH	73865	4.25	271782	5.26	150322	6.64
04	MARSHY POINT	51582	4.25	200970	5.26	121676	6.62
05	MARSHY POINT	59478	4.25	218336	5.25	129217	6.62
06	MARSHY POINT	57092	4.25	217852	5.26	128574	6.62
07	BOWLEYS QUAR	60333	4.25	227227	5.26	133725	6.63
08	BOWLEYS QUAR	55332	4.25	210441	5.26	126160	6.62
09	BOWLEYS QUAR	58801	4.25	229551	5.26	138876	6.63
10	BOWLEYS QUAR	59628	4.25	230844	5.26	135693	6.62
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22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.: C0H250417

Lab File ID (Standard): F08260C1 Date Analyzed: 08/26/10

Instrument ID: 722 Time Analyzed: 0438

		IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
	12 HOUR STD	183306	7.82	189828	10.17	190417	11.75
	UPPER LIMIT	366612	8.32	379656	10.67	380834	12.25
	LOWER LIMIT	91653	7.32	94914	9.67	95209	11.25
	CLIENT SAMPLE NO.						
01	INTRA-LAB BL	216313	7.79	216028	10.13	223111	11.70
02	INTRA-LAB CH	214265	7.79	226793	10.12	227369	11.69
03	INTRA-LAB CH	239705	7.79	256437	10.13	255592	11.70
04	MARSHY POINT	201339	7.78	232588	10.12	241951	11.69
05	MARSHY POINT	210685	7.78	246416	10.12	264150	11.69
06	MARSHY POINT	221078	7.78	254727	10.12	267384	11.69
07	BOWLEYS QUAR	224452	7.78	259950	10.11	279642	11.69
08	BOWLEYS QUAR	216528	7.78	252380	10.12	270188	11.68
09	BOWLEYS QUAR	238472	7.78	281407	10.13	294073	11.69
10	BOWLEYS QUAR	234205	7.78	288764	10.12	311702	11.68
11							
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21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.: C0H250417

Lab File ID (Standard): F08270C2 Date Analyzed: 08/27/10

Instrument ID: 722 Time Analyzed: 0556

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	77313	4.25	291941	5.25	167689	6.62
	UPPER LIMIT	154626	4.75	583882	5.75	335378	7.12
	LOWER LIMIT	38657	3.75	145971	4.75	83845	6.12
	CLIENT SAMPLE NO.						
01	MARSHY POINT	61642	4.25	220989	5.25	127044	6.60
02							
03							
04							
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21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.: C0H250417

Lab File ID (Standard): F08270C2 Date Analyzed: 08/27/10

Instrument ID: 722 Time Analyzed: 0556

		IS4(PHN) AREA	#	RT	#	IS5(CRY) AREA	#	RT	#	IS6(PRY) AREA	#	RT	#
	12 HOUR STD	246151		7.77		206415		10.10		189116		11.67	
	UPPER LIMIT	492302		8.27		412830		10.60		378232		12.17	
	LOWER LIMIT	123076		7.27		103208		9.60		94558		11.17	
	CLIENT SAMPLE NO.												
01	MARSHY POINT	194092		7.75		209959		10.06		217692		11.63	
02													
03													
04													
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21													
22													

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

PESTICIDE ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: SDGA05064

GC Column: MR-2 ID: 0.53 (mm) Init. Calib. Date(s): 09/02/10 09/02/10

Instrument ID: GC14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01		M2154	09/02/10	1444		
02		M1232	09/02/10	1504		
03		M1242	09/02/10	1525		
04		M1248	09/02/10	1545		
05		M1262	09/02/10	1605		
06		M1268	09/02/10	1626		
07		XL1660	09/02/10	1646		
08		L1660	09/02/10	1707		
09		ML1660	09/02/10	1727		
10		M1660	09/02/10	1747		
11		MH1660	09/02/10	1808		
12		H1660	09/02/10	1828		
13		2M2154	09/02/10	1909		
14		2M1232	09/02/10	1929		
15		2M1242	09/02/10	1950		
16		2M1248	09/02/10	2010		
17		2M1262	09/02/10	2030		
18		2M1268	09/02/10	2051		
19		2M1660	09/02/10	2111		
20						
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QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Report Date : 03-Sep-2010 10:53

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

6E
HP6890 GC-14
MR-2

Start Cal Date : 02-SEP-2010 14:44
End Cal Date : 02-SEP-2010 18:49
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc14.i\09020.B\yPCBB.m
Last Edit : 03-Sep-2010 10:52 gc14.i
Curve Type : Average

Calibration File Names:
Level 1: \\PITSVR06\D\chem\gc14.i\09020.B\Z0900067.D
Level 2: \\PITSVR06\D\chem\gc14.i\09020.B\Z0900068.D
Level 3: \\PITSVR06\D\chem\gc14.i\09020.B\Z0900069.D
Level 4: \\PITSVR06\D\chem\gc14.i\09020.B\Z0900070.D
Level 5: \\PITSVR06\D\chem\gc14.i\09020.B\Z0900071.D
Level 6: \\PITSVR06\D\chem\gc14.i\09020.B\Z0900072.D
Level 7: \\PITSVR06\D\chem\gc14.i\09020.B\Z0900066.D

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	0.01000 Level 7	RRF	% RSD	
1 Aroclor-1221(1)	+++++	+++++	333554	+++++	+++++	+++++	+++++	333554	0.000	
(2)	+++++	+++++	213892	+++++	+++++	+++++	+++++	213892	0.000	<-
(3)	+++++	+++++	747008	+++++	+++++	+++++	+++++	747008	0.000	<-
3 Aroclor-1232(1)	+++++	+++++	360014	+++++	+++++	+++++	+++++	360014	0.000	<-
(2)	+++++	+++++	356318	+++++	+++++	+++++	+++++	356318	0.000	<-
(3)	+++++	+++++	276108	+++++	+++++	+++++	+++++	276108	0.000	<-
(4)	+++++	+++++	370766	+++++	+++++	+++++	+++++	370766	0.000	<-
(5)	+++++	+++++	238432	+++++	+++++	+++++	+++++	238432	0.000	<-

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 02-SEP-2010 14:44
End Cal Date : 02-SEP-2010 18:49
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc14.i\09020.B\yPCBB.m
Last Edit : 03-Sep-2010 10:52 gc14.i
Curve Type : Average

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD
	0.01000 Level 7							
4 Aroclor-1016(1)	923640	903530	846942	771091	779265	+++++		
	1057200						880278	12.125
(2)	1014220	1001495	918888	922578	901680	+++++		
	1340600						1016577	16.271
(3)	858560	891405	872630	883862	870915	+++++		
	926800						884029	2.693
(4)	992620	935650	889400	881750	865801	+++++		
	1278700						973987	16.040
(5)	721620	705110	643744	644573	626205	+++++		
	1010800						725342	19.971
5 Aroclor-1242(1)	+++++	+++++	420486	+++++	+++++	+++++		
	+++++						420486	0.000
(2)	+++++	+++++	679866	+++++	+++++	+++++		
	+++++						679866	0.000
(3)	+++++	+++++	713230	+++++	+++++	+++++		
	+++++						713230	0.000
(4)	+++++	+++++	445850	+++++	+++++	+++++		
	+++++						445850	0.000
(5)	+++++	+++++	339342	+++++	+++++	+++++		
	+++++						339342	0.000
6 Aroclor-1248(1)	+++++	+++++	1041508	+++++	+++++	+++++		
	+++++						1041508	0.000

Report Date : 03-Sep-2010 10:53

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 02-SEP-2010 14:44
End Cal Date : 02-SEP-2010 18:49
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc14.i\09020.B\yPCBB.m
Last Edit : 03-Sep-2010 10:52 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
(2)	+++++ / +++++	+++++	406940	+++++	+++++	+++++	406940	0.000	<-
(3)	+++++ / +++++	+++++	491322	+++++	+++++	+++++	491322	0.000	<-
(4)	+++++ / +++++	+++++	436776	+++++	+++++	+++++	436776	0.000	<-
(5)	+++++ / +++++	+++++	619976	+++++	+++++	+++++	619976	0.000	<-
7 Aroclor-1254(1)	+++++ / +++++	+++++	1144822	+++++	+++++	+++++	1144822	0.000	
(2)	+++++ / +++++	+++++	1902580	+++++	+++++	+++++	1902580	0.000	
(3)	+++++ / +++++	+++++	1069714	+++++	+++++	+++++	1069714	0.000	
(4)	+++++ / +++++	+++++	1454892	+++++	+++++	+++++	1454892	0.000	
(5)	+++++ / +++++	+++++	1011000	+++++	+++++	+++++	1011000	0.000	
8 Aroclor-1260(1)	1986280 / 2213400	1934205	1774966	1677980	1652811	+++++	1873274	11.414	
(2)	2615500 / 2792900	2439275	2323566	2229388	2207857	+++++	2434748	9.491	

Report Date : 03-Sep-2010 10:53

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 02-SEP-2010 14:44
End Cal Date : 02-SEP-2010 18:49
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc14.i\09020.B\yPCBB.m
Last Edit : 03-Sep-2010 10:52 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
(3)	2254800 / 2375500	2139695	2002940	1848940	1874135	+++++	2082668	10.143	
(4)	2246000 / 2531300	2094370	2023828	1814592	1842167	+++++	2092043	12.839	
(5)	1100260 / 1166900	1044560	931270	904051	891643	+++++	1006447	11.356	
9 Aroclor-1262 (1)	+++++ / +++++	+++++	2762654	+++++	+++++	+++++	2762654	0.000	
(2)	+++++ / +++++	+++++	2303116	+++++	+++++	+++++	2303116	0.000	<-
(3)	+++++ / +++++	+++++	4765290	+++++	+++++	+++++	4765290	0.000	<-
(4)	+++++ / +++++	+++++	1934972	+++++	+++++	+++++	1934972	0.000	<-
(5)	+++++ / +++++	+++++	3053472	+++++	+++++	+++++	3053472	0.000	<-
10 Aroclor-1268 (1)	+++++ / +++++	+++++	5707960	+++++	+++++	+++++	5707960	0.000	
(2)	+++++ / +++++	+++++	4924600	+++++	+++++	+++++	4924600	0.000	<-
(3)	+++++ / +++++	+++++	4014208	+++++	+++++	+++++	4014208	0.000	<-

Report Date : 03-Sep-2010 10:53

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 02-SEP-2010 14:44
End Cal Date : 02-SEP-2010 18:49
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc14.i\09020.B\yPCBB.m
Last Edit : 03-Sep-2010 10:52 gc14.i
Curve Type : Average

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	0.01000 Level 7	RRF	% RSD	
(4)	+++++	+++++	1271086	+++++	+++++	+++++	+++++	1271086	0.000	<-
$ 2 Tetrachloro-m-xylene	25362400	26401900	28279400	27883340	27449500	+++++	29194000	27428423	4.991	
$ 11 Decachlorobiphenyl	16775600	14740100	16316480	15102760	15062600	+++++	18336000	16055590	8.545	

Data File: \\PITSVR06\D\chem\gc14.i\09020.B\Z0900079.D
Report Date: 03-Sep-2010 10:57

7E
HP6890 GC-14
MR-2

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc14.i
Lab File ID: Z0900079.D
Analysis Type: ~~AIR~~ NONE
Lab Sample ID: 2M1660
Method: \\PITSVR06\D\chem\gc14.i\09020.B\yPCBB.m

Injection Date: 02-SEP-2010 21:11
Init. Cal. Date(s): 02-SEP-2010 02-SEP-2010
Init. Cal. Times: 14:44 18:49
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF0.500	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
4 Aroclor-1016 (1)	880278	835130	0.010	5.12883	15.00000	Averaged	
(2)	1016577	939096	0.010	7.62173	15.00000	Averaged	
(3)	884029	870368	0.010	1.54527	15.00000	Averaged	
(4)	973987	906108	0.010	6.96917	15.00000	Averaged	
(5)	725342	608146	0.010	16.15733	15.00000	Averaged	<- O.K.
$ 2 Tetrachloro-m-xylene	27428423	++++	0.000	++++	15.00000	Averaged	<- N.A.
$ 11 Decachlorobiphenyl	16055590	368280	0.010	97.70622	15.00000	Averaged	<- N.A.
8 Aroclor-1260 (1)	1873274	1891140	0.010	-0.95375	15.00000	Averaged	
(2)	2434748	2445674	0.010	-0.44877	15.00000	Averaged	
(3)	2082668	2111940	0.010	-1.40549	15.00000	Averaged	
(4)	2092043	1839330	0.010	12.07971	15.00000	Averaged	
(5)	1006447	935944	0.010	7.00517	15.00000	Averaged	

AA 9/3/10

8D
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: C0H250417

GC Column: MR-2 ID: 0.53 (mm) Init. Calib. Date(s): 09/02/10 09/02/10

Instrument ID: GC14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 6.05 DCB: 13.23

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	MARSHY POINT	L537V1AE	09/03/10	0035	6.05	13.23
02	MARSHY POINT	L537W1AD	09/03/10	0055	6.05	13.23
03	MARSHY POINT	L53701AD	09/03/10	0116	6.05	13.24
04	MARSHY POINT	L53711AD	09/03/10	0136	6.05	13.23
05	BOWLEYS QUAR	L53721AE	09/03/10	0156	6.05	13.23
06	BOWLEYS QUAR	L53741AD	09/03/10	0217	6.05	13.23
07	BOWLEYS QUAR	L53761AD	09/03/10	0237	6.05	13.23
08	BOWLEYS QUAR	L53771AD	09/03/10	0257	6.05	13.23
09	PBLK7336	L54X91AA	09/03/10	0318	6.05	13.23
10	LCS7336	L54X91AC	09/03/10	0338	6.05	13.24
11	LCSD7336	L54X91AD	09/03/10	0358	6.05	13.23
12		MH1660	09/03/10	0419	6.04	13.23
13						
14						
15						
16						
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18						
19						
20						
21						
22						
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24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Data File: \\PITSVR06\D\chem\gc14.i\09020.B\Z0900100.D
Report Date: 03-Sep-2010 10:49

7E
MH6890 GC-14
MR-2

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc14.i
Lab File ID: Z0900100.D
Analysis Type:
Lab Sample ID: MH1660
Method: \\PITSVR06\D\chem\gc14.i\09020.B\yPCBB.m

Injection Date: 03-SEP-2010 04:19
Init. Cal. Date(s): 02-SEP-2010 02-SEP-2010
Init. Cal. Times: 14:44 18:49
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF1	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
4 Aroclor-1016 (1)	880278	780250	0.010	11.36322	15.00000	Averaged
(2)	1016577	934158	0.010	8.10748	15.00000	Averaged
(3)	884029	909863	0.010	-2.92234	15.00000	Averaged
(4)	973987	901346	0.010	7.45809	15.00000	Averaged
(5)	725342	657779	0.010	9.31463	15.00000	Averaged
$ 2 Tetrachloro-m-xylene	27428423	27524400	0.000	-0.34992	15.00000	Averaged
$ 11 Decachlorobiphenyl	16055590	15068660	0.010	6.14696	15.00000	Averaged
8 Aroclor-1260 (1)	1873274	1716253	0.010	8.38215	15.00000	Averaged
(2)	2434748	2286053	0.010	6.10719	15.00000	Averaged
(3)	2082668	1936197	0.010	7.03287	15.00000	Averaged
(4)	2092043	1877704	0.010	10.24543	15.00000	Averaged
(5)	1006447	900617	0.010	10.51524	15.00000	Averaged

8D
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: SDGA05064

GC Column: MR-1 ID: 0.53 (mm) Init. Calib. Date(s): 09/02/10 09/02/10

Instrument ID: GC14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

			MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT	#	RT	#
01		M2154	09/02/10	1423				
02		M1232	09/02/10	1444				
03		M1242	09/02/10	1504				
04		M1248	09/02/10	1525				
05		M1262	09/02/10	1545				
06		M1268	09/02/10	1605				
07		XL1660	09/02/10	1626				
08		L1660	09/02/10	1646				
09		ML1660	09/02/10	1707				
10		M1660	09/02/10	1727				
11		MH1660	09/02/10	1747				
12		H1660	09/02/10	1808				
13		XH1660	09/02/10	1828				
14		2M2154	09/02/10	1849				
15		2M1232	09/02/10	1909				
16		2M1242	09/02/10	1929				
17		2M1248	09/02/10	1950				
18		2M1262	09/02/10	2010				
19		2M1268	09/02/10	2030				
20		2M1660	09/02/10	2051				
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Report Date : 03-Sep-2010 12:06

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 02-SEP-2010 14:23
End Cal Date : 02-SEP-2010 18:28
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc14.i\09020.B\PCBA.m
Last Edit : 03-Sep-2010 12:02 gc14.i
Curve Type : Average

6E
HP6890 GC-14
MA-1

Calibration File Names:
Level 1: \\PITSVR06\D\chem\gc14.i\09020.B\Y0900067.D
Level 2: \\PITSVR06\D\chem\gc14.i\09020.B\Y0900068.D
Level 3: \\PITSVR06\D\chem\gc14.i\09020.B\Y0900069.D
Level 4: \\PITSVR06\D\chem\gc14.i\09020.B\Y0900070.D
Level 5: \\PITSVR06\D\chem\gc14.i\09020.B\Y0900071.D
Level 6: \\PITSVR06\D\chem\gc14.i\09020.B\Y0900072.D
Level 7: \\PITSVR06\D\chem\gc14.i\09020.B\Y0900066.D

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
1 Aroclor-1221(1)	+++++ / +++++	+++++	158318	+++++	+++++	+++++	158318	0.000	
(2)	+++++ / +++++	+++++	113230	+++++	+++++	+++++	113230	0.000	
(3)	+++++ / +++++	+++++	397978	+++++	+++++	+++++	397978	0.000	<-
3 Aroclor-1232(1)	+++++ / +++++	+++++	115154	+++++	+++++	+++++	115154	0.000	
(2)	+++++ / +++++	+++++	165876	+++++	+++++	+++++	165876	0.000	<-
(3)	+++++ / +++++	+++++	184724	+++++	+++++	+++++	184724	0.000	<-
(4)	+++++ / +++++	+++++	109890	+++++	+++++	+++++	109890	0.000	<-
(5)	+++++ / +++++	+++++	142110	+++++	+++++	+++++	142110	0.000	<-

Report Date : 03-Sep-2010 12:06

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 02-SEP-2010 14:23
End Cal Date : 02-SEP-2010 18:28
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc14.i\09020.B\PCBA.m
Last Edit : 03-Sep-2010 12:02 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD
4 Aroclor-1016(1)	460380 549400	456225	436984	423273	440168	510758	468170	9.706
(2)	531180 601500	542855	523448	526302	562914	661682	564269	9.019
(3)	288460 270300	317205	312092	311855	351392	413870	323596	14.554
(4)	395560 427200	388630	372592	351875	383165	431261	392898	7.246
(5)	436580 484100	427840	405108	384361	430419	484211	436088	8.558
5 Aroclor-1242(1)	+++++ +++++	+++++	257966	+++++	+++++	+++++	257966	0.000
(2)	+++++ +++++	+++++	411314	+++++	+++++	+++++	411314	0.000
(3)	+++++ +++++	+++++	231546	+++++	+++++	+++++	231546	0.000
(4)	+++++ +++++	+++++	195370	+++++	+++++	+++++	195370	0.000
(5)	+++++ +++++	+++++	251484	+++++	+++++	+++++	251484	0.000
6 Aroclor-1248(1)	+++++ +++++	+++++	555682	+++++	+++++	+++++	555682	0.000

Report Date : 03-Sep-2010 12:06

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 02-SEP-2010 14:23
End Cal Date : 02-SEP-2010 18:28
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc14.i\09020.B\PCBA.m
Last Edit : 03-Sep-2010 12:02 gc14.i
Curve Type : Average

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	0.01000 Level 7	RRF	% RSD	
(2)	+++++	+++++	591274	+++++	+++++	+++++	+++++	591274	0.000	<-
(3)	+++++	+++++	523708	+++++	+++++	+++++	+++++	523708	0.000	<-
(4)	+++++	+++++	211982	+++++	+++++	+++++	+++++	211982	0.000	<-
(5)	+++++	+++++	126484	+++++	+++++	+++++	+++++	126484	0.000	<-
7 Aroclor-1254(1)	+++++	+++++	198072	+++++	+++++	+++++	+++++	198072	0.000	
(2)	+++++	+++++	461322	+++++	+++++	+++++	+++++	461322	0.000	<-
(3)	+++++	+++++	682708	+++++	+++++	+++++	+++++	682708	0.000	<-
(4)	+++++	+++++	405952	+++++	+++++	+++++	+++++	405952	0.000	<-
(5)	+++++	+++++	312610	+++++	+++++	+++++	+++++	312610	0.000	<-
8 Aroclor-1260(1)	584280	575520	541594	509380	557882	626132	753000	592541	13.421	
(2)	781300	778825	769718	773756	806981	916815	896800	817742	7.615	

Report Date : 03-Sep-2010 12:06

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 02-SEP-2010 14:23
End Cal Date : 02-SEP-2010 18:28
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc14.i\09020.B\PCBA.m
Last Edit : 03-Sep-2010 12:02 gc14.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.01000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
(3)	457020 / 494300	477495	466244	442566	477242	546535	480200	6.992	
(4)	1165720 / 1190400	1199850	1239132	1140195	1253732	1436877	1232272	7.984	
(5)	582800 / 677400	567015	576770	575262	625119	673214	611083	7.808	
9 Aroclor-1262(1)	+++++ / +++++	+++++	506162	+++++	+++++	+++++	506162	0.000	
(2)	+++++ / +++++	+++++	231460	+++++	+++++	+++++	231460	0.000	<-
(3)	+++++ / +++++	+++++	228222	+++++	+++++	+++++	228222	0.000	<-
(4)	+++++ / +++++	+++++	1321770	+++++	+++++	+++++	1321770	0.000	<-
(5)	+++++ / +++++	+++++	712214	+++++	+++++	+++++	712214	0.000	<-
10 Aroclor-1268(1)	+++++ / +++++	+++++	1625080	+++++	+++++	+++++	1625080	0.000	<-
(2)	+++++ / +++++	+++++	1310294	+++++	+++++	+++++	1310294	0.000	<-
(3)	+++++ / +++++	+++++	1153652	+++++	+++++	+++++	1153652	0.000	<-

Report Date : 03-Sep-2010 12:06

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 02-SEP-2010 14:23
End Cal Date : 02-SEP-2010 18:28
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc14.i\09020.B\PCBA.m
Last Edit : 03-Sep-2010 12:02 gc14.i
Curve Type : Average

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD
	0.01000 Level 7							
(4)	+++++	+++++	2981280	+++++	+++++	+++++		
	+++++						2981280	0.000 <-
$ 2 Tetrachloro-m-xylene	15285200	15474500	18029680	17686400	18674570	20767755		
	16864000						17540301	10.861
$ 11 Decachlorobiphenyl	7002000	6553300	7230320	6711440	7044030	7631285		
	9146000						7331196	11.909

8D
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: C0H250417

GC Column: MR-1 ID: 0.53 (mm) Init. Calib. Date(s): 09/02/10 09/02/10

Instrument ID: GC14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 6.03 DCB: 13.03

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	MARSHY POINT	L537V1AE	09/03/10	0014	6.03	13.04
02	MARSHY POINT	L537W1AD	09/03/10	0035	6.03	13.04
03	MARSHY POINT	L53701AD	09/03/10	0055	6.03	13.04
04	MARSHY POINT	L53711AD	09/03/10	0116	6.03	13.04
05	BOWLEYS QUAR	L53721AE	09/03/10	0136	6.03	13.04
06	BOWLEYS QUAR	L53741AD	09/03/10	0156	6.03	13.04
07	BOWLEYS QUAR	L53761AD	09/03/10	0217	6.03	13.04
08	BOWLEYS QUAR	L53771AD	09/03/10	0237	6.03	13.04
09	PBLK7336	L54X91AA	09/03/10	0257	6.03	13.04
10	LCS7336	L54X91AC	09/03/10	0318	6.02	13.04
11	LCSD7336	L54X91AD	09/03/10	0338	6.02	13.04
12		MH1660	09/03/10	0358	6.03	13.04
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.03 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Data File: \\PITSVR06\D\chem\gc14.i\09020.B\Y0900079.D
Report Date: 03-Sep-2010 12:02

TE

HP6890 GC-14

MR-1

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc14.i
Lab File ID: Y0900079.D
Analysis Type:
Lab Sample ID: 2M1660
Method: \\PITSVR06\D\chem\gc14.i\09020.B\PCBA.m

Injection Date: 02-SEP-2010 20:51
Init. Cal. Date(s): 02-SEP-2010 02-SEP-2010
Init. Cal. Times: 14:23 18:28
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF0.500	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
4 Aroclor-1016 (1)	468170	428474	400.000	8.47889	15.00000	Averaged	
(2)	564269	520160	400.000	7.81695	15.00000	Averaged	
(3)	323596	305230	400.000	5.67569	15.00000	Averaged	
(4)	392898	386574	400.000	1.60945	15.00000	Averaged	
(5)	436088	414402	400.000	4.97294	15.00000	Averaged	
$ 2 Tetrachloro-m-xylene	17540301	808600	400.000	95.39004	15.00000	Averaged	<- NA
$ 11 Decachlorobiphenyl	7331196	175680	400.000	97.60367	15.00000	Averaged	<- NA
8 Aroclor-1260 (1)	592541	568896	400.000	3.99045	15.00000	Averaged	
(2)	817742	844090	400.000	-3.22204	15.00000	Averaged	
(3)	480200	420688	400.000	12.39322	15.00000	Averaged	
(4)	1232272	1085962	400.000	11.87321	15.00000	Averaged	
(5)	611083	546038	400.000	10.64420	15.00000	Averaged	

Data File: \\PITSVR06\D\chem\gc14.i\09020.B\Y0900100.D
Report Date: 03-Sep-2010 13:15

7E
HP689 GC-14
MR-1

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc14.i Injection Date: 03-SEP-2010 03:58
Lab File ID: Y0900100.D Init. Cal. Date(s): 02-SEP-2010 02-SEP-2010
Analysis Type: Init. Cal. Times: 14:23 18:28
Lab Sample ID: MH1660 Quant Type: ESTD
Method: \\PITSVR06\D\chem\gc14.i\09020.B\PCBA.m

COMPOUND	RRF / AMOUNT	RF1	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
4 Aroclor-1016(1)	468170	448672	400.000	4.16465	15.00000	Averaged
(2)	564269	556455	400.000	1.38473	15.00000	Averaged
(3)	323596	326716	400.000	-0.96406	15.00000	Averaged
(4)	392898	390886	400.000	0.51197	15.00000	Averaged
(5)	436088	421257	400.000	3.40101	15.00000	Averaged
$ 2 Tetrachloro-m-xylene	17540301	18163420	400.000	-3.55250	15.00000	Averaged
$ 11 Decachlorobiphenyl	7331196	6827020	400.000	6.87714	15.00000	Averaged
8 Aroclor-1260(1)	592541	539492	400.000	8.95281	15.00000	Averaged
(2)	817742	813674	400.000	0.49747	15.00000	Averaged
(3)	480200	470976	400.000	1.92092	15.00000	Averaged
(4)	1232272	1210211	400.000	1.79029	15.00000	Averaged
(5)	611083	577826	400.000	5.44228	15.00000	Averaged

SW846 8082 METHOD BLANK SUMMARY

BLANK WORKORDER NO.: L54X91AA

Lab Name: TestAmerica Laboratories, Inc.

Lab Code: TALPIT

Lab File ID: Y0900097.

Matrix: SOLID

SDG Number:

Lot Number: C0H250417

Extraction Method: 3541

Date Extracted: 08/25/10

Date Analyzed(1): 09/03/10

Time Analyzed(1): 02:57

Instrument ID(1): S/T

Date Analyzed(2): N/A

Time Analyzed(2): N/A

Instrument ID(2): N/A

GC Column(1): MR1/MR2 ID: 053 GC Column(2): N/A ID: N/A

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	DATE ANALYZED(1)	DATE ANALYZED(2)
01	MARSHY POINT-SS	L537V1AE	09/03/10	N/A
02	MARSHY POINT-01	L537W1AD	09/03/10	N/A
03	MARSHY POINT-02	L53701AD	09/03/10	N/A
04	MARSHY POINT-04	L53711AD	09/03/10	N/A
05	BOWLEYS QUARTERS-SS	L53721AE	09/03/10	N/A
06	BOWLEYS QUARTERS-01	L53741AD	09/03/10	N/A
07	BOWLEYS QUARTERS-02	L53761AD	09/03/10	N/A
08	BOWLEYS QUARTERS-04	L53771AD	09/03/10	N/A
09	CHECK SAMPLE	L54X91AC C	09/03/10	N/A
10	DUPLICATE CHECK	L54X91AD L	09/03/10	N/A
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

COMMENTS:

FORM IV

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: C0H250417
MB Lot-Sample #: C0H250000-336

Work Order #...: L54X91AA

Prep Date.....: 08/25/10
Prep Batch #...: 0237336
Initial Wgt/Vol: 15 g
Analyst ID.....: 402360

Matrix.....: SOLID

Analysis Time..: 02:57
Final Wgt/Vol..: 10 mL
Instrument ID..: S/T

Analysis Date..: 09/03/10
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Aroclor 1016	ND	17	ug/kg	SW846 8082
Aroclor 1221	ND	17	ug/kg	SW846 8082
Aroclor 1232	ND	17	ug/kg	SW846 8082
Aroclor 1242	ND	17	ug/kg	SW846 8082
Aroclor 1248	ND	17	ug/kg	SW846 8082
Aroclor 1254	ND	17	ug/kg	SW846 8082
Aroclor 1260	ND	17	ug/kg	SW846 8082

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	106	(35 - 140)
Decachlorobiphenyl	93	(35 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

SW846 8082 SURROGATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H250417

Extraction: XXA4FQH01

	CLIENT ID.	SRG01	SRG02	TOT OUT
01	MARSHY POINT-SS	107	92	00
02	MARSHY POINT-01	102	88	00
03	MARSHY POINT-02	98	83	00
04	MARSHY POINT-04	99	85	00
05	BOWLEYS QUARTERS-SS	97	82	00
06	BOWLEYS QUARTERS-01	96	84	00
07	BOWLEYS QUARTERS-02	103	88	00
08	BOWLEYS QUARTERS-04	98	86	00
09	METHOD BLK. L54X91AA	106	93	00
10	LCS L54X91AC	113	92	00
11	LCSD L54X91AD	115	88	00

SURROGATES		QC LIMITS
SRG01	= Tetrachloro-m-xylene	(35-140)
SRG02	= Decachlorobiphenyl	(35-140)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8082 CHECK SAMPLE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H250000 WO #: L54X91AC
BATCH: 0237336

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENT. (ug/kg)	% REC	QC LIMITS REC	QUAL
Aroclor 1016	667	616	92	55- 130	
Aroclor 1260	667	606	91	54- 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM III

SW846 8082 CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H250000 WO #: L54X91AD
BATCH: 0237336

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENT. (ug/kg)	% REC	QC LIMITS REC	QUAL
Aroclor 1016	667	634	95	55- 130	
Aroclor 1260	667	621	93	54- 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM III

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT		JOB NUMBER	
Middle River Center		SDG COH250917	
SUBJECT: Sample Calculations			
BASED ON		DRAWING NUMBER	
BY: Ann Cognetti	CHECKED BY	APPROVED BY	DATE: 10-1-10

Sample Bowley Quarters 01; Fluoranthene

$$\frac{46843}{216528} * 5 * \frac{500}{2 * 30} * \frac{8}{1.11768} = \frac{64.52}{0.32} = 201.63 \text{ ug/kg}$$

Fluoranthene

Sample Calculation

Tetra Tech NUS, Inc

Client Sample ID: BOWLEYS QUARTERS-01

GC/MS Semivolatiles

Lot-Sample #...:	C0H250417-006	**Work Order #...:**	L53741AC	**Matrix.....:**	SOLID
Date Sampled...:	08/21/10 15:47	**Date Received..:**	08/24/10 10:15	**MS Run #.....:**	
Prep Date.....:	08/25/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0237335	**Analysis Time..:**	14:50		
Dilution Factor:	2.5	**Initial Wgt/Vol:**	30 g	**Final Wgt/Vol..:**	0.5 mL
% Moisture.....:	68	**Analyst ID.....:**	007062	**Instrument ID..:**	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	**110**	**53**	**ug/kg**	**4.6**
Acenaphthylene	**29 J**	**53**	**ug/kg**	**6.1**
Acenaphthene	ND	53	ug/kg	5.1
Fluorene	**51 J**	**53**	**ug/kg**	**7.0**
Phenanthrene	**140**	**53**	**ug/kg**	**8.4**
Anthracene	**47 J**	**53**	**ug/kg**	**5.2**
Fluoranthene	**200**	**53**	**ug/kg**	**5.7**
Pyrene	**130**	**53**	**ug/kg**	**5.4**
Benzo(a)anthracene	**70**	**53**	**ug/kg**	**6.6**
Chrysene	**63**	**53**	**ug/kg**	**6.3**
Benzo(b)fluoranthene	**110**	**53**	**ug/kg**	**8.3**
Benzo(k)fluoranthene	ND	53	ug/kg	11
Benzo(a)pyrene	**74**	**53**	**ug/kg**	**5.3**
Indeno(1,2,3-cd)pyrene	**110**	**53**	**ug/kg**	**5.5**
Dibenzo(a,h)anthracene	ND	53	ug/kg	5.9
Benzo(ghi)perylene	**110**	**53**	**ug/kg**	**5.3**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	104	(27 - 110)
Terphenyl-d14	93	(21 - 130)
2-Fluorobiphenyl	99	(28 - 108)
2-Fluorophenol	94	(28 - 107)
Phenol-d5	105	(30 - 112)
2,4,6-Tribromophenol	93	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Sample Calculation

Test America Pittsburgh

Semivolatile REPORT SW-846 Method 8270

Data file : \\PITSVR06\d\chem\722.i\082610.b\F0826029.D
Lab Smp Id: 153741ac Client Smp ID: BOWLEYS QUARTERS-01
Inj Date : 26-AUG-2010 14:50
Operator : 007062 Inst ID: 722.i
Smp Info : C0H250417-006 x5 8/25/10 Soil (0237335)
Misc Info : 153741ac,082610.b,ll.m,42pah.sub
Comment :
Method : \\PITSVR06\d\chem\722.i\082610.b\LL.m
Meth Date : 27-Aug-2010 04:07 bungardf Quant Type: ISTD
Cal Date : 18-AUG-2010 02:51 Cal File: F08180A9.D
Als bottle: 32
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: 42pah.sub
Target Version: 4.14
Processing Host: PITPC-503

Concentration Formula: Amt * DF * Uf * Vt/(Vi * Ws)*1 * CpndVariable

Name	Value	Description
DF	5.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	500.000	Volume of final extract (uL) (1000 low, 2
Vi	2.000	Volume injected (uL)
Ws	30.000	Weight of sample extracted (g)
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	CONCENTRATIONS FINAL (ug/kg)	
* 1	1,4-Dichlorobenzene-d4	152	4.251	4.253	(1.000)	55332	8.00000		
* 2	Naphthalene-d8	136	5.256	5.268	(1.000)	210441	8.00000		
* 3	Acenaphthene-d10	164	6.623	6.646	(1.000)	126160	8.00000		
* 4	Phenanthrene-d10	188	7.777	7.816	(1.000)	216528	8.00000		(H)
* 5	Chrysene-d12	240	10.117	10.172	(1.000)	252380	8.00000		
* 6	Perylene-d12	264	11.682	11.753	(1.000)	270188	8.00000		(H)
51	Naphthalene	128	5.272	5.284	(1.003)	22406	0.80533	33.556	
62	2-Methylnaphthalene	142	5.817	5.829	(1.107)	10220	0.55498	23.124	(a)
205	1-Methylnaphthalene	142	5.891	5.909	(1.121)	4000	0.22537	9.3902	(a)
79	Acenaphthylene	152	6.511	6.534	(0.983)	5794	0.21848	9.1035	
82	Acenaphthene	153	Compound Not Detected.						
94	Fluorene	166	7.051	7.079	(1.065)	8121	0.38818	16.174	
115	Phenanthrene	178	7.799	7.832	(1.003)	32352	1.04783	43.660	(H)
116	Anthracene	178	7.836	7.875	(1.008)	10949	0.35329	14.720	
123	Fluoranthene	202	8.744	8.788	(1.124)	46843	1.54847	64.520	
125	Pyrene	202	8.936	8.981	(0.883)	41222	1.01259	42.191	
136	Benzo(a)Anthracene	228	10.106	10.161	(0.999)	18789	0.53255	22.190	(Q)
137	Chrysene	228	10.138	10.199	(1.002)	16925	0.47882	19.951	
139	bis(2-ethylhexyl)Phthalate	149	10.144	10.209	(1.003)	12598	0.49759	20.733	(a)
141	Benzo(b)fluoranthene	252	11.271	11.342	(0.965)	37232	0.86423	36.010	(H)
142	Benzo(k)fluoranthene	252	Compound Not Detected.						

Sample Calculation

Report Date : 17-Aug-2010 01:42

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
122 Methapyrilene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
123 Fluoranthene	1.01536	1.14862	1.14047	1.09907	1.18313	1.14698						
	1.09291	1.11490					AVRG		1.11768		4.54401	
124 Benzidine	2328	9886	34574	97253	179112	307693						
	484456	682853					QUAD	0.00840	3.17671	-0.00076	0.99889	
125 Pyrene	1.31593	1.33451	1.37368	1.36146	1.28464	1.25122						
	1.23822	1.16368					AVRG		1.29042		5.47434	
126 Aramite 1	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
M 191 Aramite, total	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
127 Aramite 2	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

56

COH250417

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **MIKE MARTIN** **DATE:** **OCTOBER 25, 2010**

FROM: **CHERYLE LU** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – METALS, MERCURY, POLYCHLORINATED BIPHENYLS, SEMIVOLATILE ORGANIC COMPONDS, AND METALS, ACID VOLATILE SULFIDES/SEM METALS, AND MISCELLANEOUS LOCKHEED MIDDLE RIVER COMPLEX, MD**

SAMPLE DELIVERY GROUP (SDG) – C0H180480

SAMPLES: 14/ Sediment

SD-90-SS	SD-90-01	SD-90-02	SD-90-04	SD-91-SS
SD-91-01	SD-94-SS	SD-94-01	SD-94-02	SD-94-04
SD-97-SS	SD-97-01	SD-97-02	SD-97-04	

Overview

The sample set for Lockheed Middle River Complex (MRC) SDG C0H180480 consists of 14 sediment samples. Fourteen (14) samples were analyzed for semivolatile organic compounds (for poly-aromatic hydrocarbons (PAHs)) by Method 8270C, for metals by Method 6020 Inductively Coupled Plasma Mass Spectrometry (ICP-MS), for mercury by Method 7471A, and for polychlorinated biphenyls (PCBs) by Method 8082. Four (4) samples were analyzed for acid volatile sulfide (AVS) and simultaneously extractable metals (SEM), and three samples were analyzed for total organic carbon (TOC) by Lloyd Kahn methodology .

The samples were collected by Tetra Tech on August 17, 2010 and analyzed by Test America Pittsburgh Laboratory. All analyses were conducted in accordance with SW-846 Methods 6020, 7471A, 8270C, and 8082, EPA (AVS/SEM) and EPA TOC by Lloyd Kahn analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, initial/continuing calibrations, laboratory method blank results, ICP interference check sample results, surrogate spike recoveries, blank spike results, matrix spike/matrix spike duplicate results, internal standard recoveries, chromatographic resolution, compound identification, compound quantitation, and detection limits. Areas of concern are listed below.

Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

Major Problems – None.

Minor Problems

- The chrysene-d12 and perylene-d12 internal standard area counts were greater than the upper quality control (QC) limits for sample SD-90-02. The positive results reported for pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene and benzo(g,h,i)perylene were qualified as estimated, "J".

- The internal standare perylene-d12 area count was greater than the upper QC limit for samples SD-90-04, SD-97-02 and SD-97-04. The positive results reported for benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene and benzo(g,h,i)perylene were qualified as estimated, "J". No positive results were reported in sample SD-97-02 so no action was required.

- The relative percent difference (RPD) value was greater than 25% for Aroclor-1260 results between column 1 and 2 for samples SD-90-01(29.5%) and SD-97-SS (27.8%). The positive results were qualified as estimated, "J".

- The MS/MSD Batch #C0H180480-001 had percent recoveries (%Rs) below the QC limits for antimony, therefore, the positive results were qualified as estimated, "J" in all affected samples as a result of conflicting directional bias.

- The percent difference (%D) value in the serial dilution test was greater than 10% for antimony, lead and thallium, the positive results were qualified as estimated, "J" in all samples.

- The positive results reported below the reporting limit (RL) were qualified as estimated "J", due to uncertainty near the detection limit.

Notes

The MS/MSD batch #C0H180480-001 had percent recoveries (%Rs) not calculated because the analyte concentrations were greater than 4 times of the spike concentrations for lead, zinc and mercury, no qualification was required.

The MS percent recovery (%R) of copper was below the QC limit, but the MSD %R was within the QC limit, no qualification was required.

The method blank (batch #0239078) contained chromium [0.025 milligrams per kilogram (mg/kg)] and copper (0.15 mg/kg). However, the analyte concentrations in the associated samples were greater than the five times of the blank concentration, no qualification was required.

Chromium and zinc were detected in the SEM preparation blank. No action was required because all sample concentrations exceeded the 5X action level for blank contamination.

The CRDL standard for lead and zinc were greater than the 110% upper quality control limit on 8/25/2010 @12:53. No action was required because all results were greater than two times the CRDL.

Executive Summary

Laboratory Performance: The chrysene-d12 and perylene-d12 internal standard area counts in PAH fraction were greater than the upper QC limits for several samples. The RPD value was greater than 25% for Aroclor-1260 results between column 1 and 2 in PC fraction for two samples.

The metal MS/MSD had %Rs below the QC limits for antimony, therefore, the positive results were qualified as biased low, "L" for all affected samples. The %D value in the serial dilution test was greater than 10% for antimony, lead and thallium, the positive results were qualified as estimated, "J" for sample SD-90-SS.

Other Factors Affecting Data Quality: The matrix spike/matrix spike duplicate %Rs for antimony fell below 75% affecting all samples. The serial dilution %D for antimony, lead, and zinc exceeded the 10% criterion. All samples were affected.

The data for the analysis were reviewed with reference to the "Region III Modifications to National Functional Guidelines for Organic Data Review, Multi-Media, Multi-Concentration, September 1994 and EPA Region III modifications to the National Functional Guidelines for Inorganic Data Review, April 1993.

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified above."

Tetra Tech NUS
Cheryle C. Lu
Senior Toxicologist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

Data Qualifier Key:

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Nondetected result

B - Not detected substantially above the level reported in the laboratory method blanks and trip blank.

UR - Unreliable result. Analyte may or may not be present in the sample.

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02903	NSAMPLE	SD-90-01			SD-90-02			SD-90-02-DL			SD-90-04		
SDG: C0H180480	LAB_ID	C0H180480002			C0H180480003			C0H180480003			C0H180480004		
FRACTION: PAH	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	38.0			42.0			42.0			57.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ACENAPHTHENE		190			410						10	J	P
ACENAPHTHYLENE		280			460						27	J	P
ANTHRACENE		530			1300						26	J	P
BENZO(A)ANTHRACENE		2100			5000	J	N				73		
BENZO(A)PYRENE		2300			5100	J	N				63	J	N
BENZO(B)FLUORANTHENE		3600			7300	J	N				93	J	N
BENZO(G,H,I)PERYLENE		1900			3100	J	N				69	J	N
BENZO(K)FLUORANTHENE		9	U		8	J	N				5.9	UJ	N
CHRYSENE		2500			5400	J	N				82		
DIBENZO(A,H)ANTHRACENE		510			1000	J	N				51	J	N
FLUORANTHENE		5500						13000			160		
FLUORENE		200			560						24	J	P
INDENO(1,2,3-CD)PYRENE		1500			2900	J	N				78	J	N
NAPHTHALENE		120			230						8.5	J	P
PHENANTHRENE		1800			4600						56		
PYRENE		3400			7300	J	N				120		

PROJ_NO: 02903 SDG: C0H180480 FRACTION: PAH MEDIA: SEDIMENT	NSAMPLE	SD-90-SS			SD-91-01			SD-91-SS			SD-94-01		
	LAB_ID	C0H180480001			C0H180480006			C0H180480005			C0H180480008		
	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010			8/17/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	27.0			75.0			70.0			40.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ACENAPHTHENE		62	J	Y	2.1	U		2.3	U		3.9	U	
ACENAPHTHYLENE		120	J	Y	2.5	U		2.7	U		4.7	U	
ANTHRACENE		190	J	Y	2.2	U		2.3	U		4	U	
BENZO(A)ANTHRACENE		810	J	Y	2.8	U		5.6	J	P	5.1	U	
BENZO(A)PYRENE		1100	J	Y	2.2	U		2.4	U		4.1	U	
BENZO(B)FLUORANTHENE		2000	J	Y	3.5	U		3.7	U		6.5	U	
BENZO(G,H,I)PERYLENE		1100	J	Y	2.2	U		2.4	U		4.1	U	
BENZO(K)FLUORANTHENE		12	UJ	Y	4.5	U		4.8	U		8.3	U	
CHRYSENE		1200	J	Y	2.6	U		2.8	U		4.9	U	
DIBENZO(A,H)ANTHRACENE		270	J	Y	2.5	U		2.6	U		4.6	U	
FLUORANTHENE		2500	J	Y	2.4	U		8	J	P	4.4	U	
FLUORENE		82	J	Y	2.9	U		3.1	U		5.4	U	
INDENO(1,2,3-CD)PYRENE		850	J	Y	2.3	U		2.4	U		4.2	U	
NAPHTHALENE		88	J	Y	1.9	U		2	U		3.5	U	
PHENANTHRENE		650	J	Y	3.5	U		3.8	U		6.5	U	
PYRENE		1600	J	Y	2.2	U		6.2	J	P	4.2	U	

PROJ_NO: 02903	NSAMPLE	SD-94-02			SD-94-04			SD-94-SS			SD-97-01		
SDG: C0H180480	LAB_ID	C0H180480009			C0H180480010			C0H180480007			C0H180480012		
FRACTION: PAH	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	46.0			60.0			36.0			27.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ACENAPHTHENE		3.5	U		2.7	U		4.5	U		22	J	PY
ACENAPHTHYLENE		4.2	U		3.2	U		5.3	U		47	J	PY
ANTHRACENE		3.6	U		2.7	U		4.6	U		75	J	Y
BENZO(A)ANTHRACENE		4.5	U		3.5	U		16	J	P	190	J	Y
BENZO(A)PYRENE		3.6	U		2.8	U		22	J	P	210	J	Y
BENZO(B)FLUORANTHENE		5.7	U		4.4	U		27	J	P	370	J	Y
BENZO(G,H,I)PERYLENE		3.6	U		2.8	U		67			240	J	Y
BENZO(K)FLUORANTHENE		7.3	U		5.7	U		9.7	J	P	12	UJ	Y
CHRYSENE		4.3	U		3.3	U		21	J	P	220	J	Y
DIBENZO(A,H)ANTHRACENE		4	U		3.1	U		5.2	U		120	J	Y
FLUORANTHENE		3.9	U		3	U		41	J	P	500	J	Y
FLUORENE		4.8	U		3.7	U		6.1	U		37	J	PY
INDENO(1,2,3-CD)PYRENE		3.7	U		2.9	U		82			230	J	Y
NAPHTHALENE		3.1	U		2.4	U		4	U		86	J	Y
PHENANTHRENE		5.8	U		4.4	U		7.4	U		190	J	Y
PYRENE		3.7	U		2.8	U		28	J	P	360	J	Y

PROJ_NO: 02903 SDG: C0H180480 FRACTION: PAH MEDIA: SEDIMENT	NSAMPLE	SD-97-02			SD-97-04			SD-97-SS		
	LAB_ID	C0H180480013			C0H180480014			C0H180480011		
	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010		
	QC_TYPE	NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	39.0			41.0			23.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ACENAPHTHENE		4.1	U		3.9	U		6.9	UJ	Y
ACENAPHTHYLENE		11	J	P	4.7	U		38	J	PY
ANTHRACENE		17	J	P	4	U		49	J	PY
BENZO(A)ANTHRACENE		48			5.1	U		130	J	Y
BENZO(A)PYRENE		34	J	PN	4.1	U		170	J	Y
BENZO(B)FLUORANTHENE		67	J	N	6.4	U		320	J	Y
BENZO(G,H,I)PERYLENE		80	J	N	4.1	U		250	J	Y
BENZO(K)FLUORANTHENE		8.6	UJ	N	8.2	U		14	UJ	Y
CHRYSENE		90			4.9	U		190	J	Y
DIBENZO(A,H)ANTHRACENE		4.7	J	N	4.5	U		130	J	Y
FLUORANTHENE		150			4.4	U		370	J	Y
FLUORENE		5.6	U		5.4	U		23	J	PY
INDENO(1,2,3-CD)PYRENE		82	J	N	4.2	U		240	J	Y
NAPHTHALENE		3.7	U		3.5	U		53	J	PY
PHENANTHRENE		40	J	P	6.5	U		120	J	Y
PYRENE		100			4.1	U		250	J	Y

PROJ_NO: 02903	NSAMPLE	SD-90-01			SD-90-02			SD-90-04			SD-90-SS		
SDG: C0H180480	LAB_ID	C0H180480002			C0H180480003			C0H180480004			C0H180480001		
FRACTION: PEST/PCB	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	38.0			42.0			57.0			27.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016		3.3	U		3	U		2.2	U		4.6	UJ	Y
AROCLOR-1221		4.2	U		3.8	U		2.8	U		5.8	UJ	Y
AROCLOR-1232		3.8	U		3.4	U		2.5	U		5.2	UJ	Y
AROCLOR-1242		3.6	U		3.3	U		2.4	U		5	UJ	Y
AROCLOR-1248		2.1	U		1.9	U		1.4	U		2.9	UJ	Y
AROCLOR-1254		3.1	U		2.8	U		2.1	U		4.4	UJ	Y
AROCLOR-1260		1000	J	U	400			2.1	U		690	J	Y

PROJ_NO: 02903	NSAMPLE	SD-91-01			SD-91-SS			SD-94-01			SD-94-02		
SDG: C0H180480	LAB_ID	C0H180480006			C0H180480005			C0H180480008			C0H180480009		
FRACTION: PEST/PCB	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	75.0			70.0			40.0			46.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016		1.6	U		1.8	U		3.1	U		2.7	U	
AROCLOR-1221		2.1	U		2.3	U		3.9	U		3.5	U	
AROCLOR-1232		1.9	U		2	U		3.5	U		3.1	U	
AROCLOR-1242		1.8	U		1.9	U		3.4	U		3	U	
AROCLOR-1248		1	U		1.1	U		1.9	U		1.7	U	
AROCLOR-1254		1.6	U		1.7	U		2.9	U		2.6	U	
AROCLOR-1260		1.6	U		1.7	U		2.9	U		2.6	U	

PROJ_NO: 02903	NSAMPLE	SD-94-04			SD-94-SS			SD-97-01			SD-97-02		
SDG: C0H180480	LAB_ID	C0H180480010			C0H180480007			C0H180480012			C0H180480013		
FRACTION: PEST/PCB	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	60.0			36.0			27.0			39.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016		2.1	U		3.5	U		4.5	UJ	Y	3.2	U	
AROCLOR-1221		2.7	U		4.4	U		5.7	UJ	Y	4.1	U	
AROCLOR-1232		2.4	U		4	U		5.1	UJ	Y	3.7	U	
AROCLOR-1242		2.3	U		3.8	U		4.9	UJ	Y	3.5	U	
AROCLOR-1248		1.3	U		2.2	U		2.8	UJ	Y	2	U	
AROCLOR-1254		2	U		3.3	U		4.3	UJ	Y	3	U	
AROCLOR-1260		2	U		44			210	J	Y	3	U	

PROJ_NO: 02903	NSAMPLE	SD-97-04			SD-97-SS		
SDG: C0H180480	LAB_ID	C0H180480014			C0H180480011		
FRACTION: PEST/PCB	SAMP_DATE	8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM		
	UNITS	UG/KG			UG/KG		
	PCT_SOLIDS	41.0			23.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016		3	U		5.3	UJ	Y
AROCLOR-1221		3.9	U		6.8	UJ	Y
AROCLOR-1232		3.5	U		6.1	UJ	Y
AROCLOR-1242		3.3	U		5.8	UJ	Y
AROCLOR-1248		1.9	U		3.4	UJ	Y
AROCLOR-1254		2.9	U		5.1	UJ	Y
AROCLOR-1260		2.9	U		620	J	UY

PROJ_NO: 02903	NSAMPLE	SD-90-01			SD-90-02			SD-90-04			SD-90-SS		
SDG: C0H180480	LAB_ID	C0H180480002			C0H180480003			C0H180480004			C0H180480001		
FRACTION: AVS/SEM	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UMOLES/G			UMOLES/G			UMOLES/G			UMOLES/G		
	PCT_SOLIDS	38.0			42.0			57.0			27.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ACID VOLATILE SULFIDE		19			18.7			0.27	U		22.6	J	Y
CADMIUM		0.085			0.22			0.0068			0.034	J	Y
CHROMIUM		1.6			5.9			0.18			0.71	J	Y
COPPER		0.037			0.0021	U		0.064			0.086	J	Y
LEAD		0.66			0.47			0.033			0.36	J	Y
NICKEL		0.18			0.19			0.024	J	P	0.17	J	Y
SILVER		0.00095	J	P	0.00066	J	P	0.0055			0.0005	UJ	Y
ZINC		4.2			5.3			0.42			3.9	J	Y

PROJ_NO: 02903	NSAMPLE	SD-90-01			SD-90-02			SD-90-04			SD-90-SS		
SDG: C0H180480	LAB_ID	C0H180480002			C0H180480003			C0H180480004			C0H180480001		
FRACTION: M	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	38.0			42.0			57.0			27.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		1.4	J	DI	3	J	DI	0.25	J	DI	1.4	J	DIY
ARSENIC		7.6			6.5			3.3			8.9	J	Y
BERYLLIUM		1.6			1.8			1.5			1.8	J	Y
CADMIUM		12.5			38.7			1.1			5.2	J	Y
CHROMIUM		212			690			44.7			110	J	Y
COPPER		130			82.7			15.9			116	J	Y
LEAD		257	J	I	195	J	I	13.7	J	I	111	J	IY
MERCURY		2			4.7			0.099			0.43	J	Y
NICKEL		41.8			46.1			15.4			36.4	J	Y
SELENIUM		1.8			1.9			0.89			1.8	J	Y
SILVER		8.9			29.3			1.7			2.8	J	Y
THALLIUM		0.26	J	I	0.32	J	I	0.12	J	I	0.24	J	IY
ZINC		386			524			51.2			382	J	Y

PROJ_NO: 02903	NSAMPLE	SD-91-01			SD-91-SS			SD-94-01			SD-94-02		
SDG: C0H180480	LAB_ID	C0H180480006			C0H180480005			C0H180480008			C0H180480009		
FRACTION: M	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	75.0			70.0			40.0			46.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.18	J	DI	0.2	J	DI	0.076	J	DIP	0.048	J	DIP
ARSENIC		3.6			3.6			4.2			4.4		
BERYLLIUM		2.5			2.4			1.7			1.7		
CADMIUM		0.18			0.18			0.37			0.37		
CHROMIUM		17.6			21			26			24.7		
COPPER		23			21.7			18.4			15.9		
LEAD		5.5	J	I	6.6	J	I	9	J	I	7.4	J	I
MERCURY		0.0072	U		0.0078	U		0.028	J	P	0.024	J	P
NICKEL		20.4			15			18.7			17		
SELENIUM		0.66			0.76			1			1		
SILVER		0.025	J	P	0.029	J	P	0.065	J	P	0.055	J	P
THALLIUM		0.065	J	IP	0.084	J	I	0.15	J	I	0.12	J	I
ZINC		44.7			40.2			56			52.8		

PROJ_NO: 02903	NSAMPLE	SD-94-04			SD-94-SS			SD-97-01			SD-97-02		
SDG: C0H180480	LAB_ID	C0H180480010			C0H180480007			C0H180480012			C0H180480013		
FRACTION: M	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	60.0			36.0			27.0			39.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.2	J	DI	0.11	J	DIP	1	J	DIY	0.17	J	DIP
ARSENIC		5.7			4.6			11	J	Y	6.2		
BERYLLIUM		3.4			1.7			2.6	J	Y	1.8		
CADMIUM		0.32			0.88			22	J	Y	2.5		
CHROMIUM		27.7			30.9			423	J	Y	80.6		
COPPER		18.9			25.1			110	J	Y	21.7		
LEAD		5.7	J	I	15.9	J	I	149	J	IY	24.4	J	I
MERCURY		0.0091	U		0.056			0.99	J	Y	0.1		
NICKEL		21.8			20.2			46.4	J	Y	23		
SELENIUM		0.97			1.2			2.2	J	Y	1.3		
SILVER		0.039	J	P	0.15			5	J	Y	0.73		
THALLIUM		0.077	J	IP	0.16	J	I	0.3	J	IY	0.17	J	I
ZINC		56.3			77.3			439	J	Y	102		

PROJ_NO: 02903	NSAMPLE	SD-97-04			SD-97-SS		
SDG: C0H180480	LAB_ID	C0H180480014			C0H180480011		
FRACTION: M	SAMP_DATE	8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM		
	UNITS	MG/KG			MG/KG		
	PCT_SOLIDS	41.0			23.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.16	J	DIP	0.71	J	DIY
ARSENIC		6.5			10.9	J	Y
BERYLLIUM		1.9			2.1	J	Y
CADMIUM		0.35			6.7	J	Y
CHROMIUM		34.1			171	J	Y
COPPER		17.5			145	J	Y
LEAD		13.7	J	I	141	J	IY
MERCURY		0.036	J	P	0.52	J	Y
NICKEL		22.6			43	J	Y
SELENIUM		1.1			2.1	J	Y
SILVER		0.076	J	P	2.3	J	Y
THALLIUM		0.16	J	I	0.27	J	IY
ZINC		76.7			415	J	Y

PROJ_NO: 02903	NSAMPLE	SD-90-01			SD-90-02			SD-90-SS		
SDG: C0H180480	LAB_ID	C0H180480002			C0H180480003			C0H180480001		
FRACTION: MISC	SAMP_DATE	8/17/2010			8/17/2010			8/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	38.0			42.0			27.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL ORGANIC CARBON		35900			35900			28000	J	Y

APPENDIX B
RESULTS AS REPORTED BY THE LABORATORY

Tetra Tech NUS, Inc

Client Sample ID: SD-90-01

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-002	Work Order #...:	L5QX01AH	Matrix.....:	SOLID
Date Sampled...:	08/17/10 10:07	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	09:20		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	62	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	120	44	ug/kg	3.8
Acenaphthylene	280	44	ug/kg	5.1
Acenaphthene	190	44	ug/kg	4.3
Fluorene	200	44	ug/kg	5.8
Phenanthrene	1800	44	ug/kg	7.0
Anthracene	530	44	ug/kg	4.3
Fluoranthene	5500	44	ug/kg	4.7
Pyrene	3400	44	ug/kg	4.5
Benzo(a)anthracene	2100	44	ug/kg	5.5
Chrysene	2500	44	ug/kg	5.3
Benzo(b)fluoranthene	3600	44	ug/kg	7.0
Benzo(k)fluoranthene	ND	44	ug/kg	9.0
Benzo(a)pyrene	2300	44	ug/kg	4.4
Indeno(1,2,3-cd)pyrene	1500	44	ug/kg	4.6
Dibenzo(a,h)anthracene	510	44	ug/kg	4.9
Benzo(ghi)perylene	1900	44	ug/kg	4.4

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	69	(27 - 110)
Terphenyl-d14	69	(21 - 130)
2-Fluorobiphenyl	73	(28 - 108)
2-Fluorophenol	58	(28 - 107)
Phenol-d5	60	(30 - 112)
2,4,6-Tribromophenol	77	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-02

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-003	Work Order #...:	L5QX11AH	Matrix.....:	SOLID
Date Sampled...:	08/17/10 10:20	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	09:39		
Dilution Factor:	2.48	Initial Wgt/Vol:	30.2 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	58	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	**230**	**40**	**ug/kg**	3.4
Acenaphthylene	**460**	**40**	**ug/kg**	4.6
Acenaphthene	**410**	**40**	**ug/kg**	3.8
Fluorene	**560**	**40**	**ug/kg**	5.2
Phenanthrene	**4600**	**40**	**ug/kg**	6.3
Anthracene	**1300**	**40**	**ug/kg**	3.9
Fluoranthene	**13000 E**	**40**	**ug/kg**	4.3
Pyrene	**7300**	**40**	**ug/kg**	4.0
Benzo(a)anthracene	**5000**	**40**	**ug/kg**	5.0
Chrysene	**5400**	**40**	**ug/kg**	4.7
Benzo(b)fluoranthene	**7300**	**40**	**ug/kg**	6.3
Benzo(k)fluoranthene	ND	40	ug/kg	8.0
Benzo(a)pyrene	**5100**	**40**	**ug/kg**	4.0
Indeno(1,2,3-cd)pyrene	**2900**	**40**	**ug/kg**	4.1
Dibenzo(a,h)anthracene	**1000**	**40**	**ug/kg**	4.4
Benzo(ghi)perylene	**3100**	**40**	**ug/kg**	4.0

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	73	(27 - 110)
Terphenyl-d14	65	(21 - 130)
2-Fluorobiphenyl	77	(28 - 108)
2-Fluorophenol	66	(28 - 107)
Phenol-d5	68	(30 - 112)
2,4,6-Tribromophenol	82	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

E Estimated result. Result concentration exceeds the calibration range.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-02

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-003	Work Order #...:	L5QX12AH	Matrix.....:	SOLID
Date Sampled...:	08/17/10 10:20	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/25/10		
Prep Batch #...:	0232395	Analysis Time..:	06:12		
Dilution Factor:	12.42	Initial Wgt/Vol:	30.2 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	58	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	300	200	ug/kg	17
Acenaphthylene	460	200	ug/kg	23
Acenaphthene	450	200	ug/kg	19
Fluorene	610	200	ug/kg	26
Phenanthrene	5100	200	ug/kg	32
Anthracene	1400	200	ug/kg	19
Fluoranthene	13000	200	ug/kg	21
Pyrene	10000	200	ug/kg	20
Benzo(a)anthracene	6100	200	ug/kg	25
Chrysene	6000	200	ug/kg	24
Benzo(b)fluoranthene	8000	200	ug/kg	31
Benzo(k)fluoranthene	7500	200	ug/kg	40
Benzo(a)pyrene	5200	200	ug/kg	20
Indeno(1,2,3-cd)pyrene	3100	200	ug/kg	21
Dibenzo(a,h)anthracene	1200	200	ug/kg	22
Benzo(ghi)perylene	3600	200	ug/kg	20

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	NC,DIL	(27 - 110)
Terphenyl-d14	NC,DIL	(21 - 130)
2-Fluorobiphenyl	NC,DIL	(28 - 108)
2-Fluorophenol	NC,DIL	(28 - 107)
Phenol-d5	NC,DIL	(30 - 112)
2,4,6-Tribromophenol	NC,DIL	(21 - 116)

NOTE(S):

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-04

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-004	Work Order #...:	L5QX21AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 10:30	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	09:59		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	43	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	8.5 J	30	ug/kg	2.5
Acenaphthylene	27 J	30	ug/kg	3.4
Acenaphthene	10 J	30	ug/kg	2.8
Fluorene	24 J	30	ug/kg	3.9
Phenanthrene	56	30	ug/kg	4.7
Anthracene	26 J	30	ug/kg	2.9
Fluoranthene	160	30	ug/kg	3.1
Pyrene	120	30	ug/kg	3.0
Benzo(a)anthracene	73	30	ug/kg	3.7
Chrysene	82	30	ug/kg	3.5
Benzo(b)fluoranthene	93	30	ug/kg	4.6
Benzo(k)fluoranthene	ND	30	ug/kg	5.9
Benzo(a)pyrene	63	30	ug/kg	2.9
Indeno(1,2,3-cd)pyrene	78	30	ug/kg	3.0
Dibenzo(a,h)anthracene	51	30	ug/kg	3.3
Benzo(ghi)perylene	69	30	ug/kg	2.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	66	(27 - 110)
Terphenyl-d14	60	(21 - 130)
2-Fluorobiphenyl	63	(28 - 108)
2-Fluorophenol	57	(28 - 107)
Phenol-d5	56	(30 - 112)
2,4,6-Tribromophenol	77	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-SS

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-001	Work Order #...:	L5QXW1AD	Matrix.....:	SOLID
Date Sampled...:	08/17/10 10:05	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	09:00		
Dilution Factor:	2.49	Initial Wgt/Vol:	30.1 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	73	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	88	61	ug/kg	5.3
Acenaphthylene	120	61	ug/kg	7.0
Acenaphthene	62	61	ug/kg	5.9
Fluorene	82	61	ug/kg	8.0
Phenanthrene	650	61	ug/kg	9.7
Anthracene	190	61	ug/kg	6.0
Fluoranthene	2500	61	ug/kg	6.5
Pyrene	1600	61	ug/kg	6.2
Benzo(a)anthracene	810	61	ug/kg	7.6
Chrysene	1200	61	ug/kg	7.3
Benzo(b)fluoranthene	2000	61	ug/kg	9.6
Benzo(k)fluoranthene	ND	61	ug/kg	12
Benzo(a)pyrene	1100	61	ug/kg	6.1
Indeno(1,2,3-cd)pyrene	850	61	ug/kg	6.3
Dibenzo(a,h)anthracene	270	61	ug/kg	6.8
Benzo(ghi)perylene	1100	61	ug/kg	6.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	81	(27 - 110)
Terphenyl-d14	78	(21 - 130)
2-Fluorobiphenyl	84	(28 - 108)
2-Fluorophenol	76	(28 - 107)
Phenol-d5	75	(30 - 112)
2,4,6-Tribromophenol	81	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-91-01

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-006	Work Order #...:	L5QX41AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 11:30	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	10:38		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	25	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	22	ug/kg	1.9
Acenaphthylene	ND	22	ug/kg	2.5
Acenaphthene	ND	22	ug/kg	2.1
Fluorene	ND	22	ug/kg	2.9
Phenanthrene	ND	22	ug/kg	3.5
Anthracene	ND	22	ug/kg	2.2
Fluoranthene	ND	22	ug/kg	2.4
Pyrene	ND	22	ug/kg	2.2
Benzo(a)anthracene	ND	22	ug/kg	2.8
Chrysene	ND	22	ug/kg	2.6
Benzo(b)fluoranthene	ND	22	ug/kg	3.5
Benzo(k)fluoranthene	ND	22	ug/kg	4.5
Benzo(a)pyrene	ND	22	ug/kg	2.2
Indeno(1,2,3-cd)pyrene	ND	22	ug/kg	2.3
Dibenzo(a,h)anthracene	ND	22	ug/kg	2.5
Benzo(ghi)perylene	ND	22	ug/kg	2.2

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	48	(27 - 110)
Terphenyl-d14	59	(21 - 130)
2-Fluorobiphenyl	56	(28 - 108)
2-Fluorophenol	42	(28 - 107)
Phenol-d5	46	(30 - 112)
2,4,6-Tribromophenol	66	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-91-SS

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-005	Work Order #...:	L5QX31AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 11:25	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	10:19		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	30	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	24	ug/kg	2.0
Acenaphthylene	ND	24	ug/kg	2.7
Acenaphthene	ND	24	ug/kg	2.3
Fluorene	ND	24	ug/kg	3.1
Phenanthrene	ND	24	ug/kg	3.8
Anthracene	ND	24	ug/kg	2.3
Fluoranthene	**8.0 J**	**24**	**ug/kg**	**2.5**
Pyrene	**6.2 J**	**24**	**ug/kg**	**2.4**
Benzo(a)anthracene	**5.6 J**	**24**	**ug/kg**	**3.0**
Chrysene	ND	24	ug/kg	2.8
Benzo(b)fluoranthene	ND	24	ug/kg	3.7
Benzo(k)fluoranthene	ND	24	ug/kg	4.8
Benzo(a)pyrene	ND	24	ug/kg	2.4
Indeno(1,2,3-cd)pyrene	ND	24	ug/kg	2.4
Dibenzo(a,h)anthracene	ND	24	ug/kg	2.6
Benzo(ghi)perylene	ND	24	ug/kg	2.4

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	45	(27 - 110)
Terphenyl-d14	51	(21 - 130)
2-Fluorobiphenyl	48	(28 - 108)
2-Fluorophenol	39	(28 - 107)
Phenol-d5	44	(30 - 112)
2,4,6-Tribromophenol	65	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-01

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-008	Work Order #...:	L5QX71AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 13:35	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	11:17		
Dilution Factor:	2.49	Initial Wgt/Vol:	30.1 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	60	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	41	ug/kg	3.5
Acenaphthylene	ND	41	ug/kg	4.7
Acenaphthene	ND	41	ug/kg	3.9
Fluorene	ND	41	ug/kg	5.4
Phenanthrene	ND	41	ug/kg	6.5
Anthracene	ND	41	ug/kg	4.0
Fluoranthene	ND	41	ug/kg	4.4
Pyrene	ND	41	ug/kg	4.2
Benzo(a)anthracene	ND	41	ug/kg	5.1
Chrysene	ND	41	ug/kg	4.9
Benzo(b)fluoranthene	ND	41	ug/kg	6.5
Benzo(k)fluoranthene	ND	41	ug/kg	8.3
Benzo(a)pyrene	ND	41	ug/kg	4.1
Indeno(1,2,3-cd)pyrene	ND	41	ug/kg	4.2
Dibenzo(a,h)anthracene	ND	41	ug/kg	4.6
Benzo(ghi)perylene	ND	41	ug/kg	4.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	63	(27 - 110)
Terphenyl-d14	63	(21 - 130)
2-Fluorobiphenyl	63	(28 - 108)
2-Fluorophenol	61	(28 - 107)
Phenol-d5	56	(30 - 112)
2,4,6-Tribromophenol	72	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-02

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-009	Work Order #...:	L5QX81AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 13:40	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	11:37		
Dilution Factor:	2.49	Initial Wgt/Vol:	30.1 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	54	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	36	ug/kg	3.1
Acenaphthylene	ND	36	ug/kg	4.2
Acenaphthene	ND	36	ug/kg	3.5
Fluorene	ND	36	ug/kg	4.8
Phenanthrene	ND	36	ug/kg	5.8
Anthracene	ND	36	ug/kg	3.6
Fluoranthene	ND	36	ug/kg	3.9
Pyrene	ND	36	ug/kg	3.7
Benzo(a)anthracene	ND	36	ug/kg	4.5
Chrysene	ND	36	ug/kg	4.3
Benzo(b)fluoranthene	ND	36	ug/kg	5.7
Benzo(k)fluoranthene	ND	36	ug/kg	7.3
Benzo(a)pyrene	ND	36	ug/kg	3.6
Indeno(1,2,3-cd)pyrene	ND	36	ug/kg	3.7
Dibenzo(a,h)anthracene	ND	36	ug/kg	4.0
Benzo(ghi)perylene	ND	36	ug/kg	3.6

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	91	(27 - 110)
Terphenyl-d14	77	(21 - 130)
2-Fluorobiphenyl	84	(28 - 108)
2-Fluorophenol	89	(28 - 107)
Phenol-d5	82	(30 - 112)
2,4,6-Tribromophenol	83	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-04

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-010	Work Order #...:	L5QX91AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 13:45	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	11:56		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	40	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	28	ug/kg	2.4
Acenaphthylene	ND	28	ug/kg	3.2
Acenaphthene	ND	28	ug/kg	2.7
Fluorene	ND	28	ug/kg	3.7
Phenanthrene	ND	28	ug/kg	4.4
Anthracene	ND	28	ug/kg	2.7
Fluoranthene	ND	28	ug/kg	3.0
Pyrene	ND	28	ug/kg	2.8
Benzo(a)anthracene	ND	28	ug/kg	3.5
Chrysene	ND	28	ug/kg	3.3
Benzo(b)fluoranthene	ND	28	ug/kg	4.4
Benzo(k)fluoranthene	ND	28	ug/kg	5.7
Benzo(a)pyrene	ND	28	ug/kg	2.8
Indeno(1,2,3-cd)pyrene	ND	28	ug/kg	2.9
Dibenzo(a,h)anthracene	ND	28	ug/kg	3.1
Benzo(ghi)perylene	ND	28	ug/kg	2.8

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	108	(27 - 110)
Terphenyl-d14	99	(21 - 130)
2-Fluorobiphenyl	107	(28 - 108)
2-Fluorophenol	97	(28 - 107)
Phenol-d5	93	(30 - 112)
2,4,6-Tribromophenol	108	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-SS

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-007	Work Order #...:	L5QX61AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 13:30	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	10:58		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	64	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	47	ug/kg	4.0
Acenaphthylene	ND	47	ug/kg	5.3
Acenaphthene	ND	47	ug/kg	4.5
Fluorene	ND	47	ug/kg	6.1
Phenanthrene	ND	47	ug/kg	7.4
Anthracene	ND	47	ug/kg	4.6
Fluoranthene	**41 J**	**47**	**ug/kg**	**5.0**
Pyrene	**28 J**	**47**	**ug/kg**	**4.7**
Benzo(a)anthracene	**16 J**	**47**	**ug/kg**	**5.8**
Chrysene	**21 J**	**47**	**ug/kg**	**5.5**
Benzo(b)fluoranthene	**27 J**	**47**	**ug/kg**	**7.3**
Benzo(k)fluoranthene	**9.7 J**	**47**	**ug/kg**	**9.4**
Benzo(a)pyrene	**22 J**	**47**	**ug/kg**	**4.7**
Indeno(1,2,3-cd)pyrene	**82**	**47**	**ug/kg**	**4.8**
Dibenzo(a,h)anthracene	ND	47	ug/kg	5.2
Benzo(ghi)perylene	**67**	**47**	**ug/kg**	**4.6**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	82	(27 - 110)
Terphenyl-d14	73	(21 - 130)
2-Fluorobiphenyl	71	(28 - 108)
2-Fluorophenol	77	(28 - 107)
Phenol-d5	71	(30 - 112)
2,4,6-Tribromophenol	84	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-01

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-012	Work Order #...:	L5Q0D1AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 12:25	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	12:35		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	73	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	86	62	ug/kg	5.3
Acenaphthylene	47 J	62	ug/kg	7.0
Acenaphthene	22 J	62	ug/kg	5.9
Fluorene	37 J	62	ug/kg	8.1
Phenanthrene	190	62	ug/kg	9.8
Anthracene	75	62	ug/kg	6.0
Fluoranthene	500	62	ug/kg	6.6
Pyrene	360	62	ug/kg	6.2
Benzo(a)anthracene	190	62	ug/kg	7.7
Chrysene	220	62	ug/kg	7.3
Benzo(b)fluoranthene	370	62	ug/kg	9.7
Benzo(k)fluoranthene	ND	62	ug/kg	12
Benzo(a)pyrene	210	62	ug/kg	6.1
Indeno(1,2,3-cd)pyrene	230	62	ug/kg	6.3
Dibenzo(a,h)anthracene	120	62	ug/kg	6.8
Benzo(ghi)perylene	240	62	ug/kg	6.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	86	(27 - 110)
Terphenyl-d14	77	(21 - 130)
2-Fluorobiphenyl	82	(28 - 108)
2-Fluorophenol	75	(28 - 107)
Phenol-d5	73	(30 - 112)
2,4,6-Tribromophenol	80	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-02

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-013	Work Order #...:	L5Q0F1AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 12:30	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	12:55		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	61	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	43	ug/kg	3.7
Acenaphthylene	**11 J**	**43**	**ug/kg**	**4.9**
Acenaphthene	ND	43	ug/kg	4.1
Fluorene	ND	43	ug/kg	5.6
Phenanthrene	**40 J**	**43**	**ug/kg**	**6.8**
Anthracene	**17 J**	**43**	**ug/kg**	**4.2**
Fluoranthene	**150**	**43**	**ug/kg**	**4.6**
Pyrene	**100**	**43**	**ug/kg**	**4.3**
Benzo(a)anthracene	**48**	**43**	**ug/kg**	**5.3**
Chrysene	**90**	**43**	**ug/kg**	**5.1**
Benzo(b)fluoranthene	**67**	**43**	**ug/kg**	**6.7**
Benzo(k)fluoranthene	ND	43	ug/kg	8.6
Benzo(a)pyrene	**34 J**	**43**	**ug/kg**	**4.3**
Indeno(1,2,3-cd)pyrene	**82**	**43**	**ug/kg**	**4.4**
Dibenzo(a,h)anthracene	ND	43	ug/kg	4.7
Benzo(ghi)perylene	**80**	**43**	**ug/kg**	**4.2**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	70	(27 - 110)
Terphenyl-d14	59	(21 - 130)
2-Fluorobiphenyl	65	(28 - 108)
2-Fluorophenol	64	(28 - 107)
Phenol-d5	64	(30 - 112)
2,4,6-Tribromophenol	64	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-04

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-014	Work Order #...:	L5Q0K1AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 12:35	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	13:14		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	59	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	41	ug/kg	3.5
Acenaphthylene	ND	41	ug/kg	4.7
Acenaphthene	ND	41	ug/kg	3.9
Fluorene	ND	41	ug/kg	5.4
Phenanthrene	ND	41	ug/kg	6.5
Anthracene	ND	41	ug/kg	4.0
Fluoranthene	ND	41	ug/kg	4.4
Pyrene	ND	41	ug/kg	4.1
Benzo(a)anthracene	ND	41	ug/kg	5.1
Chrysene	ND	41	ug/kg	4.9
Benzo(b)fluoranthene	ND	41	ug/kg	6.4
Benzo(k)fluoranthene	ND	41	ug/kg	8.2
Benzo(a)pyrene	ND	41	ug/kg	4.1
Indeno(1,2,3-cd)pyrene	ND	41	ug/kg	4.2
Dibenzo(a,h)anthracene	ND	41	ug/kg	4.5
Benzo(ghi)perylene	ND	41	ug/kg	4.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	75	(27 - 110)
Terphenyl-d14	63	(21 - 130)
2-Fluorobiphenyl	69	(28 - 108)
2-Fluorophenol	72	(28 - 107)
Phenol-d5	67	(30 - 112)
2,4,6-Tribromophenol	76	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-SS

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-011	Work Order #...:	L5Q0C1AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 12:20	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	12:16		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	77	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	53 J	72	ug/kg	6.2
Acenaphthylene	38 J	72	ug/kg	8.2
Acenaphthene	ND	72	ug/kg	6.9
Fluorene	23 J	72	ug/kg	9.4
Phenanthrene	120	72	ug/kg	11
Anthracene	49 J	72	ug/kg	7.0
Fluoranthene	370	72	ug/kg	7.7
Pyrene	250	72	ug/kg	7.2
Benzo(a)anthracene	130	72	ug/kg	9.0
Chrysene	190	72	ug/kg	8.5
Benzo(b)fluoranthene	320	72	ug/kg	11
Benzo(k)fluoranthene	ND	72	ug/kg	14
Benzo(a)pyrene	170	72	ug/kg	7.2
Indeno(1,2,3-cd)pyrene	240	72	ug/kg	7.4
Dibenzo(a,h)anthracene	130	72	ug/kg	8.0
Benzo(ghi)perylene	250	72	ug/kg	7.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	80	(27 - 110)
Terphenyl-d14	69	(21 - 130)
2-Fluorobiphenyl	78	(28 - 108)
2-Fluorophenol	72	(28 - 107)
Phenol-d5	71	(30 - 112)
2,4,6-Tribromophenol	82	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-01

GC Semivolatiles

Lot-Sample #...:	C0H180480-002	**Work Order #...:**	L5QX01AJ	**Matrix.....:**	SOLID
Date Sampled...:	08/17/10	**Date Received..:**	08/18/10	**MS Run #.....:**	
Prep Date.....:	08/20/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0232359	**Analysis Time..:**	17:12		
Dilution Factor:	0.5	**Initial Wgt/Vol:**	15 g	**Final Wgt/Vol..:**	10 mL
% Moisture.....:	62	**Analyst ID.....:**	402360	**Instrument ID..:**	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	22	ug/kg	3.3
Aroclor 1221	ND	22	ug/kg	4.2
Aroclor 1232	ND	22	ug/kg	3.8
Aroclor 1242	ND	22	ug/kg	3.6
Aroclor 1248	ND	22	ug/kg	2.1
Aroclor 1254	ND	22	ug/kg	3.1
Aroclor 1260	**1000**	**22**	**ug/kg**	**3.1**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	117	(35 - 140)
Decachlorobiphenyl	85	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-02

GC Semivolatiles

Lot-Sample #...:	C0H180480-003	**Work Order #...:**	L5QX11AJ	**Matrix.....:**	SOLID
Date Sampled...:	08/17/10	**Date Received..:**	08/18/10	**MS Run #.....:**	
Prep Date.....:	08/20/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0232359	**Analysis Time..:**	17:38		
Dilution Factor:	0.5	**Initial Wgt/Vol:**	15 g	**Final Wgt/Vol..:**	10 mL
% Moisture.....:	58	**Analyst ID.....:**	402360	**Instrument ID..:**	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	20	ug/kg	3.0
Aroclor 1221	ND	20	ug/kg	3.8
Aroclor 1232	ND	20	ug/kg	3.4
Aroclor 1242	ND	20	ug/kg	3.3
Aroclor 1248	ND	20	ug/kg	1.9
Aroclor 1254	ND	20	ug/kg	2.8
Aroclor 1260	**400**	**20**	**ug/kg**	**2.8**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	110	(35 - 140)
Decachlorobiphenyl	86	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-04

GC Semivolatiles

Lot-Sample #...:	C0H180480-004	Work Order #...:	L5QX21AD	Matrix.....:	SOLID
Date Sampled...:	08/17/10	Date Received..:	08/18/10	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/26/10		
Prep Batch #...:	0232359	Analysis Time..:	18:03		
Dilution Factor:	0.5	Initial Wgt/Vol:	15 g	Final Wgt/Vol..:	10 mL
% Moisture.....:	43	Analyst ID.....:	402360	Instrument ID..:	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	15	ug/kg	2.2
Aroclor 1221	ND	15	ug/kg	2.8
Aroclor 1232	ND	15	ug/kg	2.5
Aroclor 1242	ND	15	ug/kg	2.4
Aroclor 1248	ND	15	ug/kg	1.4
Aroclor 1254	ND	15	ug/kg	2.1
Aroclor 1260	ND	15	ug/kg	2.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	124	(35 - 140)
Decachlorobiphenyl	87	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-SS

GC Semivolatiles

Lot-Sample #...:	C0H180480-001	**Work Order #...:**	L5QXW1AE	**Matrix.....:**	SOLID
Date Sampled...:	08/17/10	**Date Received..:**	08/18/10	**MS Run #.....:**	
Prep Date.....:	08/20/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0232359	**Analysis Time..:**	16:47		
Dilution Factor:	0.5	**Initial Wgt/Vol:**	15 g	**Final Wgt/Vol..:**	10 mL
% Moisture.....:	73	**Analyst ID.....:**	402360	**Instrument ID..:**	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	31	ug/kg	4.6
Aroclor 1221	ND	31	ug/kg	5.8
Aroclor 1232	ND	31	ug/kg	5.2
Aroclor 1242	ND	31	ug/kg	5.0
Aroclor 1248	ND	31	ug/kg	2.9
Aroclor 1254	ND	31	ug/kg	4.4
Aroclor 1260	**690**	**31**	**ug/kg**	**4.4**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	128	(35 - 140)
Decachlorobiphenyl	96	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-91-01

GC Semivolatiles

Lot-Sample #...:	C0H180480-006	Work Order #...:	L5QX41AD	Matrix.....:	SOLID
Date Sampled...:	08/17/10	Date Received..:	08/18/10	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/26/10		
Prep Batch #...:	0232359	Analysis Time..:	18:54		
Dilution Factor:	0.5	Initial Wgt/Vol:	15 g	Final Wgt/Vol..:	10 mL
% Moisture.....:	25	Analyst ID.....:	402360	Instrument ID..:	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	11	ug/kg	1.6
Aroclor 1221	ND	11	ug/kg	2.1
Aroclor 1232	ND	11	ug/kg	1.9
Aroclor 1242	ND	11	ug/kg	1.8
Aroclor 1248	ND	11	ug/kg	1.0
Aroclor 1254	ND	11	ug/kg	1.6
Aroclor 1260	ND	11	ug/kg	1.6

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	132	(35 - 140)
Decachlorobiphenyl	106	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-91-SS

GC Semivolatiles

Lot-Sample #...:	C0H180480-005	**Work Order #...:**	L5QX31AD	**Matrix.....:**	SOLID
Date Sampled...:	08/17/10	**Date Received..:**	08/18/10	**MS Run #.....:**	
Prep Date.....:	08/20/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0232359	**Analysis Time..:**	18:29		
Dilution Factor:	0.5	**Initial Wgt/Vol:**	15.1 g	**Final Wgt/Vol..:**	10 mL
% Moisture.....:	30	**Analyst ID.....:**	402360	**Instrument ID..:**	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	12	ug/kg	1.8
Aroclor 1221	ND	12	ug/kg	2.3
Aroclor 1232	ND	12	ug/kg	2.0
Aroclor 1242	ND	12	ug/kg	1.9
Aroclor 1248	ND	12	ug/kg	1.1
Aroclor 1254	ND	12	ug/kg	1.7
Aroclor 1260	ND	12	ug/kg	1.7

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	132	(35 - 140)
Decachlorobiphenyl	98	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-01

GC Semivolatiles

Lot-Sample #...:	C0H180480-008	**Work Order #...:**	L5QX71AD	**Matrix.....:**	SOLID
Date Sampled...:	08/17/10	**Date Received..:**	08/18/10	**MS Run #.....:**	
Prep Date.....:	08/20/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0232359	**Analysis Time..:**	19:45		
Dilution Factor:	0.5	**Initial Wgt/Vol:**	15 g	**Final Wgt/Vol..:**	10 mL
% Moisture.....:	60	**Analyst ID.....:**	402360	**Instrument ID..:**	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	21	ug/kg	3.1
Aroclor 1221	ND	21	ug/kg	3.9
Aroclor 1232	ND	21	ug/kg	3.5
Aroclor 1242	ND	21	ug/kg	3.4
Aroclor 1248	ND	21	ug/kg	1.9
Aroclor 1254	ND	21	ug/kg	2.9
Aroclor 1260	ND	21	ug/kg	2.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	123	(35 - 140)
Decachlorobiphenyl	98	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-02

GC Semivolatiles

Lot-Sample #...:	C0H180480-009	Work Order #...:	L5QX81AD	Matrix.....:	SOLID
Date Sampled...:	08/17/10	Date Received..:	08/18/10	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/26/10		
Prep Batch #...:	0232359	Analysis Time..:	20:10		
Dilution Factor:	0.5	Initial Wgt/Vol:	15 g	Final Wgt/Vol..:	10 mL
% Moisture.....:	54	Analyst ID.....:	402360	Instrument ID..:	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	18	ug/kg	2.7
Aroclor 1221	ND	18	ug/kg	3.5
Aroclor 1232	ND	18	ug/kg	3.1
Aroclor 1242	ND	18	ug/kg	3.0
Aroclor 1248	ND	18	ug/kg	1.7
Aroclor 1254	ND	18	ug/kg	2.6
Aroclor 1260	ND	18	ug/kg	2.6

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	128	(35 - 140)
Decachlorobiphenyl	106	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-04

GC Semivolatiles

Lot-Sample #...: C0H180480-010	**Work Order #...:** L5QX91AD	**Matrix.....:** SOLID
Date Sampled...: 08/17/10	**Date Received..:** 08/18/10	**MS Run #.....:**
Prep Date.....: 08/20/10	**Analysis Date..:** 08/26/10	
Prep Batch #...: 0232359	**Analysis Time..:** 20:36	
Dilution Factor: 0.5	**Initial Wgt/Vol:** 15 g	**Final Wgt/Vol..:** 10 mL
% Moisture.....: 40	**Analyst ID.....:** 402360	**Instrument ID..:** S/T
	Method.....: SW846 8082	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	14	ug/kg	2.1
Aroclor 1221	ND	14	ug/kg	2.7
Aroclor 1232	ND	14	ug/kg	2.4
Aroclor 1242	ND	14	ug/kg	2.3
Aroclor 1248	ND	14	ug/kg	1.3
Aroclor 1254	ND	14	ug/kg	2.0
Aroclor 1260	ND	14	ug/kg	2.0

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	130	(35 - 140)
Decachlorobiphenyl	102	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-SS

GC Semivolatiles

Lot-Sample #...:	C0H180480-007	**Work Order #...:**	L5QX61AD	**Matrix.....:**	SOLID
Date Sampled...:	08/17/10	**Date Received..:**	08/18/10	**MS Run #.....:**	
Prep Date.....:	08/20/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0232359	**Analysis Time..:**	19:20		
Dilution Factor:	0.5	**Initial Wgt/Vol:**	15 g	**Final Wgt/Vol..:**	10 mL
% Moisture.....:	64	**Analyst ID.....:**	402360	**Instrument ID..:**	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	23	ug/kg	3.5
Aroclor 1221	ND	23	ug/kg	4.4
Aroclor 1232	ND	23	ug/kg	4.0
Aroclor 1242	ND	23	ug/kg	3.8
Aroclor 1248	ND	23	ug/kg	2.2
Aroclor 1254	ND	23	ug/kg	3.3
Aroclor 1260	**44**	23	**ug/kg**	**3.3**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	130	(35 - 140)
Decachlorobiphenyl	101	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-01

GC Semivolatiles

Lot-Sample #...:	C0H180480-012	**Work Order #...:**	L5Q0D1AD	**Matrix.....:**	SOLID
Date Sampled...:	08/17/10	**Date Received..:**	08/18/10	**MS Run #.....:**	
Prep Date.....:	08/20/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0232359	**Analysis Time..:**	21:27		
Dilution Factor:	0.49	**Initial Wgt/Vol:**	15.2 g	**Final Wgt/Vol..:**	10 mL
% Moisture.....:	73	**Analyst ID.....:**	402360	**Instrument ID..:**	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	30	ug/kg	4.5
Aroclor 1221	ND	30	ug/kg	5.7
Aroclor 1232	ND	30	ug/kg	5.1
Aroclor 1242	ND	30	ug/kg	4.9
Aroclor 1248	ND	30	ug/kg	2.8
Aroclor 1254	ND	30	ug/kg	4.3
Aroclor 1260	**210**	**30**	**ug/kg**	**4.3**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	129	(35 - 140)
Decachlorobiphenyl	98	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-02

GC Semivolatiles

Lot-Sample #...:	C0H180480-013	**Work Order #...:**	L5Q0F1AD	**Matrix.....:**	SOLID
Date Sampled...:	08/17/10	**Date Received..:**	08/18/10	**MS Run #.....:**	
Prep Date.....:	08/20/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0232359	**Analysis Time..:**	21:52		
Dilution Factor:	0.5	**Initial Wgt/Vol:**	15 g	**Final Wgt/Vol..:**	10 mL
% Moisture.....:	61	**Analyst ID.....:**	402360	**Instrument ID..:**	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	21	ug/kg	3.2
Aroclor 1221	ND	21	ug/kg	4.1
Aroclor 1232	ND	21	ug/kg	3.7
Aroclor 1242	ND	21	ug/kg	3.5
Aroclor 1248	ND	21	ug/kg	2.0
Aroclor 1254	ND	21	ug/kg	3.0
Aroclor 1260	ND	21	ug/kg	3.0

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	133	(35 - 140)
Decachlorobiphenyl	104	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-04

GC Semivolatiles

Lot-Sample #...:	C0H180480-014	**Work Order #...:**	L5Q0K1AD	**Matrix.....:**	SOLID
Date Sampled...:	08/17/10	**Date Received..:**	08/18/10	**MS Run #.....:**	
Prep Date.....:	08/20/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0232359	**Analysis Time..:**	22:17		
Dilution Factor:	0.5	**Initial Wgt/Vol:**	15 g	**Final Wgt/Vol..:**	10 mL
% Moisture.....:	59	**Analyst ID.....:**	402360	**Instrument ID..:**	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	20	ug/kg	3.0
Aroclor 1221	ND	20	ug/kg	3.9
Aroclor 1232	ND	20	ug/kg	3.5
Aroclor 1242	ND	20	ug/kg	3.3
Aroclor 1248	ND	20	ug/kg	1.9
Aroclor 1254	ND	20	ug/kg	2.9
Aroclor 1260	ND	20	ug/kg	2.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	129	(35 - 140)
Decachlorobiphenyl	104	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-SS

GC Semivolatiles

Lot-Sample #...:	C0H180480-011	**Work Order #...:**	L5Q0C1AD	**Matrix.....:**	SOLID
Date Sampled...:	08/17/10	**Date Received..:**	08/18/10	**MS Run #.....:**	
Prep Date.....:	08/20/10	**Analysis Date..:**	08/26/10		
Prep Batch #...:	0232359	**Analysis Time..:**	21:01		
Dilution Factor:	0.5	**Initial Wgt/Vol:**	15.1 g	**Final Wgt/Vol..:**	10 mL
% Moisture.....:	77	**Analyst ID.....:**	402360	**Instrument ID..:**	S/T
		Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	36	ug/kg	5.3
Aroclor 1221	ND	36	ug/kg	6.8
Aroclor 1232	ND	36	ug/kg	6.1
Aroclor 1242	ND	36	ug/kg	5.8
Aroclor 1248	ND	36	ug/kg	3.4
Aroclor 1254	ND	36	ug/kg	5.1
Aroclor 1260	**620**	**36**	**ug/kg**	**5.1**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	135	(35 - 140)
Decachlorobiphenyl	100	(35 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-SS

TOTAL Metals

Lot-Sample #...: C0H180480-001 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10
% Moisture.....: 73

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	**0.43**	**0.061**	**mg/kg**	**SW846 7471A**	**08/24/10**	**L5QXW1AF**
		Dilution Factor: 0.5		Analysis Time..: 08:48	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.020	
Prep Batch #...: 0236124						
Silver	ND	0.0043	umoles/gm	EPA SEM	08/24-08/25/10	L5QXW1A5
		Dilution Factor: 1		Analysis Time..: 20:36	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00050	
Chromium	**0.71 J**	**0.0088**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QXW1A4**
		Dilution Factor: 1		Analysis Time..: 20:36	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00077	
Cadmium	**0.034**	**0.0041**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QXW1A6**
		Dilution Factor: 1		Analysis Time..: 20:36	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00013	
Copper	**0.086**	**0.036**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QXW1A7**
		Dilution Factor: 1		Analysis Time..: 20:36	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.0032	
Nickel	**0.17**	**0.063**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QXW1A8**
		Dilution Factor: 1		Analysis Time..: 20:36	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.0018	
Lead	**0.36**	**0.0027**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QXW1A9**
		Dilution Factor: 1		Analysis Time..: 20:36	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00088	
Zinc	**3.9 J**	**0.14**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QXW1CA**
		Dilution Factor: 1		Analysis Time..: 20:36	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.010	
Prep Batch #...: 0239078						
Silver	**2.8**	**0.18**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QXW1AG**
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0072	

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Tetra Tech NUS, Inc

Client Sample ID: SD-90-SS

TOTAL Metals

Lot-Sample #...: C0H180480-001 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Arsenic	8.9	0.18	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AH
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.033	
Beryllium	1.8	0.18	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AJ
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.014	
Cadmium	5.2	0.18	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AK
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.013	
Chromium	110 J	0.37	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AL
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.011	
Copper	116 J	0.37	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AM
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.061	
Nickel	36.4	0.18	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AN
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.021	
Lead	111 E	0.18	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AP
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0070	
Antimony	1.4 E	0.37	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AQ
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0048	
Selenium	1.8	0.92	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AR
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.092	
Thallium	0.24 E	0.18	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AT
		Dilution Factor: 0.5		Analysis Time..: 20:55	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0037	

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Tetra Tech NUS, Inc

Client Sample ID: SD-90-SS

TOTAL Metals

Lot-Sample #...: C0H180480-001 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Zinc	382	0.92	mg/kg	SW846 6020	08/27-08/28/10	L5QXW1AU

Dilution Factor: 0.5 Analysis Time..: 20:55 Analyst ID.....: 400149

Instrument ID..: ICPMS2 MS Run #.....: 0239051 MDL.....: 0.12

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

E Matrix interference.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-01

TOTAL Metals

Lot-Sample #...: C0H180480-002 Matrix.....: SOLID
Date Sampled...: 08/17/10 Date Received..: 08/18/10
% Moisture.....: 62

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	2.0	0.088	mg/kg	SW846 7471A	08/24/10	L5QX01AK
		Dilution Factor: 1		Analysis Time..: 08:53	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.029	
Prep Batch #...: 0236124						
Silver	0.00095 B	0.0031	umoles/gm	EPA SEM	08/24-08/25/10	L5QX01A2
		Dilution Factor: 1		Analysis Time..: 20:20	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00036	
Chromium	1.6 J	0.0064	umoles/gm	EPA SEM	08/24-08/25/10	L5QX01A1
		Dilution Factor: 1		Analysis Time..: 20:20	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00056	
Cadmium	0.085	0.0030	umoles/gm	EPA SEM	08/24-08/25/10	L5QX01A3
		Dilution Factor: 1		Analysis Time..: 20:20	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.000096	
Copper	0.037	0.026	umoles/gm	EPA SEM	08/24-08/25/10	L5QX01A4
		Dilution Factor: 1		Analysis Time..: 20:20	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.0023	
Nickel	0.18	0.045	umoles/gm	EPA SEM	08/24-08/25/10	L5QX01A5
		Dilution Factor: 1		Analysis Time..: 20:20	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.0013	
Lead	0.66	0.0019	umoles/gm	EPA SEM	08/24-08/25/10	L5QX01A6
		Dilution Factor: 1		Analysis Time..: 20:20	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00063	
Zinc	4.2 J	0.10	umoles/gm	EPA SEM	08/24-08/25/10	L5QX01A7
		Dilution Factor: 1		Analysis Time..: 20:20	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.0075	
Prep Batch #...: 0239078						
Silver	8.9	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AL
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0052	

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Tetra Tech NUS, Inc

Client Sample ID: SD-90-01

TOTAL Metals

Lot-Sample #...: C0H180480-002 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Arsenic	7.6	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AM
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.024	
Beryllium	1.6	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AN
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.010	
Cadmium	12.5	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AP
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0093	
Chromium	212 J	0.27	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AQ
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0081	
Copper	130 J	0.27	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AR
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.044	
Nickel	41.8	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AT
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.015	
Lead	257	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AU
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0050	
Antimony	1.4	0.27	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AV
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0035	
Selenium	1.8	0.66	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AW
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.067	
Thallium	0.26	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5QX01AX
		Dilution Factor: 0.5		Analysis Time..: 21:26	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0027	

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Tetra Tech NUS, Inc

Client Sample ID: SD-90-01

TOTAL Metals

Lot-Sample #...: C0H180480-002 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Zinc	**386**	**0.66**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX01A0**

Dilution Factor: 0.5 Analysis Time..: 21:26 Analyst ID.....: 400149
Instrument ID..: ICPMS2 MS Run #.....: 0239051 MDL.....: 0.086

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-02

TOTAL Metals

Lot-Sample #...: C0H180480-003
Date Sampled...: 08/17/10 Date Received..: 08/18/10 Matrix.....: SOLID
% Moisture.....: 58

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	**4.7**	**0.20**	**mg/kg**	**SW846 7471A**	**08/24/10**	**L5QX11AK**
		Dilution Factor: 2.5		Analysis Time..: 10:06	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.065	
Prep Batch #...: 0236124						
Silver	**0.00066 B**	**0.0028**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QX11A2**
		Dilution Factor: 1		Analysis Time..: 20:25	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00032	
Chromium	**5.9 J**	**0.0058**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QX11A1**
		Dilution Factor: 1		Analysis Time..: 20:25	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00050	
Cadmium	**0.22**	**0.0027**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QX11A3**
		Dilution Factor: 1		Analysis Time..: 20:25	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.000087	
Copper	ND	0.024	umoles/gm	EPA SEM	08/24-08/25/10	L5QX11A4
		Dilution Factor: 1		Analysis Time..: 20:25	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.0021	
Nickel	**0.19**	**0.041**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QX11A5**
		Dilution Factor: 1		Analysis Time..: 20:25	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.0012	
Lead	**0.47**	**0.0017**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L5QX11A6**
		Dilution Factor: 1		Analysis Time..: 20:25	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00057	
Zinc	**5.3 J**	**0.18**	**umoles/gm**	**EPA SEM**	**08/24-08/26/10**	**L5QX11A7**
		Dilution Factor: 2		Analysis Time..: 02:01	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.014	
Prep Batch #...: 0239078						
Silver	**29.3**	**0.12**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX11AL**
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0047	

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Tetra Tech NUS, Inc

Client Sample ID: SD-90-02

TOTAL Metals

Lot-Sample #...: C0H180480-003 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Arsenic	6.5	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5QX11AM
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.022	
Beryllium	1.8	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5QX11AN
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0090	
Cadmium	38.7	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5QX11AP
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0084	
Chromium	690 J	0.24	mg/kg	SW846 6020	08/27-08/28/10	L5QX11AQ
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0073	
Copper	82.7 J	0.24	mg/kg	SW846 6020	08/27-08/28/10	L5QX11AR
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.040	
Nickel	46.1	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5QX11AT
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.014	
Lead	195	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5QX11AU
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0046	
Antimony	3.0	0.24	mg/kg	SW846 6020	08/27-08/28/10	L5QX11AV
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0031	
Selenium	1.9	0.60	mg/kg	SW846 6020	08/27-08/28/10	L5QX11AW
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.060	
Thallium	0.32	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5QX11AX
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0024	

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Tetra Tech NUS, Inc

Client Sample ID: SD-90-02

TOTAL Metals

Lot-Sample #...: C0H180480-003 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Zinc	**524**	**0.60**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX11A0**
		Dilution Factor: 0.5		Analysis Time..: 21:30	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.078	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-04

TOTAL Metals

Lot-Sample #...: C0H180480-004 Matrix.....: SOLID
Date Sampled...: 08/17/10 Date Received..: 08/18/10
% Moisture.....: 43

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	0.099	0.029	mg/kg	SW846 7471A	08/24/10	L5QX21AE
		Dilution Factor: 0.5		Analysis Time..: 09:00	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.0096	
Prep Batch #...: 0236124						
Silver	0.0055	0.0020	umoles/gm	EPA SEM	08/24-08/25/10	L5QX21A4
		Dilution Factor: 1		Analysis Time..: 20:31	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00024	
Chromium	0.18 J	0.0042	umoles/gm	EPA SEM	08/24-08/25/10	L5QX21A3
		Dilution Factor: 1		Analysis Time..: 20:31	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00037	
Cadmium	0.0068	0.0020	umoles/gm	EPA SEM	08/24-08/25/10	L5QX21A5
		Dilution Factor: 1		Analysis Time..: 20:31	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.000063	
Copper	0.064	0.017	umoles/gm	EPA SEM	08/24-08/25/10	L5QX21A6
		Dilution Factor: 1		Analysis Time..: 20:31	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.0016	
Nickel	0.024 B	0.030	umoles/gm	EPA SEM	08/24-08/25/10	L5QX21A7
		Dilution Factor: 1		Analysis Time..: 20:31	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00086	
Lead	0.033	0.0013	umoles/gm	EPA SEM	08/24-08/25/10	L5QX21A8
		Dilution Factor: 1		Analysis Time..: 20:31	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.00042	
Zinc	0.42 J	0.067	umoles/gm	EPA SEM	08/24-08/25/10	L5QX21A9
		Dilution Factor: 1		Analysis Time..: 20:31	Analyst ID.....: 403938	
		Instrument ID..: TRACEICP		MS Run #.....:	MDL.....: 0.0050	
Prep Batch #...: 0239078						
Silver	1.7	0.088	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AF
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0034	

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Tetra Tech NUS, Inc

Client Sample ID: SD-90-04

TOTAL Metals

Lot-Sample #...: C0H180480-004 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Arsenic	3.3	0.088	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AG
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.016	
Beryllium	1.5	0.088	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AH
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0066	
Cadmium	1.1	0.088	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AJ
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0062	
Chromium	44.7 J	0.18	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AK
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0054	
Copper	15.9 J	0.18	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AL
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.029	
Nickel	15.4	0.088	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AM
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.010	
Lead	13.7	0.088	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AN
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0034	
Antimony	0.25	0.18	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AP
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0023	
Selenium	0.89	0.44	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AQ
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.044	
Thallium	0.12	0.088	mg/kg	SW846 6020	08/27-08/28/10	L5QX21AR
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0018	

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Tetra Tech NUS, Inc

Client Sample ID: SD-90-04

TOTAL Metals

Lot-Sample #...: C0H180480-004 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Zinc	**51.2**	**0.44**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX21AT**
		Dilution Factor: 0.5		Analysis Time..: 21:35	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.057	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-91-SS

TOTAL Metals

Lot-Sample #...: C0H180480-005
Date Sampled...: 08/17/10 Date Received..: 08/18/10 Matrix.....: SOLID
% Moisture.....: 30

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	ND	0.023	mg/kg	SW846 7471A	08/24/10	L5QX31AE
		Dilution Factor: 0.5		Analysis Time..: 09:02	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.0078	
Prep Batch #...: 0239078						
Silver	**0.029 B**	**0.071**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AF**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0028	
Arsenic	**3.6**	**0.071**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AG**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.013	
Beryllium	**2.4**	**0.071**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AH**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0053	
Cadmium	**0.18**	**0.071**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AJ**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0050	
Chromium	**21.0 J**	**0.14**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AK**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0043	
Copper	**21.7 J**	**0.14**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AL**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.023	
Nickel	**15.0**	**0.071**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AM**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0080	
Lead	**6.6**	**0.071**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AN**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0027	

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Tetra Tech NUS, Inc

Client Sample ID: SD-91-SS

TOTAL Metals

Lot-Sample #...: C0H180480-005 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	**0.20**	**0.14**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AP**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0019	
Selenium	**0.76**	**0.36**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AQ**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.036	
Thallium	**0.084**	**0.071**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AR**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0014	
Zinc	**40.2**	**0.36**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX31AT**
		Dilution Factor: 0.5		Analysis Time..: 21:39	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.046	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: SD-91-01

TOTAL Metals

Lot-Sample #...: C0H180480-006 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10
% Moisture.....: 25

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	ND	0.022	mg/kg	SW846 7471A	08/24/10	L5QX41AE
		Dilution Factor: 0.5		Analysis Time..: 09:04	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.0072	
Prep Batch #...: 0239078						
Silver	**0.025 B**	**0.066**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX41AF**
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0026	
Arsenic	**3.6**	**0.066**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX41AG**
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.012	
Beryllium	**2.5**	**0.066**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX41AH**
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0050	
Cadmium	**0.18**	**0.066**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX41AJ**
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0047	
Chromium	**17.6 J**	**0.13**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX41AK**
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0041	
Copper	**23.0 J**	**0.13**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX41AL**
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.022	
Nickel	**20.4**	**0.066**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX41AM**
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0075	
Lead	**5.5**	**0.066**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX41AN**
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0025	

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Tetra Tech NUS, Inc

Client Sample ID: SD-91-01

TOTAL Metals

Lot-Sample #...: C0H180480-006 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.18	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5QX41AP
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0017	
Selenium	0.66	0.33	mg/kg	SW846 6020	08/27-08/28/10	L5QX41AQ
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.033	
Thallium	0.065 B	0.066	mg/kg	SW846 6020	08/27-08/28/10	L5QX41AR
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0013	
Zinc	44.7	0.33	mg/kg	SW846 6020	08/27-08/28/10	L5QX41AT
		Dilution Factor: 0.5		Analysis Time..: 21:43	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.043	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-SS

TOTAL Metals

Lot-Sample #...: C0H180480-007 Matrix.....: SOLID
Date Sampled...: 08/17/10 Date Received..: 08/18/10
% Moisture.....: 64

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	0.056	0.046	mg/kg	SW846 7471A	08/24/10	L5QX61AE
		Dilution Factor: 0.5		Analysis Time..: 09:05	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.015	
Prep Batch #...: 0239078						
Silver	0.15	0.14	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AF
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0054	
Arsenic	4.6	0.14	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AG
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.025	
Beryllium	1.7	0.14	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AH
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.010	
Cadmium	0.88	0.14	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AJ
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0098	
Chromium	30.9 J	0.28	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AK
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0085	
Copper	25.1 J	0.28	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AL
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.046	
Nickel	20.2	0.14	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AM
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.016	
Lead	15.9	0.14	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AN
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0053	

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Tetra Tech NUS, Inc

Client Sample ID: SD-94-SS

TOTAL Metals

Lot-Sample #...: C0H180480-007 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.11 B	0.28	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AP
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0036	
Selenium	1.2	0.70	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AQ
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.070	
Thallium	0.16	0.14	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AR
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0028	
Zinc	77.3	0.70	mg/kg	SW846 6020	08/27-08/28/10	L5QX61AT
		Dilution Factor: 0.5		Analysis Time..: 21:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.091	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-01

TOTAL Metals

Lot-Sample #...: C0H180480-008 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10
% Moisture.....: 60

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	**0.028 B**	**0.041**	**mg/kg**	**SW846 7471A**	**08/24/10**	**L5QX71AE**
		Dilution Factor: 0.5		Analysis Time..: 09:07	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.013	
Prep Batch #...: 0239078						
Silver	**0.065 B**	**0.12**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX71AF**
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0048	
Arsenic	**4.2**	**0.12**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX71AG**
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.022	
Beryllium	**1.7**	**0.12**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX71AH**
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0093	
Cadmium	**0.37**	**0.12**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX71AJ**
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0087	
Chromium	**26.0 J**	**0.25**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX71AK**
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0075	
Copper	**18.4 J**	**0.25**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX71AL**
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.041	
Nickel	**18.7**	**0.12**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX71AM**
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.014	
Lead	**9.0**	**0.12**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX71AN**
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0047	

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Tetra Tech NUS, Inc

Client Sample ID: SD-94-01

TOTAL Metals

Lot-Sample #...: C0H180480-008 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.076 B	0.25	mg/kg	SW846 6020	08/27-08/28/10	L5QX71AP
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0032	
Selenium	1.0	0.62	mg/kg	SW846 6020	08/27-08/28/10	L5QX71AQ
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.062	
Thallium	0.15	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5QX71AR
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0025	
Zinc	56.0	0.62	mg/kg	SW846 6020	08/27-08/28/10	L5QX71AT
		Dilution Factor: 0.5		Analysis Time..: 21:52	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.080	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-02

TOTAL Metals

Lot-Sample #...: C0H180480-009 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10
% Moisture.....: 54

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	**0.024 B**	**0.036**	**mg/kg**	**SW846 7471A**	**08/24/10**	**L5QX81AE**
		Dilution Factor: 0.5		Analysis Time..: 09:08	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.012	
Prep Batch #...: 0239078						
Silver	**0.055 B**	**0.11**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX81AF**
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0043	
Arsenic	**4.4**	**0.11**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX81AG**
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.020	
Beryllium	**1.7**	**0.11**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX81AH**
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0082	
Cadmium	**0.37**	**0.11**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX81AJ**
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0076	
Chromium	**24.7 J**	**0.22**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX81AK**
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0067	
Copper	**15.9 J**	**0.22**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX81AL**
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.036	
Nickel	**17.0**	**0.11**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX81AM**
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.012	
Lead	**7.4**	**0.11**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX81AN**
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0042	

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Tetra Tech NUS, Inc

Client Sample ID: SD-94-02

TOTAL Metals

Lot-Sample #...: C0H180480-009 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.048 B	0.22	mg/kg	SW846 6020	08/27-08/28/10	L5QX81AP
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0028	
Selenium	1.0	0.55	mg/kg	SW846 6020	08/27-08/28/10	L5QX81AQ
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.055	
Thallium	0.12	0.11	mg/kg	SW846 6020	08/27-08/28/10	L5QX81AR
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0022	
Zinc	52.8	0.55	mg/kg	SW846 6020	08/27-08/28/10	L5QX81AT
		Dilution Factor: 0.5		Analysis Time..: 21:56	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.071	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: SD-94-04

TOTAL Metals

Lot-Sample #...: C0H180480-010 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10
% Moisture.....: 40

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	ND	0.028	mg/kg	SW846 7471A	08/24/10	L5QX91AE
		Dilution Factor: 0.5		Analysis Time..: 09:14	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.0091	
Prep Batch #...: 0239078						
Silver	**0.039 B**	**0.084**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX91AF**
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0033	
Arsenic	**5.7**	**0.084**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX91AG**
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.015	
Beryllium	**3.4**	**0.084**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX91AH**
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0063	
Cadmium	**0.32**	**0.084**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX91AJ**
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0059	
Chromium	**27.7 J**	**0.17**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX91AK**
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0051	
Copper	**18.9 J**	**0.17**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX91AL**
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.028	
Nickel	**21.8**	**0.084**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX91AM**
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0095	
Lead	**5.7**	**0.084**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5QX91AN**
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0032	

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Tetra Tech NUS, Inc

Client Sample ID: SD-94-04

TOTAL Metals

Lot-Sample #...: C0H180480-010 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.20	0.17	mg/kg	SW846 6020	08/27-08/28/10	L5QX91AP
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0022	
Selenium	0.97	0.42	mg/kg	SW846 6020	08/27-08/28/10	L5QX91AQ
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.042	
Thallium	0.077 B	0.084	mg/kg	SW846 6020	08/27-08/28/10	L5QX91AR
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0017	
Zinc	56.3	0.42	mg/kg	SW846 6020	08/27-08/28/10	L5QX91AT
		Dilution Factor: 0.5		Analysis Time..: 22:00	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.054	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-SS

TOTAL Metals

Lot-Sample #...: C0H180480-011 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10
% Moisture.....: 77

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	**0.52**	**0.071**	**mg/kg**	**SW846 7471A**	**08/24/10**	**L5Q0C1AE**
		Dilution Factor: 0.5		Analysis Time..: 09:15	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.023	
Prep Batch #...: 0239078						
Silver	**2.3**	**0.21**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0C1AF**
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0084	
Arsenic	**10.9**	**0.21**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0C1AG**
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.039	
Beryllium	**2.1**	**0.21**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0C1AH**
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.016	
Cadmium	**6.7**	**0.21**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0C1AJ**
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.015	
Chromium	**171 J**	**0.43**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0C1AK**
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.013	
Copper	**145 J**	**0.43**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0C1AL**
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.071	
Nickel	**43.0**	**0.21**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0C1AM**
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.024	
Lead	**141**	**0.21**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0C1AN**
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0082	

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Tetra Tech NUS, Inc

Client Sample ID: SD-97-SS

TOTAL Metals

Lot-Sample #...: C0H180480-011 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.71	0.43	mg/kg	SW846 6020	08/27-08/28/10	L5Q0C1AP
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0056	
Selenium	2.1	1.1	mg/kg	SW846 6020	08/27-08/28/10	L5Q0C1AQ
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.11	
Thallium	0.27	0.21	mg/kg	SW846 6020	08/27-08/28/10	L5Q0C1AR
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0043	
Zinc	415	1.1	mg/kg	SW846 6020	08/27-08/28/10	L5Q0C1AT
		Dilution Factor: 0.5		Analysis Time..: 22:05	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.14	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-01

TOTAL Metals

Lot-Sample #...: C0H180480-012 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10
% Moisture.....: 73

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	**0.99**	**0.061**	**mg/kg**	**SW846 7471A**	**08/24/10**	**L5Q0D1AE**
		Dilution Factor: 0.5		Analysis Time..: 09:17	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.020	
Prep Batch #...: 0239078						
Silver	**5.0**	**0.18**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0D1AF**
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0072	
Arsenic	**11.0**	**0.18**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0D1AG**
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.033	
Beryllium	**2.6**	**0.18**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0D1AH**
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.014	
Cadmium	**22.0**	**0.18**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0D1AJ**
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.013	
Chromium	**423 J**	**0.37**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0D1AK**
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.011	
Copper	**110 J**	**0.37**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0D1AL**
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.061	
Nickel	**46.4**	**0.18**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0D1AM**
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.021	
Lead	**149**	**0.18**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L5Q0D1AN**
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0070	

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: SD-97-01

TOTAL Metals

Lot-Sample #...: C0H180480-012 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	1.0	0.37	mg/kg	SW846 6020	08/27-08/28/10	L5Q0D1AP
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0048	
Selenium	2.2	0.92	mg/kg	SW846 6020	08/27-08/28/10	L5Q0D1AQ
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.092	
Thallium	0.30	0.18	mg/kg	SW846 6020	08/27-08/28/10	L5Q0D1AR
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0037	
Zinc	439	0.92	mg/kg	SW846 6020	08/27-08/28/10	L5Q0D1AT
		Dilution Factor: 0.5		Analysis Time..: 22:23	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.12	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-02

TOTAL Metals

Lot-Sample #...: C0H180480-013
Date Sampled...: 08/17/10 Date Received..: 08/18/10
% Moisture.....: 61
Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	0.10	0.042	mg/kg	SW846 7471A	08/24/10	L5Q0F1AE
		Dilution Factor: 0.5		Analysis Time..: 09:19	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.014	
Prep Batch #...: 0239078						
Silver	0.73	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AF
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0050	
Arsenic	6.2	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AG
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.023	
Beryllium	1.8	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AH
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0096	
Cadmium	2.5	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AJ
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0090	
Chromium	80.6 J	0.26	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AK
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0078	
Copper	21.7 J	0.26	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AL
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.042	
Nickel	23.0	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AM
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.014	
Lead	24.4	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AN
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0049	

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: SD-97-02

TOTAL Metals

Lot-Sample #...: C0H180480-013 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.17 B	0.26	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AP
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0033	
Selenium	1.3	0.64	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AQ
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.064	
Thallium	0.17	0.13	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AR
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0026	
Zinc	102	0.64	mg/kg	SW846 6020	08/27-08/28/10	L5Q0F1AT
		Dilution Factor: 0.5		Analysis Time..: 22:28	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.083	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-04

TOTAL Metals

Lot-Sample #...: C0H180480-014 Matrix.....: SOLID
Date Sampled...: 08/17/10 Date Received..: 08/18/10
% Moisture.....: 59

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0236022						
Mercury	0.036 B	0.040	mg/kg	SW846 7471A	08/24/10	L5Q0K1AE
		Dilution Factor: 0.5		Analysis Time..: 09:20	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA		MS Run #.....: 0236010	MDL.....: 0.013	
Prep Batch #...: 0239078						
Silver	0.076 B	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AF
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0048	
Arsenic	6.5	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AG
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.022	
Beryllium	1.9	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AH
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0092	
Cadmium	0.35	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AJ
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0086	
Chromium	34.1 J	0.24	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AK
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0075	
Copper	17.5 J	0.24	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AL
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.040	
Nickel	22.6	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AM
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.014	
Lead	13.7	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AN
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0046	

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: SD-97-04

TOTAL Metals

Lot-Sample #...: C0H180480-014 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Antimony	0.16 B	0.24	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AP
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0032	
Selenium	1.1	0.61	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AQ
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.061	
Thallium	0.16	0.12	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AR
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.0024	
Zinc	76.7	0.61	mg/kg	SW846 6020	08/27-08/28/10	L5Q0K1AT
		Dilution Factor: 0.5		Analysis Time..: 22:32	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2		MS Run #.....: 0239051	MDL.....: 0.079	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech Middle River, MD

Acid Volatile Sulfide

Lab Name: TESTAMERICA PITTSBURGH
Client Name: Tetra Tech NUS, Inc
Matrix: SOLID

Method: EPA AVS
Lot Number: C0H180480

AMBIENT MICRO-MIDI ACID PURGE

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
SD-90-SS	C0H180480 001	L5QXW1A3	22.6	umoles/g —	0.57	1.8	1	8/24/2010 - 8/24/2010 09:05	0236079
SD-90-01	C0H180480 002	L5QX01AE	19.0	umoles/g —	0.41	1.3	1	8/24/2010 - 8/24/2010 09:05	0236079
SD-90-02	C0H180480 003	L5QX11AE	18.7	umoles/g —	0.37	1.2	1	8/24/2010 - 8/24/2010 09:05	0236079
SD-90-04	C0H180480 004	L5QX21A2	ND	umoles/g —	0.27	0.88	1	8/24/2010 - 8/24/2010 09:05	0236079

Tetra Tech Middle River, MD

Percent Solids

Lab Name: TESTAMERICA PITTSBURGH
Client Name: Tetra Tech NUS, Inc
Matrix: SOLID

Method: SM20 2540G
Lot Number: C0H180480

NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
SD-90-SS	C0H180480 001	L5QXW1AA	27.2	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-90-01	C0H180480 002	L5QX01AF	37.7	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-90-02	C0H180480 003	L5QX11AF	41.6	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-90-04	C0H180480 004	L5QX21AA	56.7	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-91-SS	C0H180480 005	L5QX31AA	70.3	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-91-01	C0H180480 006	L5QX41AA	75.2	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-94-SS	C0H180480 007	L5QX61AA	35.8	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-94-01	C0H180480 008	L5QX71AA	40.4	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-94-02	C0H180480 009	L5QX81AA	45.8	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-94-04	C0H180480 010	L5QX91AA	59.7	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-97-SS	C0H180480 011	L5Q0C1AA	23.3	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-97-01	C0H180480 012	L5Q0D1AA	27.2	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-97-02	C0H180480 013	L5Q0F1AA	39.1	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-97-04	C0H180480 014	L5Q0K1AA	40.9	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265

Tetra Tech Middle River, MD

TOC

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	EPA Lloyd Kahn
Client Name:	Tetra Tech NUS, Inc	**Lot Number:**	C0H180480
Matrix:	SOLID		

Total Organic Carbon by Lloyd Kahn

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
SD-90-SS	C0H180480 001	L5QXW1AC	28000	mg/kg	1980	7270	1.98	8/19/2010 - 8/21/2010 02:18	0231116
SD-90-01	C0H180480 002	L5QX01AG	35900	mg/kg	1420	5200	1.96	8/19/2010 - 8/21/2010 03:01	0231116
SD-90-02	C0H180480 003	L5QX11AG	35900	mg/kg	1280	4710	1.96	8/19/2010 - 8/21/2010 03:15	0231116

APPENDIX C
SUPPORT DOCUMENTATION

APPENDIX C
SUPPORT DOCUMENTATION

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0H180480

Sample Receiving:
TestAmerica's Pittsburgh laboratory received one sample on August 18, 2010. The cooler was received within the proper temperature range.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

GC/MS Semivolatiles :
All non-CCC compounds that have >15% RSD were evaluated to see if a better curve could be drawn using a quadratic curve. All compounds <30% RSD will use an average response factor curve if no visible improvement is accomplished using a quadratic curve. A quadratic curve will be used for a compound where it is determined to be the "best-fit" evaluation.

The continuing calibrations had the %D > 25% but were within expected performance range for these compounds.

The samples were analyzed at a dilution due to matrix interference and/or concentration of compounds detected. Surrogates were diluted out for SD-90-02.

Several samples had internal area counts outside the daily control limits due to matrix interference. The samples analyzed before and after these samples had the internal area counts within the control limits verifying the instrument was operating in control.

PCBs:
There were no problems associated with the analysis.

Metals:
The serial dilution percent difference was outside the control limit for lead, antimony, and thallium for sample SD-90-SS.

Several samples were over the calibration range for mercury and required a dilution.

Sample SD-90-02 was diluted for SEM zinc.

The method blanks had analytes detected at concentrations between the MDL and the reporting limit. The results were flagged with a "B" qualifier. Any sample associated with a method blank that had the same analyte detected had the result flagged with a "J" qualifier. Copper recovered above the reporting limit in batch 0239078. All associated samples had copper >10X the amount detected in the sample, therefore the results were reported.

CASE NARRATIVE
TETRA TECH NUS, INC.
Middle River, MD

Lot #: C0H180480

Metals cont.:
The matrix spikes of sample SD-90-SS recovered below the control limit for antimony. The matrix spike recovered below the control limit for copper.

For the matrix spikes of sample SD-90-SS, lead and zinc recoveries were not calculated due to the concentration of analyte in the sample being >4 times the concentration of spike added.

For the matrix spikes of sample SD-90-01, mercury recoveries were not calculated due to the concentration of analyte in the sample being >4 times the concentration of spike added.

General Chemistry:
There were no problems associated with the analysis.

METHODS SUMMARY

C0H180480

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Acid Volatile Sulfide in Sediment	EPA AVS	
ICP-MS (6020)	SW846 6020	SW846 3050B
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	SW846 7471A
PCBs by SW-846 8082	SW846 8082	SW846 3541
Semivolatile Organics GCMS BNA 8270C	SW846 8270C	
Simultaneouly Extractable Metals	EPA SEM	
Total Residue as Percent Solids	SM20 2540G	
TOC Lloyd Kahn Lloyd Kahn	EPA Lloyd Kahn	EPA Lloyd Kahn

References:

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

SM20 "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER", 20TH EDITION."

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

C0H180480

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L5QXW	001	SD-90-SS	08/17/10	10:05
L5QX0	002	SD-90-01	08/17/10	10:07
L5QX1	003	SD-90-02	08/17/10	10:20
L5QX2	004	SD-90-04	08/17/10	10:30
L5QX3	005	SD-91-SS	08/17/10	11:25
L5QX4	006	SD-91-01	08/17/10	11:30
L5QX6	007	SD-94-SS	08/17/10	13:30
L5QX7	008	SD-94-01	08/17/10	13:35
L5QX8	009	SD-94-02	08/17/10	13:40
L5QX9	010	SD-94-04	08/17/10	13:45
L5Q0C	011	SD-97-SS	08/17/10	12:20
L5Q0D	012	SD-97-01	08/17/10	12:25
L5Q0F	013	SD-97-02	08/17/10	12:30
L5Q0K	014	SD-97-04	08/17/10	12:35

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PCB
CALIBRATION DATA

Report Date : 30-Jul-2010 09:26

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

6E
HP6890 GC-10
MR-2

Start Cal Date : 29-JUL-2010 09:45
End Cal Date : 29-JUL-2010 16:32
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc10.i\07290.b\PCBB.m
Last Edit : 30-Jul-2010 09:18 gc10.i
Curve Type : Average

Calibration File Names:
Level 1: \\PITSVR06\D\chem\gc10.i\07290.b\T0700721.D
Level 2: \\PITSVR06\D\chem\gc10.i\07290.b\T0700722.D
Level 3: \\PITSVR06\D\chem\gc10.i\07290.b\T0700723.D
Level 4: \\PITSVR06\D\chem\gc10.i\07290.b\T0700724.D
Level 5: \\PITSVR06\D\chem\gc10.i\07290.b\T0700725.D
Level 6: \\PITSVR06\D\chem\gc10.i\07290.b\T0700726.D
Level 7: \\PITSVR06\D\chem\gc10.i\07290.b\T0700720.D

Compound	0.05000 Level 1 / 0.02000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
1 Aroclor-1221(1)	+++++ / +++++	+++++	271972	+++++	+++++	+++++	271972	0.000	<-
(2)	+++++ / +++++	+++++	168884	+++++	+++++	+++++	168884	0.000	<-
(3)	+++++ / +++++	+++++	592274	+++++	+++++	+++++	592274	0.000	<-
3 Aroclor-1232(1)	+++++ / +++++	+++++	234872	+++++	+++++	+++++	234872	0.000	
(2)	+++++ / +++++	+++++	264516	+++++	+++++	+++++	264516	0.000	<-
(3)	+++++ / +++++	+++++	173520	+++++	+++++	+++++	173520	0.000	<-
(4)	+++++ / +++++	+++++	242166	+++++	+++++	+++++	242166	0.000	<-
(5)	+++++ / +++++	+++++	161590	+++++	+++++	+++++	161590	0.000	<-

Report Date : 30-Jul-2010 09:26

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUL-2010 09:45
End Cal Date : 29-JUL-2010 16:32
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc10.i\07290.b\PCBB.m
Last Edit : 30-Jul-2010 09:18 gc10.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.02000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD
4 Aroclor-1016(1)	545840 / 623000	597605	570474	570960	556371	516255	568643	6.099
(2)	515700 / 461300	522300	478380	475766	449711	413741	473843	7.932
(3)	606300 / 560800	607145	571866	561145	538131	497533	563274	6.805
(4)	395680 / 361300	423330	391760	409505	404995	393533	397158	4.853
(5)	474880 / 549000	494960	453074	457784	440758	417079	469648	9.108
5 Aroclor-1242(1)	557500 / +++++	530480	503296	541300	509864	+++++	528488	4.222
(2)	509700 / +++++	508340	537080	543244	540038	+++++	527680	3.256
(3)	426200 / +++++	438840	491852	487468	509298	+++++	470732	7.670
(4)	413100 / +++++	404960	408852	422464	411138	+++++	412103	1.586
(5)	427400 / +++++	440440	513610	495712	548205	+++++	485073	10.426 D.K.
6 Aroclor-1248(1)	+++++ / +++++	+++++	721042	+++++	+++++	+++++	721042	0.000

Report Date : 30-Jul-2010 09:26

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUL-2010 09:45
End Cal Date : 29-JUL-2010 16:32
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc10.i\07290.b\PCBB.m
Last Edit : 30-Jul-2010 09:18 gc10.i
Curve Type : Average

Compound	0.05000 Level 1 / 0.02000 Level 7	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	RRF	% RSD	
(2)	+++++ / +++++	+++++	666594	+++++	+++++	+++++	666594	0.000	<-
(3)	+++++ / +++++	+++++	793944	+++++	+++++	+++++	793944	0.000	<-
(4)	+++++ / +++++	+++++	552926	+++++	+++++	+++++	552926	0.000	<-
(5)	+++++ / +++++	+++++	454472	+++++	+++++	+++++	454472	0.000	<-
7 Aroclor-1254(1)	+++++ / +++++	+++++	903658	+++++	+++++	+++++	903658	0.000	<-
(2)	+++++ / +++++	+++++	1036298	+++++	+++++	+++++	1036298	0.000	<-
(3)	+++++ / +++++	+++++	805128	+++++	+++++	+++++	805128	0.000	<-
(4)	+++++ / +++++	+++++	629946	+++++	+++++	+++++	629946	0.000	<-
(5)	+++++ / +++++	+++++	617808	+++++	+++++	+++++	617808	0.000	<-
8 Aroclor-1260(1)	1284940 / 1415000	1283005	1197464	1183092	1114297	1041763	1217080	10.117	O.K.
(2)	1217340 / 1370100	1287150	1216892	1214692	1183574	1133131	1231840	6.198	

Report Date : 30-Jul-2010 09:26

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUL-2010 09:45
End Cal Date : 29-JUL-2010 16:32
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc10.i\07290.b\PCBB.m
Last Edit : 30-Jul-2010 09:18 gc10.i
Curve Type : Average

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	0.02000 Level 7	RRF	% RSD	
(3)	1364160	1465430	1380860	1409448	1340560	1299071	1507300	1395261	5.160	
(4)	1443080	1499095	1386492	1378220	1309202	1250366	1563300	1404251	7.665	
(5)	1120960	1109545	1048700	1093571	1037958	1021533	1223100	1093624	6.255	
9 Aroclor-1262(1)	+++++	+++++	918804	+++++	+++++	+++++	+++++	918804	0.000	
(2)	+++++	+++++	1697588	+++++	+++++	+++++	+++++	1697588	0.000	<-
(3)	+++++	+++++	1645346	+++++	+++++	+++++	+++++	1645346	0.000	<-
(4)	+++++	+++++	2237592	+++++	+++++	+++++	+++++	2237592	0.000	<-
(5)	+++++	+++++	1542116	+++++	+++++	+++++	+++++	1542116	0.000	<-
10 Aroclor-1268(1)	+++++	+++++	4590742	+++++	+++++	+++++	+++++	4590742	0.000	
(2)	+++++	+++++	4275076	+++++	+++++	+++++	+++++	4275076	0.000	<-
(3)	+++++	+++++	3901788	+++++	+++++	+++++	+++++	3901788	0.000	<-

Report Date : 30-Jul-2010 09:26

TestAmerica Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUL-2010 09:45
End Cal Date : 29-JUL-2010 16:32
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : Falcon
Method file : \\PITSVR06\D\chem\gc10.i\07290.b\PCBB.m
Last Edit : 30-Jul-2010 09:18 gc10.i
Curve Type : Average

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	0.02000 Level 7	RRF	% RSD	
(4)	+++++	+++++	1686910	+++++	+++++	+++++	+++++	1686910	0.000	<-
$ 2 Tetrachloro-m-xylene	25631200	24810800	27965880	27618860	25815460	23891715	26032000	25966559	5.560	
$ 11 Decachlorobiphenyl	33360000	31688900	34159520	34212440	32702880	32602580	35564000	33470046	3.845	

Data File: \\PITSVR06\D\chem\gc10.i\07290.b\T0700733.D
Report Date: 30-Jul-2010 09:27

7E
HP6890 GC-10
MR-2

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc10.i
Lab File ID: T0700733.D
Analysis Type:
Lab Sample ID: 2M1660
Method: \\PITSVR06\D\chem\gc10.i\07290.b\PCBB.m

Injection Date: 29-JUL-2010 19:30
Init. Cal. Date(s): 29-JUL-2010 29-JUL-2010
Init. Cal. Times: 09:45 16:32
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF0.500	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
4 Aroclor-1016 (1)	568643	555990	0.010	2.22520	15.00000	Averaged	
(2)	473843	478576	0.010	-0.99895	15.00000	Averaged	
(3)	563274	571110	0.010	-1.39111	15.00000	Averaged	
(4)	397158	388726	0.010	2.12297	15.00000	Averaged	
(5)	469648	506466	0.010	-7.83953	15.00000	Averaged	
$ 2 Tetrachloro-m-xylene	25966559	++++	0.000	++++	15.00000	Averaged	<- NA
$ 11 Decachlorobiphenyl	33470046	662080	0.010	98.02187	15.00000	Averaged	<- NA
8 Aroclor-1260 (1)	1217080	1239088	0.010	-1.80826	15.00000	Averaged	
(2)	1231840	1258218	0.010	-2.14136	15.00000	Averaged	
(3)	1395261	1550236	0.010	-11.10722	15.00000	Averaged	8.7
(4)	1404251	1273472	0.010	9.31306	15.00000	Averaged	
(5)	1093624	886366	0.010	18.95146	15.00000	Averaged	<- OK.

7/30/10

Data File: \\PITSVR06\D\chem\gc10.i\07290.b\T0801003.D
Report Date: 27-Aug-2010 13:40

7E
HP6890 GC-10
MR-2

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc10.i
Lab File ID: T0801003.D
Analysis Type:
Lab Sample ID: M1660
Method: \\PITSVR06\D\chem\gc10.i\07290.b\PCBB.m

Injection Date: 26-AUG-2010 09:59
Init. Cal. Date(s): 29-JUL-2010 29-JUL-2010
Init. Cal. Times: 09:45 16:32
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF0.500	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
4 Aroclor-1016(1)	568643	573556	0.010	-0.86390	15.00000	Averaged
(2)	473843	498200	0.010	-5.14041	15.00000	Averaged
(3)	563274	592280	0.010	-5.14949	15.00000	Averaged
(4)	397158	400260	0.010	-0.78117	15.00000	Averaged
(5)	469648	470368	0.010	-0.15334	15.00000	Averaged
$ 2 Tetrachloro-m-xylene	25966559	29763080	0.000	-14.62081	15.00000	Averaged
$ 11 Decachlorobiphenyl	33470046	37250560	0.010	-11.29522	15.00000	Averaged
8 Aroclor-1260(1)	1217080	1285292	0.010	-5.60456	15.00000	Averaged
(2)	1231840	1280108	0.010	-3.91838	15.00000	Averaged
(3)	1395261	1453382	0.010	-4.16558	15.00000	Averaged
(4)	1404251	1478558	0.010	-5.29160	15.00000	Averaged
(5)	1093624	1138146	0.010	-4.07108	15.00000	Averaged

Data File: \\PITSVR06\D\chem\gc10.i\07290.b\T0801010.D
Report Date: 27-Aug-2010 11:39

7E
HP6890 GC-10
MR-2

TestAmerica Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc10.i
Lab File ID: T0801010.D
Analysis Type:
Lab Sample ID: M1660
Method: \\PITSVR06\D\chem\gc10.i\07290.b\PCBB.m

Injection Date: 26-AUG-2010 16:21
Init. Cal. Date(s): 29-JUL-2010 29-JUL-2010
Init. Cal. Times: 09:45 16:32
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF0.500	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
4 Aroclor-1016(1)	568643	591050	0.010	-3.94035	15.00000	Averaged	
(2)	473843	515800	0.010	-8.85472	15.00000	Averaged	
(3)	563274	608880	0.010	-8.09654	15.00000	Averaged	
(4)	397158	413254	0.010	-4.05292	15.00000	Averaged	
(5)	469648	472354	0.010	-0.57621	15.00000	Averaged	
$ 2 Tetrachloro-m-xylene	25966559	29939600	0.000	-15.30061	15.00000	Averaged	<-
$ 11 Decachlorobiphenyl	33470046	35599040	0.010	-6.36089	15.00000	Averaged	
8 Aroclor-1260(1)	1217080	1295886	0.010	-6.47500	15.00000	Averaged	
(2)	1231840	1280030	0.010	-3.91204	15.00000	Averaged	
(3)	1395261	1474964	0.010	-5.71239	15.00000	Averaged	
(4)	1404251	1450788	0.010	-3.31403	15.00000	Averaged	
(5)	1093624	1104032	0.010	-0.95172	15.00000	Averaged	

Data File: \\PITSVR06\D\chem\gc10.i\07290.b\T0801028.D
Report Date: 27-Aug-2010 11:40

TestAmerica Pittsburgh

7E
HP6890 GC-10
MR-2

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc10.i
Lab File ID: T0801028.D
Analysis Type:
Lab Sample ID: MH1660
Method: \\PITSVR06\D\chem\gc10.i\07290.b\PCBB.m

Injection Date: 26-AUG-2010 23:59
Init. Cal. Date(s): 29-JUL-2010 29-JUL-2010
Init. Cal. Times: 09:45 16:32
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF1	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
4 Aroclor-1016 (1)	568643	603084	0.010	-6.05661	15.00000	Averaged
(2)	473843	503463	0.010	-6.25111	15.00000	Averaged
(3)	563274	594512	0.010	-5.54574	15.00000	Averaged
(4)	397158	437823	0.010	-10.23913	15.00000	Averaged
(5)	469648	460457	0.010	1.95696	15.00000	Averaged
$ 2 Tetrachloro-m-xylene	25966559	28860080	0.000	-11.14326	15.00000	Averaged
$ 11 Decachlorobiphenyl	33470046	35041020	0.010	-4.69367	15.00000	Averaged
8 Aroclor-1260 (1)	1217080	1261681	0.010	-3.66459	15.00000	Averaged
(2)	1231840	1308293	0.010	-6.20642	15.00000	Averaged
(3)	1395261	1515265	0.010	-8.60081	15.00000	Averaged
(4)	1404251	1447981	0.010	-3.11414	15.00000	Averaged
(5)	1093624	1093026	0.010	0.05465	15.00000	Averaged

8D

PESTICIDE ANALYTICAL SEQUENCE

Lab Name: .TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: C0H180480

GC Column: MR-2 ID: 0.53 (mm) Init. Calib. Date(s): 07/29/10 07/29/10

Instrument ID: GC10

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

			MEAN SURROGATE RT FROM INITIAL CALIBRATION			
	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01		M1242	07/29/10	0945		
02		M1242	07/29/10	1010		
03		M1242	07/29/10	1035		
04		M1242	07/29/10	1101		
05		M1242	07/29/10	1126		
06		M1254	07/29/10	1152		
07		M1232	07/29/10	1217		
08		M1248	07/29/10	1243		
09		M1262	07/29/10	1308		
10		M1268	07/29/10	1334		
11		XL1660	07/29/10	1359		
12		L1660	07/29/10	1424		
13		ML1660	07/29/10	1450		
14		M1660	07/29/10	1515		
15		MH1660	07/29/10	1541		
16		H1660	07/29/10	1606		
17		XH1660	07/29/10	1632		
18		2M2154	07/29/10	1657		
19		2M1232	07/29/10	1722		
20		2M1242	07/29/10	1748		
21		2M1248	07/29/10	1813		
22		2M1262	07/29/10	1839		
23		2M1268	07/29/10	1904		
24		2M1660	07/29/10	1930		
25		M2154	08/26/10	0726		
26		M1232	08/26/10	0751		
27		M1242	08/26/10	0817		
28		M1248	08/26/10	0842		
29		M1262	08/26/10	0908		
30		M1268	08/26/10	0933		
31		M1660	08/26/10	0959		
32		M1660	08/26/10	1621		
				QC LIMITS		

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

8D

PESTICIDE ANALYTICAL SEQUENCE

Lab Name: .TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: C0H180480

GC Column: MR-2 ID: 0.53 (mm) Init. Calib. Date(s): 07/29/10 07/29/10

Instrument ID: GC10

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

			MEAN SURROGATE RT FROM INITIAL CALIBRATION			
	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	SD-90-SS	L5QXW1AE	08/26/10	1647		
02	SD-90-01	L5QX01AJ	08/26/10	1712		
03	SD-90-02	L5QX11AJ	08/26/10	1738		
04	SD-90-04	L5QX21AD	08/26/10	1803		
05	SD-91-SS	L5QX31AD	08/26/10	1829		
06	SD-91-01	L5QX41AD	08/26/10	1854		
07	SD-94-SS	L5QX61AD	08/26/10	1920		
08	SD-94-01	L5QX71AD	08/26/10	1945		
09	SD-94-02	L5QX81AD	08/26/10	2010		
10	SD-94-04	L5QX91AD	08/26/10	2036		
11	SD-97-SS	L5Q0C1AD	08/26/10	2101		
12	SD-97-01	L5Q0D1AD	08/26/10	2127		
13	SD-97-02	L5Q0F1AD	08/26/10	2152		
14	SD-97-04	L5Q0K1AD	08/26/10	2217		
15	PBLK2359	L5XME1AA	08/26/10	2243		
16	LCS2359	L5XME1AC	08/26/10	2308		
17	LCSD2359	L5XME1AD	08/26/10	2334		
18		MH1660	08/26/10	2359		
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Sequence: E:\HPCHEM\1\SEQUENCE\S08260.S

Sequence Table (Front Injector):

No entries - empty table!

Sequence Table (Back Injector):

Sample Information Part:

T07290.PDF
AG 08-26-2010
HP6890 GC-10
MR-2

Line	Location	Sample Information
1	Vial 1	RINSE
T0801010 2	Vial 2	GC0311-10
3	Vial 3	C0H180480-001
4	Vial 4	C0H180480-002
5	Vial 5	C0H180480-003
6	Vial 6	C0H180480-004
1015 7	Vial 7	C0H180480-005
8	Vial 8	C0H180480-006
9	Vial 9	C0H180480-007
10	Vial 10	C0H180480-008
11	Vial 11	C0H180480-009
1020 12	Vial 12	C0H180480-010
13	Vial 13	C0H180480-011
14	Vial 14	C0H180480-012
15	Vial 15	C0H180480-013
16	Vial 16	C0H180480-014
1025 17	Vial 17	C0H180480-BLK
18	Vial 18	C0H180480-LCS
19	Vial 19	C0H180480-LCSD
1028 20	Vial 20	GC0312-10
21	Vial 1	RINSE

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 1	HEXANE	PCB1	2	Sample		
2	Vial 2	M1660,07290.b	PCB1	1	Sample		
3	Vial 3	L5QXW1AE,07290.b	PCB1	1	Sample		
4	Vial 4	L5QX01AJ,07290.b	PCB1	1	Sample		
5	Vial 5	L5QX11AJ,07290.b	PCB1	1	Sample		
6	Vial 6	L5QX21AD,07290.b	PCB1	1	Sample		

Sequence: E:\HPCHEM\1\SEQUENCE\S08260.S

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
7	Vial 7	L5QX31AD,07290.b	PCB1	1	Sample		
8	Vial 8	L5QX41AD,07290.b	PCB1	1	Sample		
9	Vial 9	L5QX61AD,07290.b	PCB1	1	Sample		
10	Vial 10	L5QX71AD,07290.b	PCB1	1	Sample		
11	Vial 11	L5QX81AD,07290.b	PCB1	1	Sample		
12	Vial 12	L5QX91AD,07290.b	PCB1	1	Sample		
13	Vial 13	L5Q0C1AD,07290.b	PCB1	1	Sample		
14	Vial 14	L5Q0D1AD,07290.b	PCB1	1	Sample		
15	Vial 15	L5Q0F1AD,07290.b	PCB1	1	Sample		
16	Vial 16	L5Q0K1AD,07290.b	PCB1	1	Sample		
17	Vial 17	L5XME1AA,07290.b	PCB1	1	Sample		
18	Vial 18	L5XME1AC,07290.b	PCB1	1	Sample		
19	Vial 19	L5XME1AD,07290.b	PCB1	1	Sample		
20	Vial 20	MH1660,07290.b	PCB1	1	Sample		
21	Vial 1	HEXANE	PCB1	10	Sample		

PCB
QC SUMMARY

SW846 8082 SURROGATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H180480

Extraction: XXA4FQH01

	CLIENT ID.	SRG01	SRG02	TOT OUT
01	SD-90-SS	128	96	00
02	SD-90-01	117	85	00
03	SD-90-02	110	86	00
04	SD-90-04	124	87	00
05	SD-91-SS	132	98	00
06	SD-91-01	132	106	00
07	SD-94-SS	130	101	00
08	SD-94-01	123	98	00
09	SD-94-02	128	106	00
10	SD-94-04	130	102	00
11	SD-97-SS	135	100	00
12	SD-97-01	129	98	00
13	SD-97-02	133	104	00
14	SD-97-04	129	104	00
15	METHOD BLK. L5XME1AA	128	102	00
16	LCS L5XME1AC	133	106	00
17	LCSD L5XME1AD	127	106	00

SURROGATES		QC LIMITS
SRG01	= Tetrachloro-m-xylene	(35-140)
SRG02	= Decachlorobiphenyl	(35-140)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8082 CHECK SAMPLE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H200000 WO #: L5XME1AC
BATCH: 0232359

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENT. (ug/kg)	% REC	QC LIMITS REC	QUAL
Aroclor 1016	667	695	104	55 - 130	
Aroclor 1260	667	680	102	54 - 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM III

SW846 8082 CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H200000 WO #: L5XME1AD
BATCH: 0232359

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENT. (ug/kg)	% REC	QC LIMITS REC	QUAL
Aroclor 1016	667	758	114	55 - 130	
Aroclor 1260	667	652	98	54 - 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM III

SW846 8082 METHOD BLANK SUMMARY

BLANK WORKORDER NO.: L5XME1AA

Lab Name: TestAmerica Laboratories, Inc.

Lab Code: TALPIT

SDG Number:

Lab File ID: T0801025.

Lot Number: C0H180480

Matrix: SOLID

Extraction Method: 3541

Date Extracted: 08/20/10

Date Analyzed(1): 08/26/10

Date Analyzed(2): N/A

Time Analyzed(1): 22:43

Time Analyzed(2): N/A

Instrument ID(1): S/T

Instrument ID(2): N/A

GC Column(1): MR1/MR2 ID: 053 GC Column(2): N/A ID: N/A

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	DATE ANALYZED(1)	DATE ANALYZED(2)
01	SD-90-SS	L5QXW1AE	08/26/10	N/A
02	SD-90-01	L5QX01AJ	08/26/10	N/A
03	SD-90-02	L5QX11AJ	08/26/10	N/A
04	SD-90-04	L5QX21AD	08/26/10	N/A
05	SD-91-SS	L5QX31AD	08/26/10	N/A
06	SD-91-01	L5QX41AD	08/26/10	N/A
07	SD-94-SS	L5QX61AD	08/26/10	N/A
08	SD-94-01	L5QX71AD	08/26/10	N/A
09	SD-94-02	L5QX81AD	08/26/10	N/A
10	SD-94-04	L5QX91AD	08/26/10	N/A
11	SD-97-SS	L5Q0C1AD	08/26/10	N/A
12	SD-97-01	L5Q0D1AD	08/26/10	N/A
13	SD-97-02	L5Q0F1AD	08/26/10	N/A
14	SD-97-04	L5Q0K1AD	08/26/10	N/A
15	CHECK SAMPLE	L5XME1AC C	08/26/10	N/A
16	DUPLICATE CHECK	L5XME1AD L	08/26/10	N/A
17				
18				
19				
20				

COMMENTS:

FORM IV

FORM VIII

PESTICIDE IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

SD-97-SS

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: C0H180480

Lab Sample ID: L5Q0C1AD Date(s) Analyzed: 08/26/10 08/26/10

Instrument ID (1): GC10 Instrument ID (2): GC10

GC Column(1): MR-2 ID: 0.53(mm) GC Column(2): MR-1 ID: 0.53(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	%D
	1	10.15	10.12	10.22	182.30		
Aroclor-1260	2	10.75	10.71	10.81	192.47		
	3	11.61	11.58	11.68	106.09		
COLUMN 1	4	12.28	12.24	12.34	104.56		
	5	14.13	14.09	14.19	132.74	143.63	
	1	10.65	10.61	10.71	168.88		
	2	10.95	10.90	11.00	64.184		
	3	11.36	11.31	11.41	98.423		
COLUMN 2	4	11.62	11.57	11.67	120.39		
	5	12.06	12.01	12.11	91.146	108.61	32.2
						RPD= 27.8	
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks for each column are required for identification of multicomponent analytes.

PESTICIDE IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

EPA SAMPLE NO.

SD-90-01

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: 40325 SDG No.: C0H180480

Lab Sample ID: L5QX01AJ Date(s) Analyzed: 08/26/10 08/26/10

Instrument ID (1): GC10 Instrument ID (2): GC10

GC Column(1): MR-2 ID: 0.53(mm) GC Column(2): MR-1 ID: 0.53(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	%D
	1	11.61	11.58	11.68	278.23		
Aroclor-1260	2	12.28	12.24	12.34	353.65		
	3	14.13	14.09	14.19	535.55		
COLUMN 1	4						
	5					389.14	
	1	10.95	10.90	11.00	187.35		
	2	11.36	11.31	11.41	271.62		
	3	11.62	11.57	11.67	394.33		
COLUMN 2	4	12.06	12.01	12.11	302.91		
	5					289.05	34.6
						RPD= 29.5	
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks for each column are required for identification of multicomponent analytes.

GC/MS SEMIVOLATILE
CALIBRATION DATA

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Calibration File Names:
Level 1: \\PITSVR06\d\chem\722.i\081310.b\F08130C9.D
Level 2: \\PITSVR06\d\chem\722.i\081310.b\F08130C2.D
Level 3: \\PITSVR06\d\chem\722.i\081310.b\F08130C3.D
Level 4: \\PITSVR06\d\chem\722.i\081310.b\F08130C4.D
Level 5: \\PITSVR06\d\chem\722.i\081310.b\F08130C5.D
Level 6: \\PITSVR06\d\chem\722.i\081310.b\F08130C6.D
Level 7: \\PITSVR06\d\chem\722.i\081310.b\F08130C7.D
Level 8: \\PITSVR06\d\chem\722.i\081310.b\F08130C8.D

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
227 Indene	2.40472	2.45731	2.52899	2.49693	2.46803	2.44948						
	2.33478	2.32425					AVRG		2.43306		3.01475	
225 n-Decane	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
226 n-Octadecane	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

Test America Pittsburgh

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
224 Pentachloroanisole	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
203 3&4 Methylphenol total	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
198 1,4-Dioxane	+++++	0.34539	0.33297	0.29844	0.28086	0.26607						
	0.25557	0.25814					AVRG		0.29106		12.41473	
7 N-Nitrosomorpholine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
8 Ethyl methanesulfonate	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
9 Pyridine	0.92723	1.21754	1.25773	1.39585	1.36682	1.40511						
	1.30676	1.31786					AVRG		1.27436		12.13302	
199 Thionazin	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

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1244
C0H180480

Test America Pittsburgh

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Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	60.0000 Level 7	80.0000 Level 8	Curve	Coefficients b	m1	m2	%RSD or R^2	
200 Sulfotepp	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-
10 N-Nitrosodimethylamine	0.61947	0.72009	0.77625	0.79126	0.77907	0.77750								
	0.73539	0.75278							AVRG		0.74398		7.51064	
11 Ethyl methacrylate	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-
12 3-Chloropropionitrile	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-
13 Malononitrile	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-
14 2-Picoline	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-
15 N-Nitrosomethylethylamine	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-

Test America Pittsburgh

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
16 Methyl methanesulfonate	0.66320	0.67855	0.72443	0.71869	0.68187	0.69214						
	0.65785	0.64207					AVRG		0.68235		4.21519	
18 1,3-Dichloro-2-propanol	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
19 N-Nitrosodiethylamine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
220 Benzaldehyde	1957	9796	35353	95520	191406	323161						
	457794	503371					QUAD	0.20790	0.62124	0.14074	0.99817	
21 Aniline	1.58339	1.66688	1.76793	1.79381	1.78401	1.76529						
	1.65352	1.60790					AVRG		1.70284		4.96363	
22 Phenol	1.80390	1.81200	1.91430	1.86621	1.82225	1.78474						
	1.68767	1.67693					AVRG		1.79600		4.51212	
23 bis(2-Chloroethyl)ether	1.29531	1.34618	1.30762	1.30921	1.28346	1.26833						
	1.22212	1.21802					AVRG		1.28128		3.43457	

(1001 - 1430)
1246
C0H180480

Test America Pittsburgh

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Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
24 2-Chlorophenol	1.37904	1.43740	1.50094	1.47930	1.44358	1.42368						
	1.35756	1.36337					AVRG		1.42311		3.72264	
25 Pentachloroethane	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
26 1,3-Dichlorobenzene	1.62401	1.65878	1.66504	1.68396	1.68657	1.65788						
	1.56778	1.57121					AVRG		1.63940		2.87965	
27 1,4-Dichlorobenzene	1.63810	1.69203	1.71523	1.68400	1.68534	1.67869						
	1.57345	1.56621					AVRG		1.65413		3.39955	
28 1,2-Dichlorobenzene	1.63085	1.61349	1.58913	1.59651	1.58874	1.57650						
	1.48362	1.48183					AVRG		1.57008		3.59425	
29 Benzyl Alcohol	0.64247	0.86345	0.86418	0.82723	0.85078	0.87687						
	0.84920	0.84962					AVRG		0.82797		9.22186	
30 2-Methylphenol	1.24101	1.28853	1.30203	1.24571	1.21711	1.22363						
	1.20999	1.19959					AVRG		1.24095		2.97726	

Test America Pittsburgh

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Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
31 2,2'-oxybis(1-Chloropropane)	1.23044	1.30538	1.32085	1.27030	1.22625	1.22258						
	1.17708	1.17713					AVRG		1.24125		4.32923	
32 N-Nitroso-di-n-propylamine	1.02195	0.95263	1.00026	0.97083	0.93469	0.91713						
	0.90201	0.90093					AVRG		0.95005		4.73558	
M 195 Cresols, total	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
192 4-Methylphenol	1.22899	1.34590	1.35555	1.30608	1.23859	1.27139						
	1.22244	1.25871					AVRG		1.27846		4.06108	
193 3-Methylphenol	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
34 Hexachloroethane	0.63791	0.61187	0.63570	0.64420	0.65350	0.63250						
	0.61182	0.62021					AVRG		0.63096		2.39833	
35 Nitrobenzene	0.37257	0.40366	0.42502	0.40352	0.41584	0.39635						
	0.38742	0.38892					AVRG		0.39916		4.17434	

Test America Pittsburgh

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Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
36 N-Nitrosopyrrolidine	0.54983	0.56691	0.59002	0.59224	0.57742	0.58602						
	0.58674	0.59308					AVRG		0.58028		2.59735	
37 Acetophenone	1.97530	2.22865	1.94044	1.85913	1.80758	1.77640						
	1.71957	1.70539					AVRG		1.87656		9.16020	
39 o-Toluidine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
40 N-Nitrosopiperidine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
41 Isophorone	0.62746	0.65089	0.67196	0.64482	0.65586	0.64340						
	0.62753	0.63295					AVRG		0.64436		2.37296	
42 2-Nitrophenol	0.15967	0.17874	0.19718	0.20326	0.21318	0.21444						
	0.21428	0.21881					AVRG		0.19994		10.41819	
43 2,4-Dimethylphenol	0.29927	0.35698	0.37616	0.36893	0.36653	0.36724						
	0.35195	0.36744					AVRG		0.35681		6.84195	

(1001 - 1430)
1249
C0H180480

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
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Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
44 bis(2-Chloroethoxy)methane	0.39373	0.38652	0.40881	0.40441	0.40299	0.39819						
	0.39391	0.39566					AVRG		0.39803		1.78958	
45 O,O,O-Triethyl phosphorothioa	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
46 2,4-Toluenediamene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
47 1,3,5-Trichlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
48 2,4-Dichlorophenol	0.24581	0.27939	0.30890	0.29930	0.30701	0.30622						
	0.30315	0.31012					AVRG		0.29499		7.51455	
49 Benzoic Acid	6806	3381	18537	32471	48798	138897						
	+++++	+++++					QUAD	-0.03249	29.12760	-38.14467	0.99428	
50 1,2,4-Trichlorobenzene	0.31627	0.34294	0.33623	0.34367	0.35178	0.34975						
	0.33878	0.34661					AVRG		0.34075		3.27891	

Test America Pittsburgh

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
51 Naphthalene	1.10269	1.08618	1.08403	1.08350	1.08384	1.03955						
	0.99767	0.98385					AVRG		1.05766		4.26789	
52 4-Chloroaniline	0.38925	0.38592	0.41569	0.41419	0.42872	0.41722						
	0.41156	0.42032					AVRG		0.41036		3.65070	
221 Caprolactam	+++++	0.07035	0.08206	0.08502	0.09636	0.09269						
	0.08174	0.09486					AVRG		0.08615		10.70160	
53 a,a-Dimethyl-phenethylamine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
54 2,6-Dichlorophenol	0.27364	0.29280	0.30639	0.29342	0.30151	0.30174						
	0.30035	0.30572					AVRG		0.29694		3.58740	
55 Hexachloropropene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
56 Hexachlorobutadiene	0.19771	0.19968	0.19559	0.20171	0.20800	0.20738						
	0.20524	0.20827					AVRG		0.20295		2.44617	

Test America Pittsburgh

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Compound	0.4000000 Level 1 / 60.0000 Level 7	2.0000 Level 2 / 80.0000 Level 8	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
57 1,2,3-Trichlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
58 N-Nitrosodi-n-butylamine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
59 4-Chloro-3-Methylphenol	0.26877	0.29213	0.30833	0.30401	0.29601	0.29780						
	0.30130	0.30418					AVRG		0.29657		4.16519	
60 p-Phenylene diamine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
61 Safrole	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
62 2-Methylnaphthalene	0.67256	0.69217	0.72525	0.70585	0.70124	0.70642						
	0.69237	0.70460					AVRG		0.70006		2.16521	
64 Hexachlorocyclopentadiene	1801	11679	28805	67202	137803	264528						
	457370	567444					QUAD	0.09551	2.81550	-0.04729	0.99982	

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Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
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Compound	0.4000000 Level 1 / 50.0000 Level 7	2.0000 Level 2 / 80.0000 Level 8	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
65 1,2,4,5-Tetrachlorobenzene	0.55878	0.57760	0.58917	0.60132	0.59809	0.61766						
	0.61525	0.61563					AVRG		0.59669		3.48374	
66 2,4,6-Trichlorophenol	0.30330	0.34000	0.37329	0.37642	0.38148	0.41907						
	0.41277	0.43243					AVRG		0.37985		11.29802	
67 2,4,5-Trichlorophenol	0.28726	0.37844	0.39594	0.39382	0.40930	0.40483						
	0.40817	0.39248					AVRG		0.38378		10.49571	
68 1,2,3,5-Tetrachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
222 1,1'-Biphenyl	1.44048	1.47292	1.52673	1.56116	1.55388	1.56567						
	1.51522	1.50219					AVRG		1.51728		2.92575	
69 1,4-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
70 2-Chloronaphthalene	1.12693	1.16820	1.20407	1.19563	1.19462	1.23388						
	1.19514	1.18643					AVRG		1.18811		2.59232	

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
219 1-Chloronaphthalene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
71 Isosafrole 1	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
M 188 Isosafrole, total	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
72 Isosafrole 2	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
73 2-Nitroaniline	0.26050	0.31228	0.32943	0.33738	0.32991	0.33712						
	0.33826	0.34095					AVRG		0.32323		8.32713	
74 1,2,3,4-Tetrachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
75 1,4-Naphthoquinone	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	60.0000 Level 7	80.0000 Level 8	Curve	Coefficients b	m1	m2	%RSD or R^2	
76 Dimethylphthalate	1.28704	1.23362	1.28226	1.25449	1.24854	1.28400								
	1.22647	1.22649							AVRG		1.25536		2.07191	
77 m-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-
78 2,6-Dinitrotoluene	0.20774	0.23474	0.28842	0.28463	0.30209	0.30126								
	0.29777	0.31020							AVRG		0.27836		13.24025	
79 Acenaphthylene	1.51990	1.66239	1.72300	1.72107	1.72059	1.76238								
	1.67971	1.66383							AVRG		1.68161		4.39021	
80 1,2-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-
81 3-Nitroaniline	0.21885	0.27642	0.30757	0.30844	0.31292	0.33000								
	0.31502	0.33465							AVRG		0.30049		12.42710	
82 Acenaphthene	1.16162	1.15942	1.19765	1.18471	1.16034	1.20575								
	1.16139	1.16463							AVRG		1.17444		1.60260	

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	60.0000 Level 7	80.0000 Level 8	Curve	Coefficients b	m1	m2	%RSD or R^2	
83 2,4-Dinitrophenol	+++++	+++++	19999	40070	71826	97073								
							174030	239504	QUAD	0.66099	7.37688	-0.92205	0.99890	
84 Pentachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-
85 4-Nitrophenol	+++++	+++++	0.17308	0.17919	0.18449	0.18473								
	0.17697	0.18889							AVRG		0.18122		3.21981	
86 Dibenzofuran	1.71276	1.57433	1.63200	1.64241	1.60976	1.63646								
	1.57759	1.57079							AVRG		1.61951		2.94571	
87 2,4-Dinitrotoluene	0.24852	0.34085	0.38661	0.38720	0.38153	0.39114								
	0.38339	0.40052							AVRG		0.36497		13.76538	
88 2,3,4,6-Tetrachlorophenol	0.21692	0.28780	0.32379	0.31328	0.31504	0.32534								
	0.31754	0.33217							AVRG		0.30399		12.35689	
89 1-Naphthylamine	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-

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Compound	0.4000000 Level 1 / 60.0000 Level 7	2.0000 Level 2 / 80.0000 Level 8	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
90 Zinophos	+++++ / +++++	+++++ / +++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
91 2,3,5,6-Tetrachlorophenol	1893 / 440826	11452 / 549898	32279	63752	131436	244781	QUAD	0.06015	3.08544	-0.09866	0.99974	
92 2-Naphthylamine	4911 / 401421	23832 / 468448	47302	107555	187866	287361	QUAD	0.04383	1.55646	0.55338	0.99786	
93 Diethylphthalate	1.11505 / 1.16207	1.18859 / 1.19250	1.33059	1.25721	1.20435	1.21916	AVRG		1.20869		5.32078	
94 Fluorene	1.27641 / 1.34378	1.30091 / 1.35132	1.32166	1.30249	1.32078	1.39553	AVRG		1.32661		2.77359	
95 4-Chlorophenyl-phenylether	0.61028 / 0.67633	0.60849 / 0.69516	0.64260	0.64846	0.63932	0.68754	AVRG		0.65102		5.06321	
96 4-Nitroaniline	0.19402 / 0.31208	0.29069 / 0.31930	0.30558	0.30369	0.32343	0.33078	AVRG		0.29745		14.66833	

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Compound	0.4000000 Level 1 / 60.0000 Level 7	2.0000 Level 2 / 80.0000 Level 8	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
97 5-Nitro-o-toluidine	+++++ / +++++	+++++ / +++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
98 4,6-Dinitro-2-methylphenol	2484 / 248972	9695 / 332951	44158	78771	126555	153586	QUAD	0.24714	6.89553	-0.18452	0.99907	
99 N-Nitrosodiphenylamine	0.51110 / 0.61206	0.58917 / 0.59915	0.60275	0.59140	0.60180	0.60040	AVRG		0.58848		5.44593	
100 1,2-Diphenylhydrazine	0.86331 / 0.86071	0.87370 / 0.83837	0.91347	0.93359	0.92439	0.90010	AVRG		0.88846		3.85647	
101 Diphenylamine	+++++ / +++++	+++++ / +++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
202 N-Nitroso&Diphenylamine	+++++ / +++++	+++++ / +++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
102 Tetraethyl dithiopyrophosphat	+++++ / +++++	+++++ / +++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	60.0000 Level 7	80.0000 Level 8	Curve	Coefficients b	m1	m2	%RSD or R^2	
103 Diallate 1	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
M 189 Diallate, total	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
104 Phorate	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
105 1,3,5-Trinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
106 4-Bromophenyl-phenylether	0.20738	0.21795	0.22770	0.23104	0.23708	0.23715	0.24272	0.24149	AVRG		0.23031		5.33670	
107 Hexachlorobenzene	0.21578	0.21224	0.22039	0.22040	0.22691	0.23300	0.23911	0.23529	AVRG		0.22539		4.31336	
108 Phenacetin	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
223 Atrazine	0.08852	0.10999	0.09435	0.12262	0.12669	0.12245						
	+++++	+++++					AVRG		0.11077		14.53039	
109 Diallate 2	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
110 Dimethoate	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++				.	AVRG		0.000e+000		0.000e+000	<-
111 Pentachlorophenol	3853	13891	47804	82673	129346	164001						
	284315	369254					QUAD	0.22768	6.61513	-0.42372	0.99946	
112 Pentachloronitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
113 4-Aminobiphenyl	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
114 Pronamide	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	60.0000 Level 7	80.0000 Level 8	Curve	Coefficients b	m1	m2	%RSD or R^2	
115 Phenanthrene	1.12791	1.12353	1.15165	1.15045	1.15488	1.11190								
	1.17256	1.13300							AVRG		1.14073		1.74637	
116 Anthracene	1.04804	1.13791	1.18867	1.17561	1.21249	1.16055								
	1.14286	1.09410							AVRG		1.14503		4.63162	
117 Dinoseb	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-
118 Disulfoton	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-
119 Carbazole	0.95652	1.03105	1.03947	1.02044	1.05215	1.01886								
	0.96425	0.99047							AVRG		1.00915		3.47433	
120 Di-n-Butylphthalate	1.03392	1.17914	1.24874	1.25819	1.34244	1.26949								
	1.24036	1.23563							AVRG		1.22599		7.32120	
121 4-Nitroquinoline 1-oxide	+++++	+++++	+++++	+++++	+++++	+++++								
	+++++	+++++							AVRG		0.000e+000		0.000e+000	<-

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
122 Methapyrilene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
123 Fluoranthene	1.01536	1.14862	1.14047	1.09907	1.18313	1.14698						
	1.09291	1.11490					AVRG		1.11768		4.54401	
124 Benzidine	2328	9886	34574	97253	179112	307693						
	484456	682853					QUAD	0.00840	3.17671	-0.00076	0.99889	
125 Pyrene	1.31593	1.33451	1.37368	1.36146	1.28464	1.25122						
	1.23822	1.16368					AVRG		1.29042		5.47434	
126 Aramite 1	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
M 191 Aramite, total	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
127 Aramite 2	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

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Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
128 p-Dimethylamino azobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
129 p-Chlorobenzilate	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
130 Famphur	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
131 Butylbenzylphthalate	0.49957	0.54719	0.58409	0.61428	0.59785	0.60144						
	0.59303	0.58405					AVRG		0.57769		6.43002	
132 3,3'-Dimethylbenzidine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
133 3,3'-Dimethoxybenzidine	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
134 2-Acetylaminofluorene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

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Compound	0.4000000 Level 1 / 60.0000 Level 7	2.0000 Level 2 / 80.0000 Level 8	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
135 3,3'-Dichlorobenzidine	0.30727	0.33735	0.36346	0.40115	0.41940	0.41856						
	0.42122	0.42615					AVRG		0.38682		11.69500	
136 Benzo(a)Anthracene	1.13091	1.10635	1.14343	1.13241	1.13667	1.11677						
	1.09331	1.08696					AVRG		1.11835		1.87535	
137 Chrysene	1.09063	1.10294	1.13267	1.16112	1.16230	1.12571						
	1.11104	1.07708					AVRG		1.12044		2.77111	
138 4,4'-Methylene bis(o-chloroan	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
139 bis(2-ethylhexyl)Phthalate	0.62066	0.77968	0.80532	0.82390	0.85603	0.84347						
	0.85254	0.83865					AVRG		0.80253		9.69853	
140 Di-n-octylphthalate	1.17345	1.29869	1.39458	1.46405	1.49397	1.53895						
	1.51083	1.49902					AVRG		1.42169		8.90439	
141 Benzo(b)fluoranthene	1.16890	1.13652	1.29405	1.19298	1.27494	1.40242						
	1.28843	1.44649					AVRG		1.27559		8.55423	

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Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
142 Benzo(k)fluoranthene	1.36410	1.41749	1.29774	1.41629	1.38221	1.30668						
	1.38287	1.31035					AVRG		1.35972		3.59125	
143 7,12-dimethylbenz[a]anthracen	0.45932	0.55515	0.57962	0.59329	0.60865	0.63708						
	0.65002	0.68075					AVRG		0.59548		11.45509	
213 Dinocap 1(1)	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
(2)	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
214 Dinocap 2	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
215 Dinocap 4	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
M 218 Dinocap, total	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
216 Dinocap 3	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
144 Hexachlorophene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
145 Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
146 Benzo(a)pyrene	0.90255	0.98512	1.03941	1.08936	1.10207	1.12387						
	1.11027	1.12765					AVRG		1.06004		7.53306	
148 3-Methylcholanthrene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
149 Indeno(1,2,3-cd)pyrene	8363	48521	110240	257850	597382	1130240						
	1754986	2457605					QUAD	0.06967	0.80308	-0.00381	0.99987	
150 Dibenz(a,h)anthracene	5706	37818	90997	208964	499792	947917						
	1487491	2133011					QUAD	0.07149	0.98253	-0.00999	0.99987	

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Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	60.0000 Level 7	80.0000 Level 8	Curve	Coefficients b	m1	m2	%RSD or R^2	
151 Benzo(g,h,i)perylene	6506	43950	102836	225588	526534	972719	1484860	2090048	QUAD	0.04777	0.93309	-0.00390	0.99984	
204 Benzenethiol	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
205 1-Methylnaphthalene	0.65042	0.68295	0.68135	0.67309	0.69042	0.67697	0.66289	0.67977	AVRG		0.67473		1.87604	
206 Kepone	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
207 6-Methylchrysene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
208 Dibenzo(a,h)acridine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-
209 Dibenz(a,j)acridine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+000		0.000e+000	<-

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
	60.0000 Level 7	80.0000 Level 8										
210 Isodrin	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
211 Parathion	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
212 Methyl parathion	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++	+++++					AVRG		0.000e+000		0.000e+000	<-
$ 154 Nitrobenzene-d5	0.38066	0.39000	0.40676	0.39893	0.40159	0.39734						
	0.38988	0.39356					AVRG		0.39484		2.05628	
$ 155 2-Fluorobiphenyl	1.26549	1.30104	1.33754	1.36237	1.34145	1.38379						
	1.33180	1.32005					AVRG		1.33044		2.72932	
$ 156 Terphenyl-d14	0.83538	0.84037	0.90299	0.88376	0.84770	0.83851						
	0.86099	0.81762					AVRG		0.85341		3.27476	

Test America Pittsburgh

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

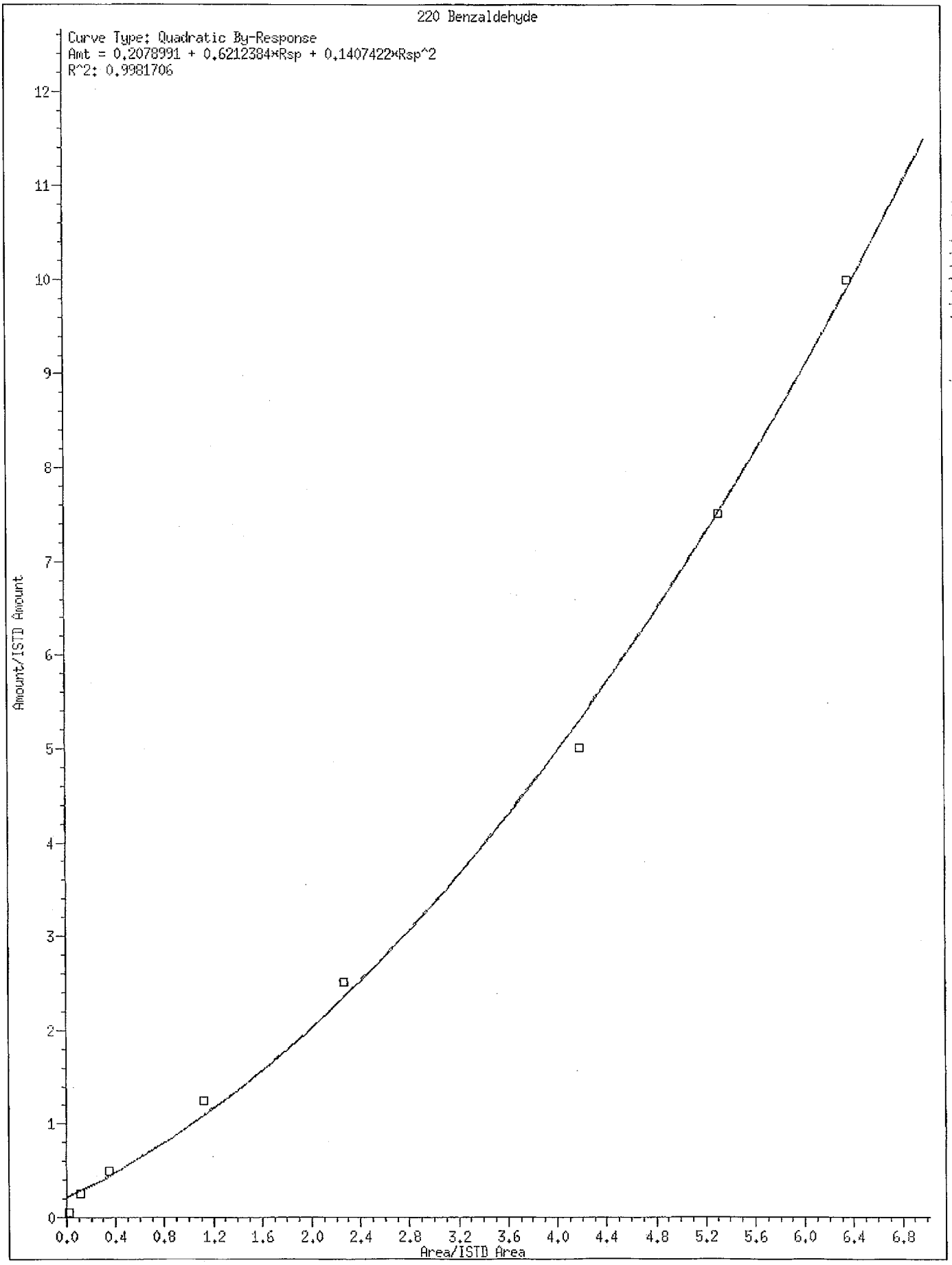
Compound	0.4000000 Level 1	2.0000 Level 2	4.0000 Level 3	10.0000 Level 4	20.0000 Level 5	40.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2
	60.0000 Level 7	80.0000 Level 8									
$ 157 Phenol-d5	1.53012	1.64600	1.69164	1.69188	1.65001	1.63487					
	1.56206	1.55591					AVRG		1.62031		3.87804
$ 158 2-Fluorophenol	1.24992	1.30163	1.30886	1.35870	1.35009	1.34003					
	1.25780	1.26735					AVRG		1.30430		3.28416
$ 159 2,4,6-Tribromophenol	0.06431	0.07114	0.08427	0.09140	0.09354	0.09582					
	0.09799	0.09858					AVRG		0.08713		14.82702
$ 186 2-Chlorophenol-d4	1.39976	1.45921	1.49063	1.47018	1.46383	1.47123					
	1.40023	1.40347					AVRG		1.44482		2.58109
$ 187 1,2-Dichlorobenzene-d4	0.98651	0.98648	1.00915	1.01840	1.02805	1.02201					
	0.99277	1.00302					AVRG		1.00580		1.61671

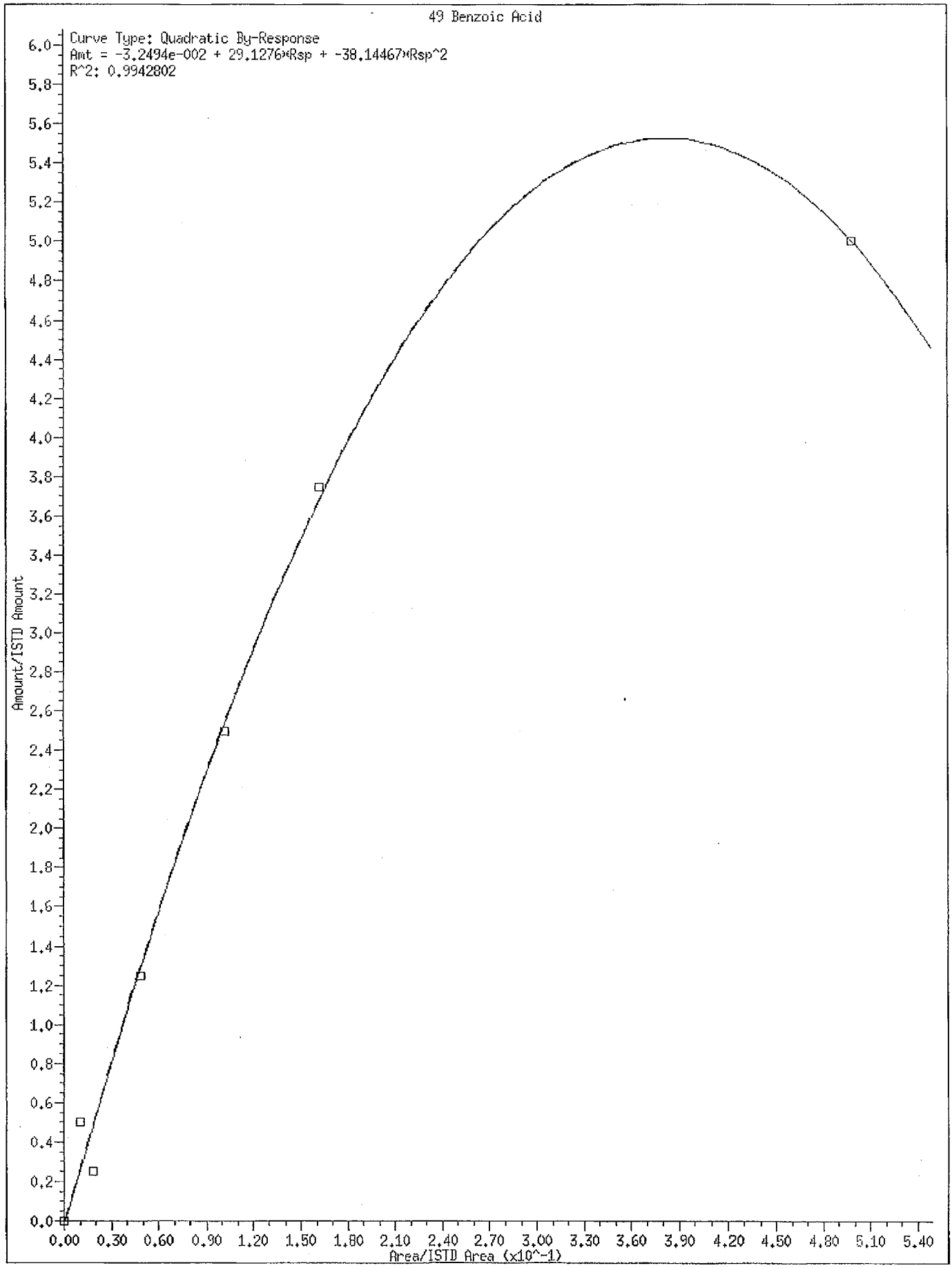
Test America Pittsburgh

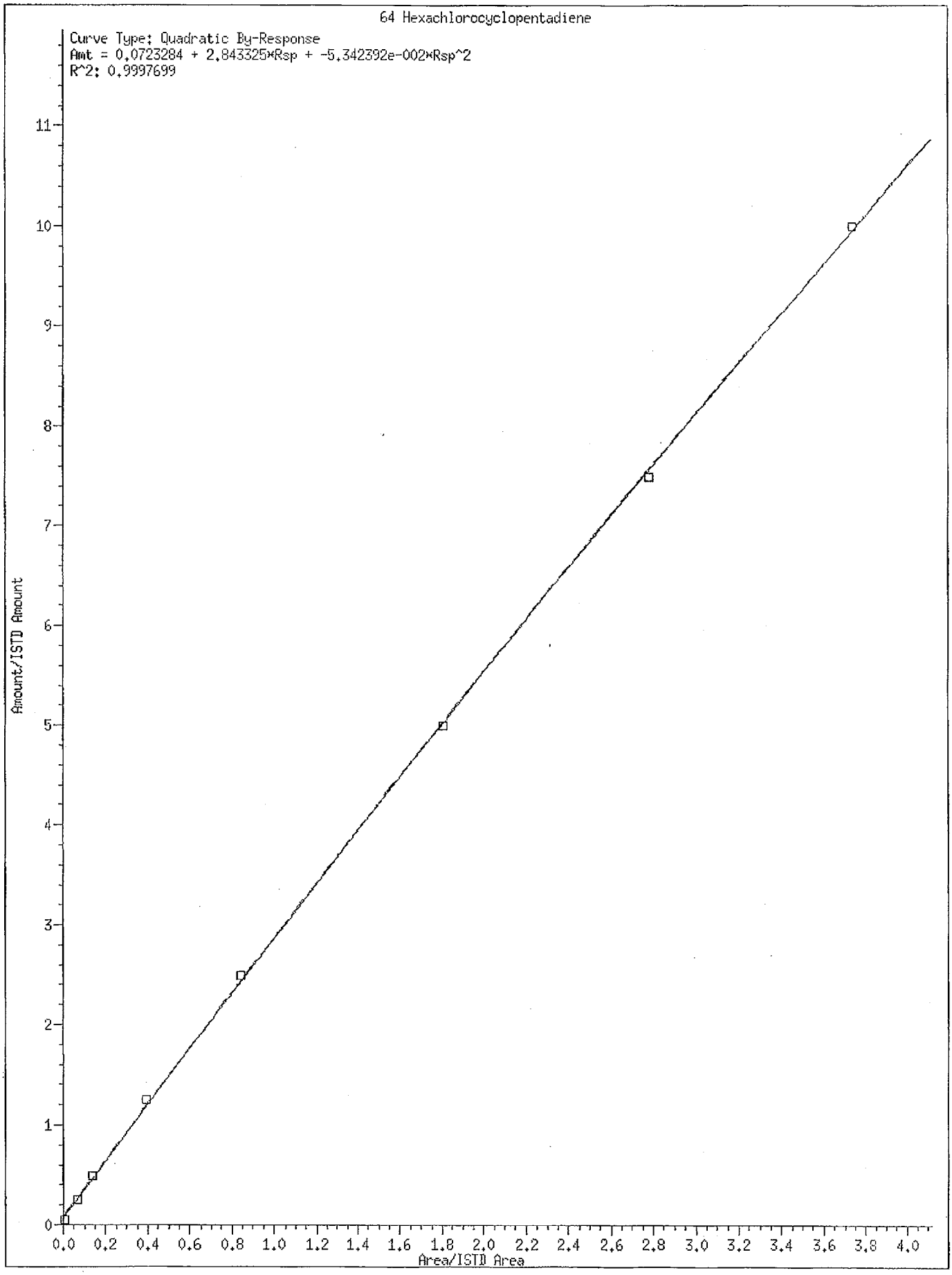
INITIAL CALIBRATION DATA

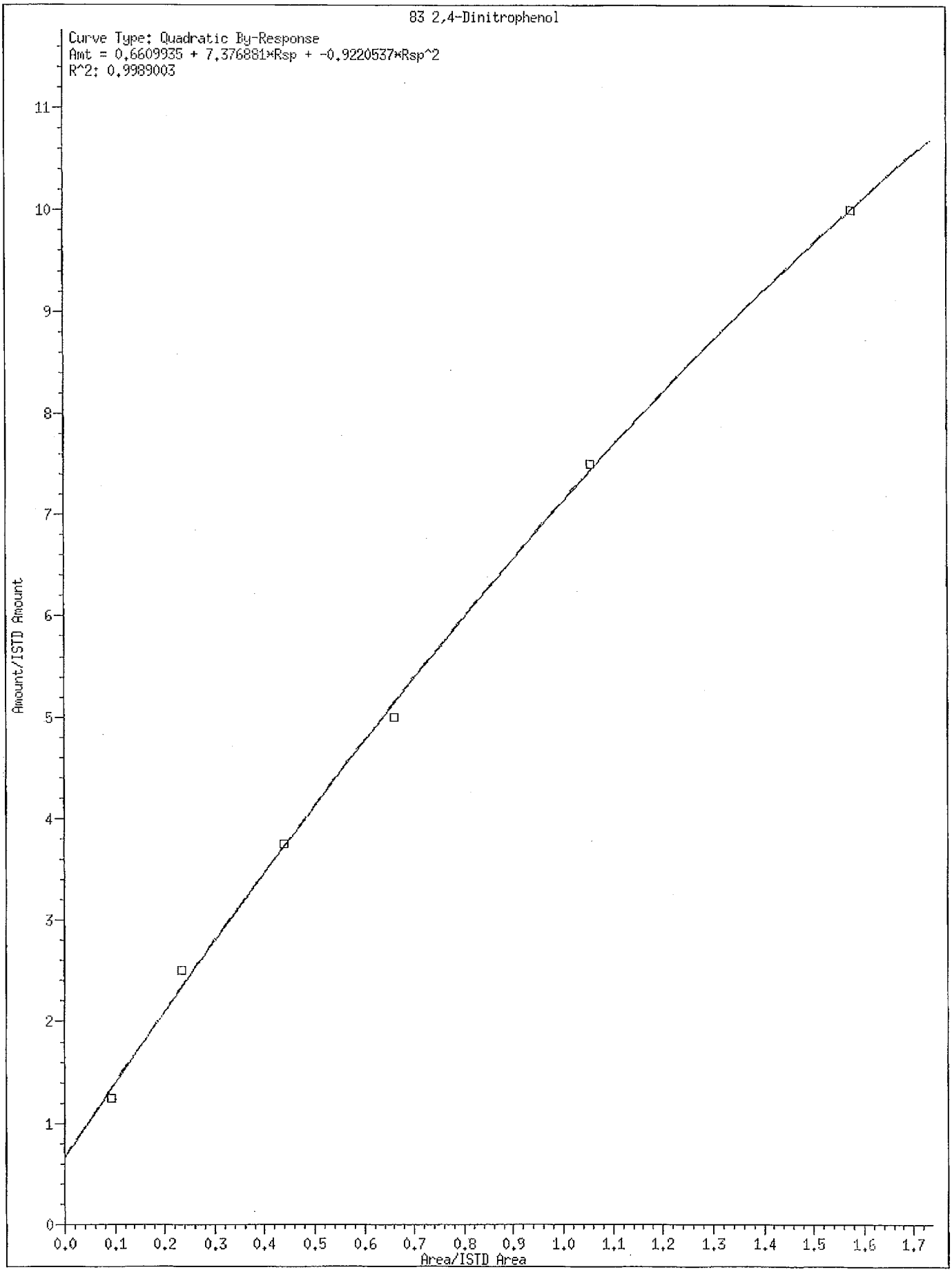
Start Cal Date : 13-AUG-2010 06:08
End Cal Date : 13-AUG-2010 08:33
Quant Method : ISTD
Origin : Included
Target Version : 4.14
Integrator : HP RTE
Method file : \\PITSVR06\d\chem\722.i\081310.b\LL.m
Last Edit : 17-Aug-2010 01:37 722.i

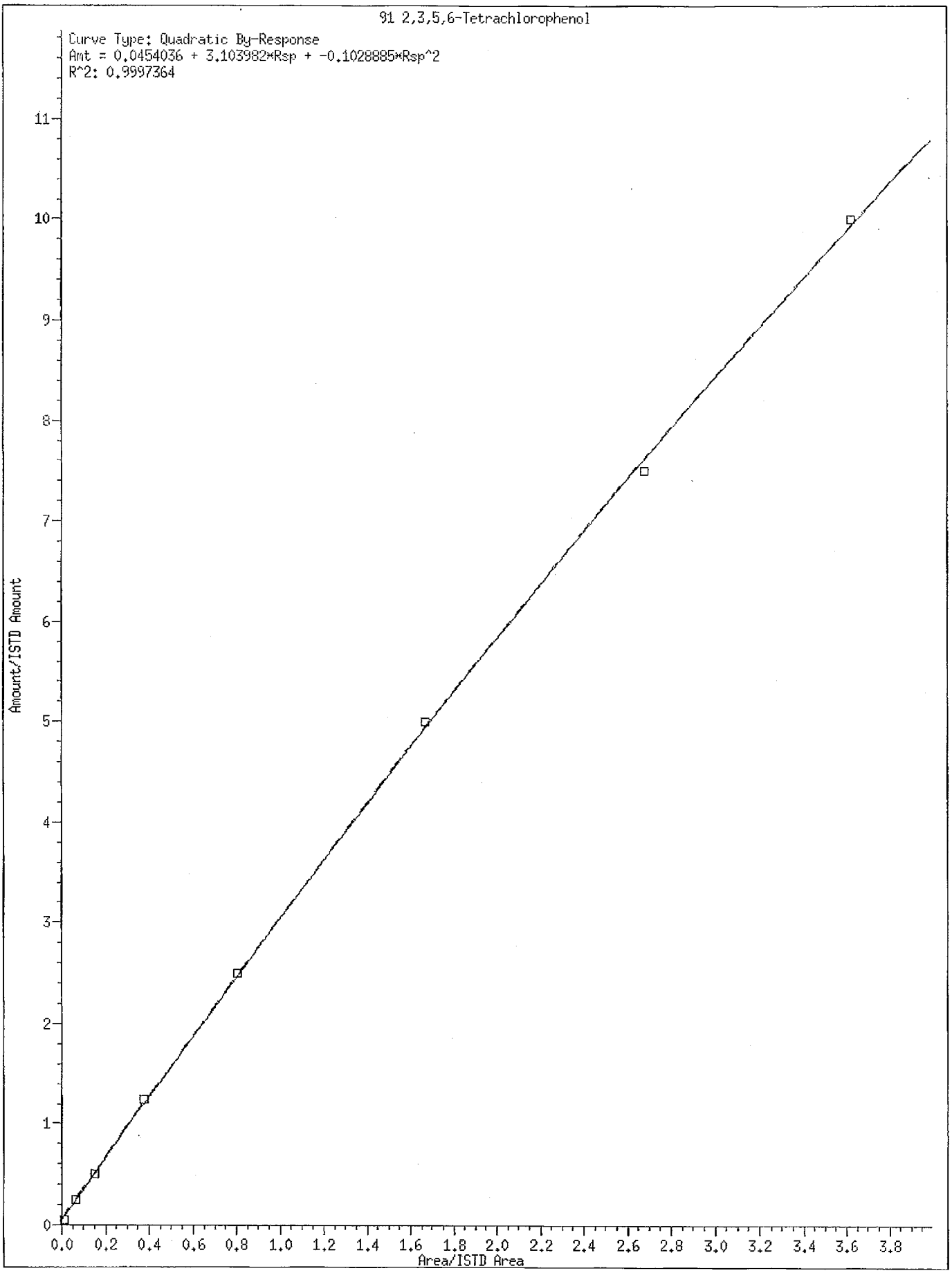
Curve	Formula	Units
Averaged	Amt = Rsp/m1	Response
Quad	Amt = b + m1*Rsp + m2*Rsp^2	Response

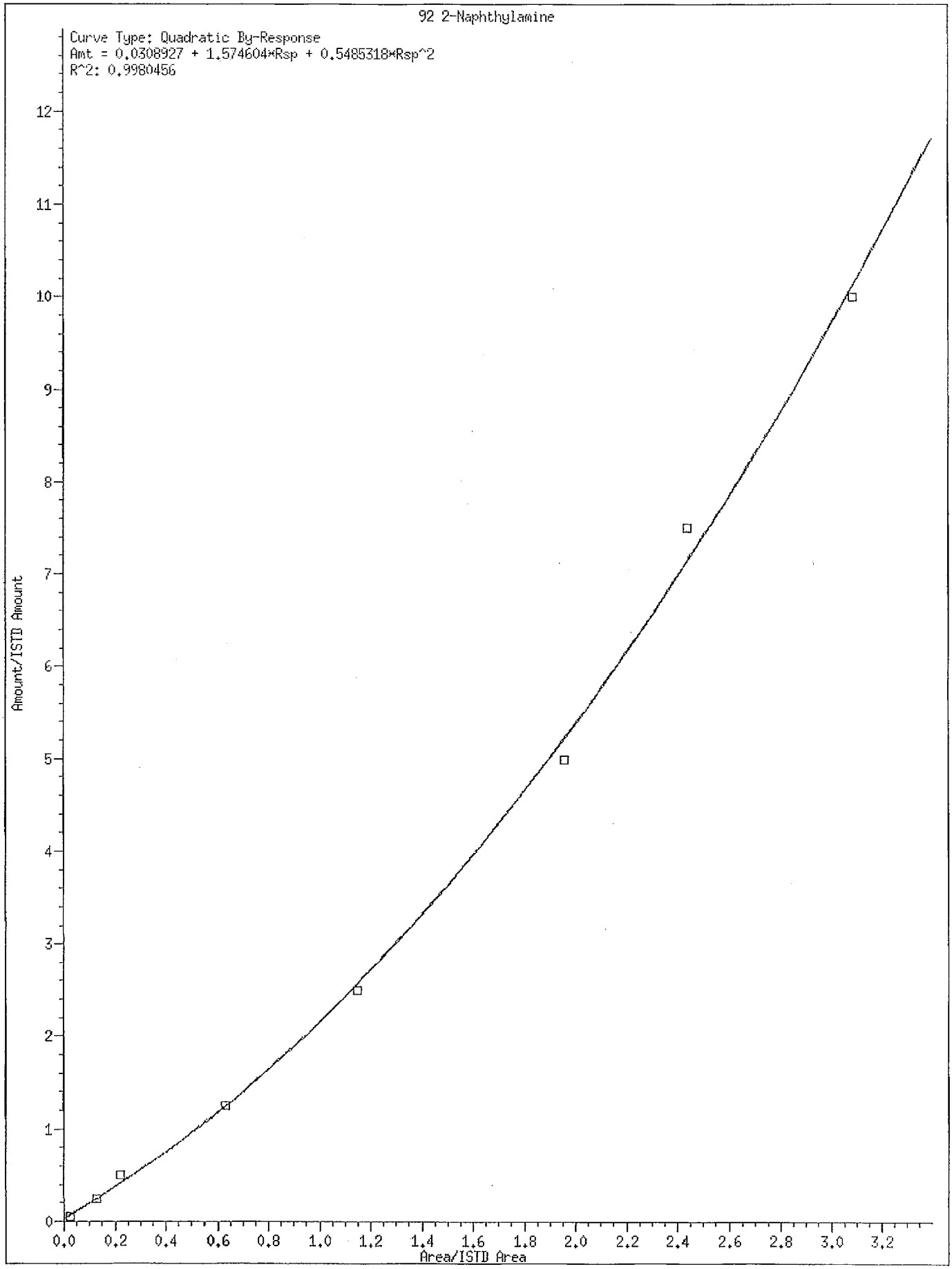

220 Benzaldehyde
Curve Type: Quadratic By-Response
Amt = 0.2078991 + 0.6212384*Rsp + 0.1407422*Rsp^2
R^2: 0.9981706
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
12
0.0
0.4
0.8
1.2
1.6
2.0
2.4
2.8
3.2
3.6
4.0
4.4
4.8
5.2
5.6
6.0
6.4
6.8

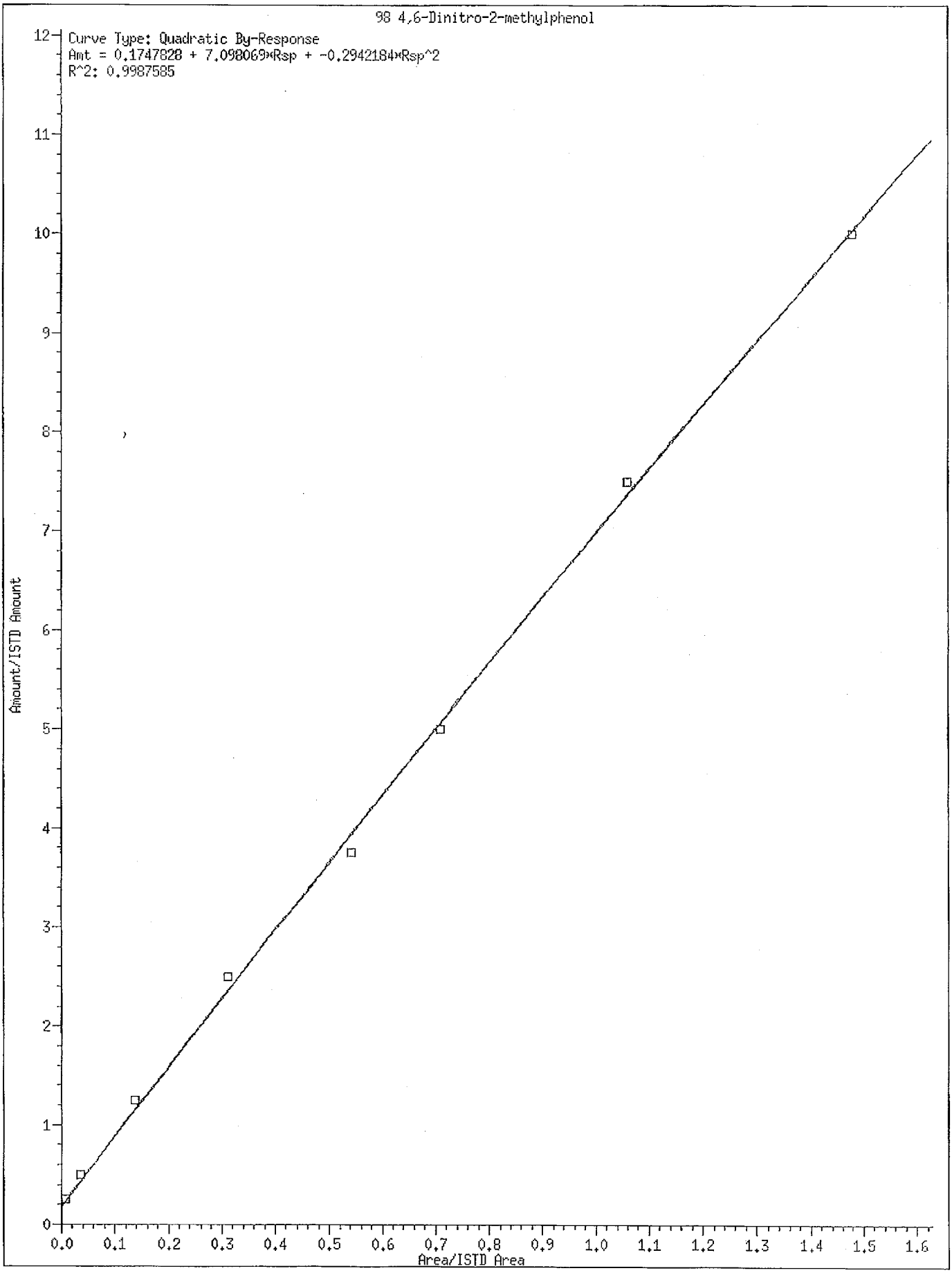

49 Benzoic Acid
Curve Type: Quadratic By-Response
Amt = -3.2494e-002 + 29.1276*Rsp + -38.14467*Rsp^2
R^2: 0.9942802
Amount/ISTD Amount
Area/ISTD Area (x10^-1)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
3.8
4.0
4.2
4.4
4.6
4.8
5.0
5.2
5.4
5.6
5.8
6.0
0.00
0.30
0.60
0.90
1.20
1.50
1.80
2.10
2.40
2.70
3.00
3.30
3.60
3.90
4.20
4.50
4.80
5.10
5.40

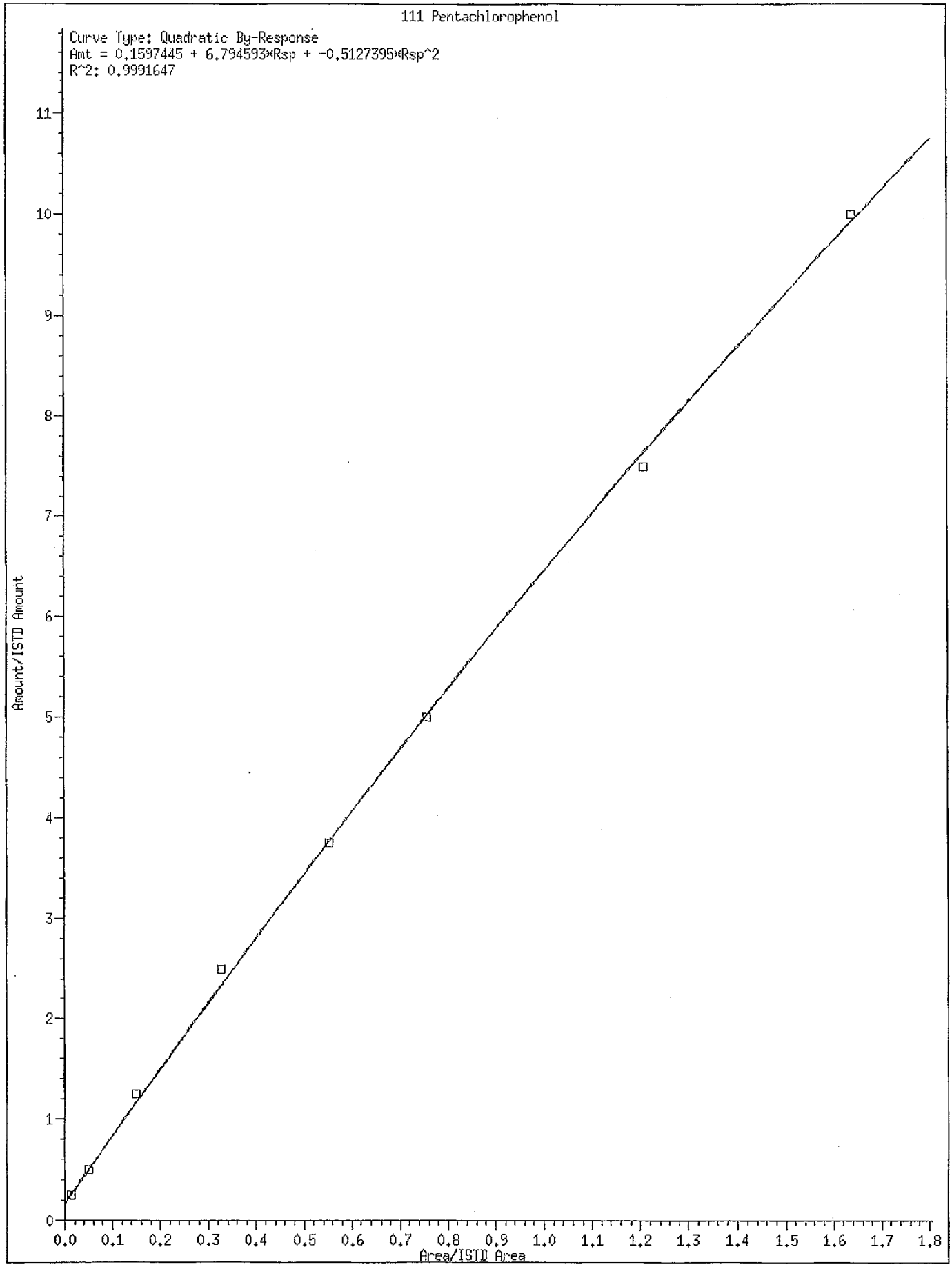

64 Hexachlorocyclopentadiene
Curve Type: Quadratic By-Response
Amt = 0.0723284 + 2.843325*Rsp + -5.342392e-002*Rsp^2
R^2: 0.9997699
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
3.8
4.0

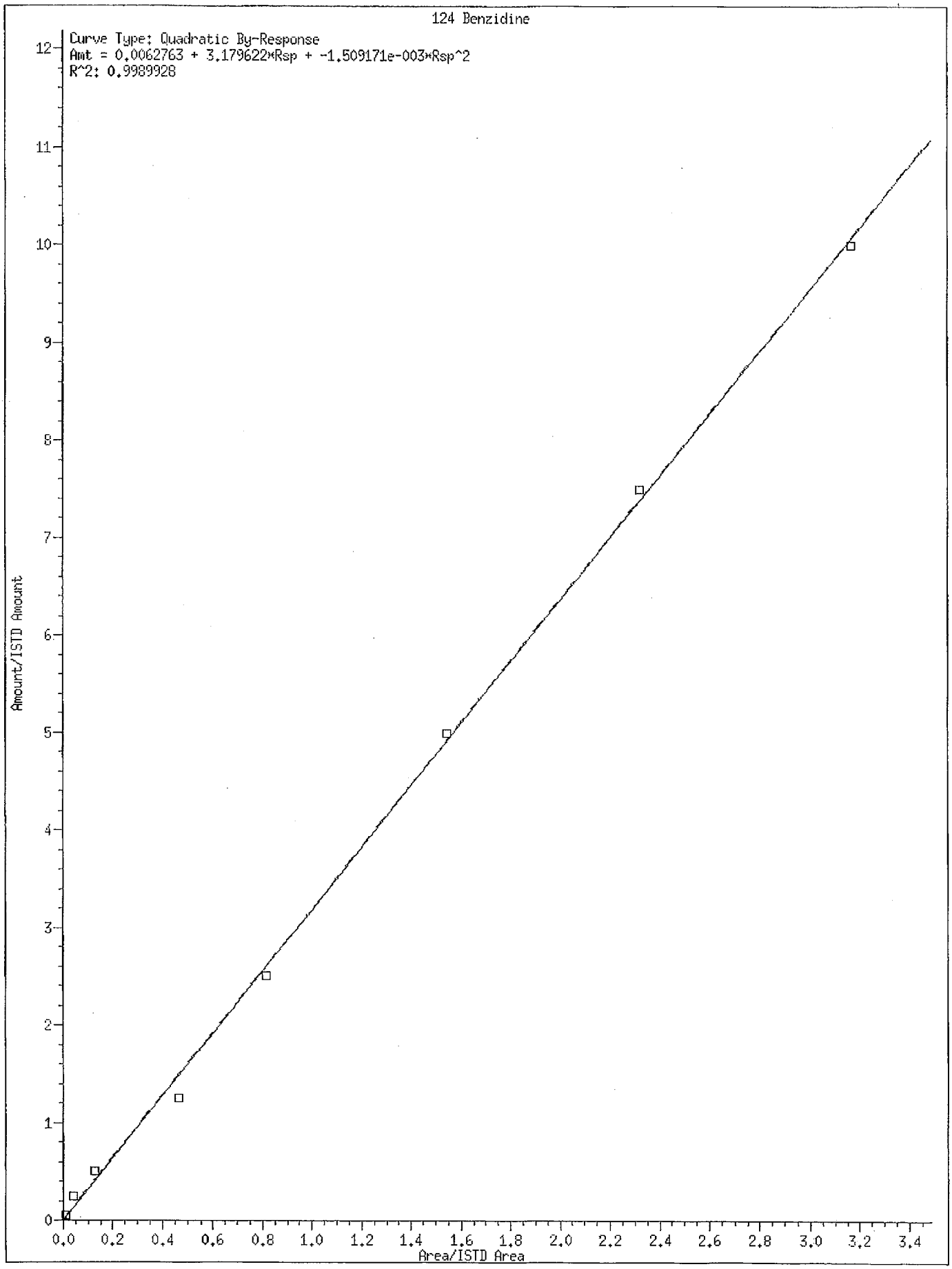

83 2,4-Dinitrophenol
Curve Type: Quadratic By-Response
Amt = 0.6609935 + 7.376881*Rsp + -0.9220537*Rsp^2
R^2: 0.9989003
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4
1.5
1.6
1.7

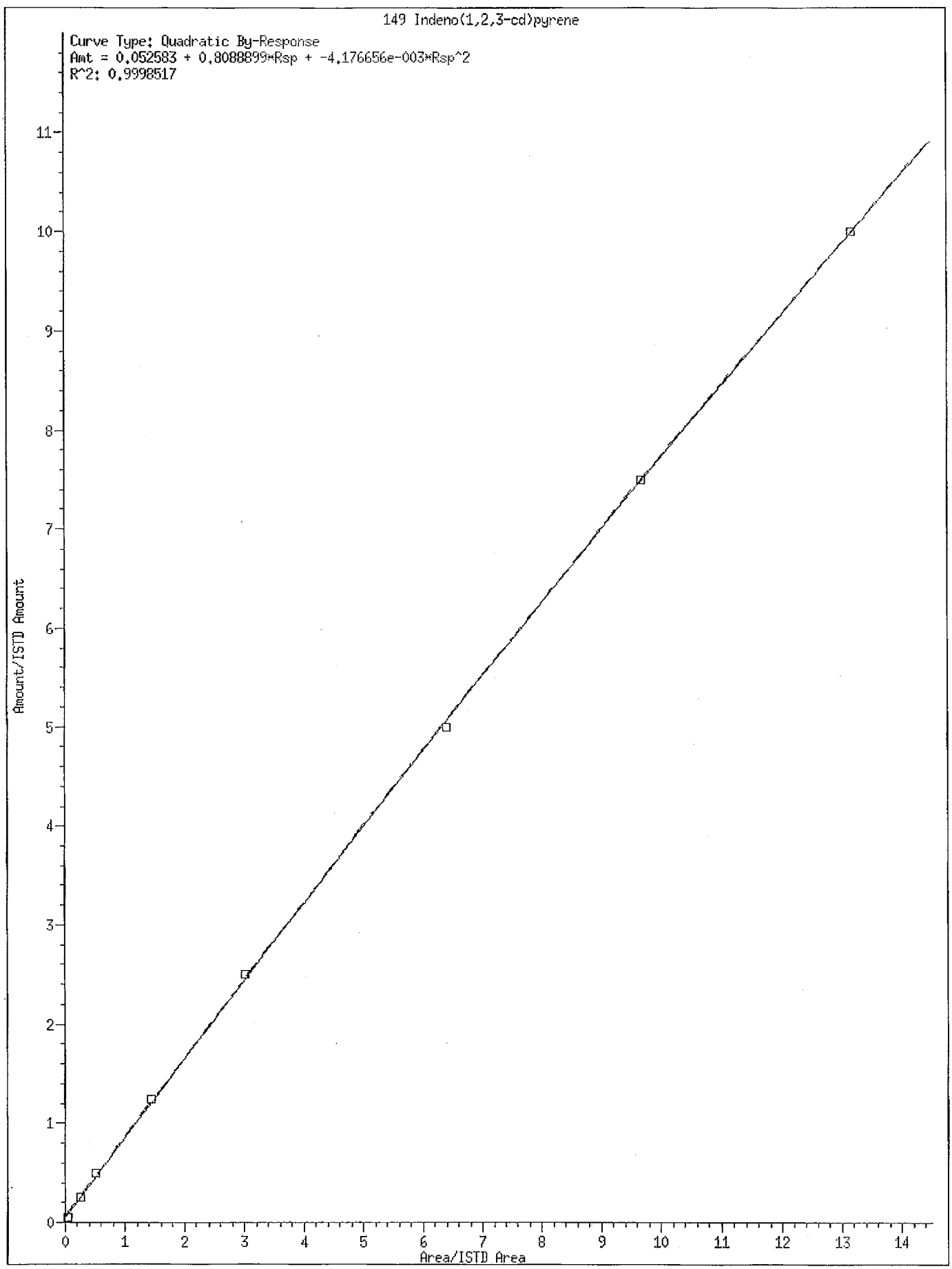

91 2,3,5,6-Tetrachlorophenol
Curve Type: Quadratic By-Response
Amt = 0.0454036 + 3.103982*Rsp + -0.1028885*Rsp^2
R^2: 0.9997364
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
3.8

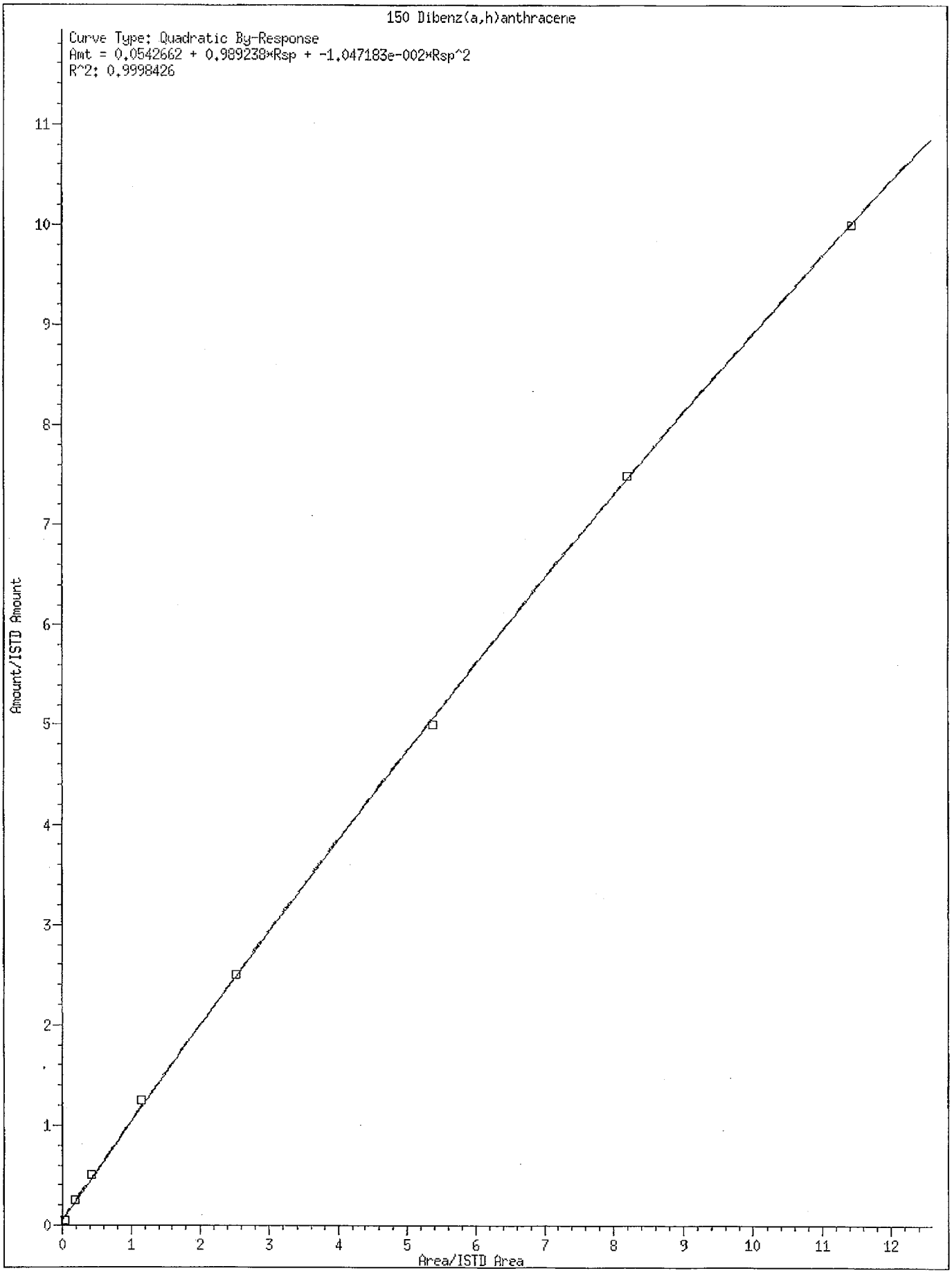

92 2-Naphthylamine
Curve Type: Quadratic By-Response
Amt = 0.0308927 + 1.574604*Rsp + 0.5485318*Rsp^2
R^2: 0.9980456
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
12
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2

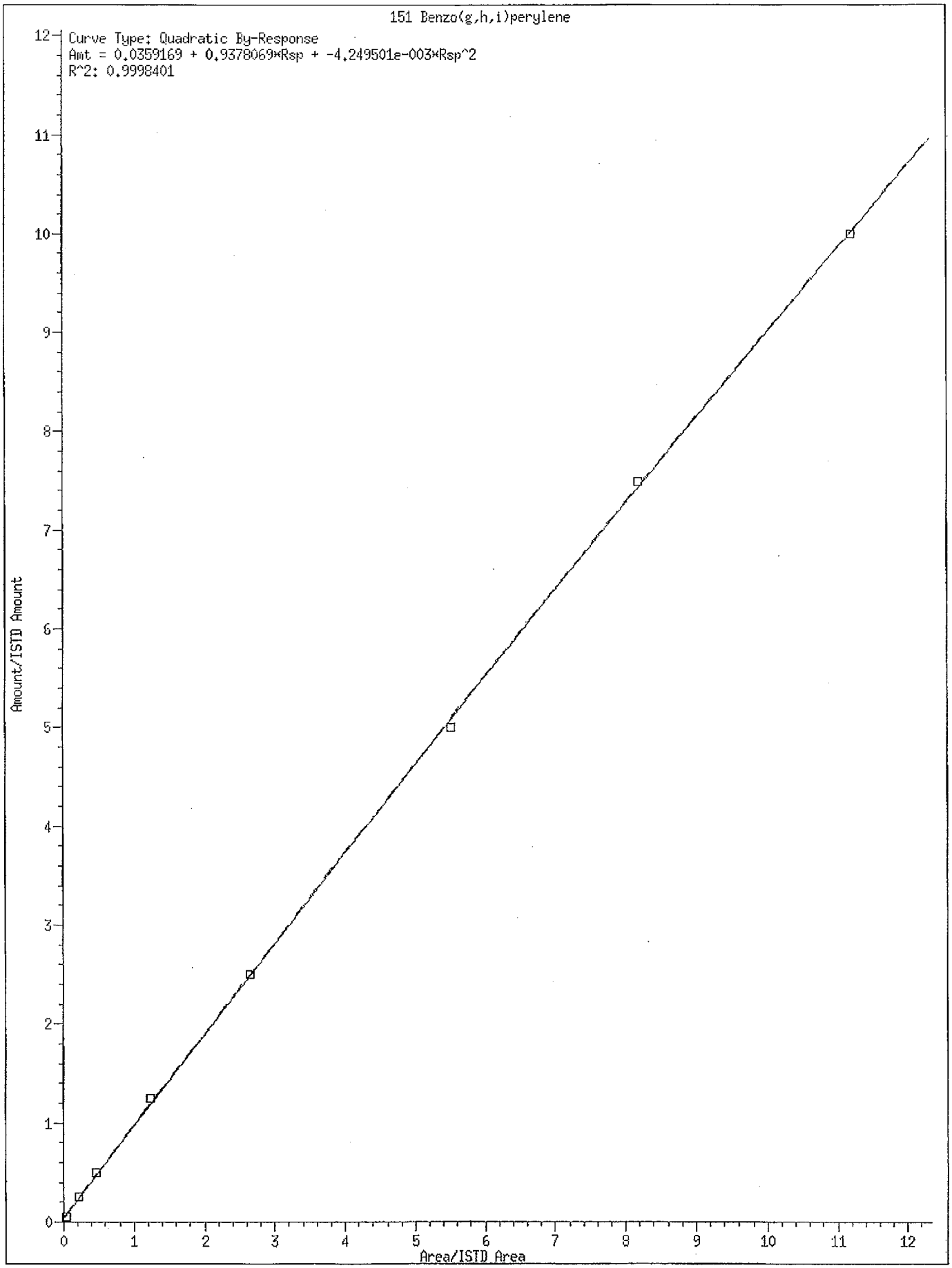

98 4,6-Dinitro-2-methylphenol
Curve Type: Quadratic By-Response
Amt = 0.1747828 + 7.098069*Rsp + -0.2942184*Rsp^2
R^2: 0.9987585
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
12
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4
1.5
1.6


111 Pentachlorophenol
Curve Type: Quadratic By-Response
Amt = 0.1597445 + 6.794593*Rsp + -0.5127395*Rsp^2
R^2: 0.9991647
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8


124 Benzidine
Curve Type: Quadratic By-Response
Amt = 0.0062763 + 3.179622*Rsp + -1.509171e-003*Rsp^2
R^2: 0.9989928
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
12
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4


149 Indeno(1,2,3-cd)pyrene
Curve Type: Quadratic By-Response
Amt = 0.052583 + 0.8088899*Rsp + -4.176656e-003*Rsp^2
R^2: 0.9998517
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14


150 Dibenz(a,h)anthracene
Curve Type: Quadratic By-Response
Amt = 0.0542662 + 0.989238*Rsp + -1.047183e-002*Rsp^2
R^2: 0.9998426
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
12


151 Benzo(g,h,i)perylene
Curve Type: Quadratic By-Response
Amt = 0.0359169 + 0.9378069*Rsp + -4.249501e-003*Rsp^2
R^2: 0.9998401
Amount/ISTD Amount
Area/ISTD Area
0
1
2
3
4
5
6
7
8
9
10
11
12

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 722.i
Lab File ID: F08240C2.D
Analysis Type:
Lab Sample ID: sstd4
Method: \\PITSVR06\d\chem\722.i\082410.b\LL.m

Injection Date: 24-AUG-2010 05:45
Init. Cal. Date(s): 13-AUG-2010 18-AUG-2010
Init. Cal. Times: 06:08 02:51
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
198 1,4-Dioxane	0.29106	0.39293	0.39293	0.010	-35.00047	25.00000	Averaged	<-
220 Benzaldehyde	4.00000	3.40053	0.65112	0.010	14.98678	25.00000	Quadratic	
10 N-Nitrosodimethylamine	0.74398	0.78679	0.78679	0.010	-5.75482	25.00000	Averaged	
9 Pyridine	1.27436	0.91414	0.91414	0.010	28.26692	25.00000	Averaged	<-
16 Methyl methanesulfonate	0.68235	0.64637	0.64637	0.010	5.27334	25.00000	Averaged	
21 Aniline	1.70284	1.23233	1.23233	0.010	27.63108	25.00000	Averaged	<-
22 Phenol	1.79600	1.60874	1.60874	0.010	10.42678	20.00000	Averaged	
23 bis(2-Chloroethyl)ether	1.28128	1.49428	1.49428	0.010	-16.62415	25.00000	Averaged	
24 2-Chlorophenol	1.42311	1.48873	1.48873	0.010	-4.61109	25.00000	Averaged	
26 1,3-Dichlorobenzene	1.63940	1.69031	1.69031	0.010	-3.10491	25.00000	Averaged	
27 1,4-Dichlorobenzene	1.65413	1.74985	1.74985	0.010	-5.78655	20.00000	Averaged	
28 1,2-Dichlorobenzene	1.57008	1.60315	1.60315	0.010	-2.10613	25.00000	Averaged	
227 Indene	2.43306	2.57220	2.57220	0.010	-5.71862	25.00000	Averaged	
29 Benzyl Alcohol	0.82797	0.52357	0.52357	0.010	36.76538	25.00000	Averaged	<-
30 2-Methylphenol	1.24095	1.22720	1.22720	0.010	1.10763	25.00000	Averaged	
31 2,2'-oxybis(1-Chloropropane	1.24125	1.28061	1.28061	0.010	-3.17131	25.00000	Averaged	
37 Acetophenone	1.87656	1.85376	1.85376	0.010	1.21472	25.00000	Averaged	
32 N-Nitroso-di-n-propylamine	0.95005	1.00043	1.00043	0.050	-5.30272	25.00000	Averaged	
192 4-Methylphenol	1.27846	1.22464	1.22464	0.010	4.20932	25.00000	Averaged	
34 Hexachloroethane	0.63096	0.63551	0.63551	0.010	-0.72083	25.00000	Averaged	
35 Nitrobenzene	0.39916	0.41994	0.41994	0.010	-5.20610	25.00000	Averaged	
36 N-Nitrosopyrrolidine	0.59099	0.54545	0.54545	0.010	7.70536	25.00000	Averaged	
41 Isophorone	0.64436	0.65750	0.65750	0.010	-2.03930	25.00000	Averaged	
42 2-Nitrophenol	0.19994	0.19200	0.19200	0.010	3.97094	20.00000	Averaged	
43 2,4-Dimethylphenol	0.35681	0.38281	0.38281	0.010	-7.28535	25.00000	Averaged	
44 bis(2-Chloroethoxy)methane	0.39803	0.40548	0.40548	0.010	-1.87175	25.00000	Averaged	
48 2,4-Dichlorophenol	0.29499	0.28770	0.28770	0.010	2.47156	20.00000	Averaged	
49 Benzoic Acid	10.00000	37.98287	0.19103	0.010	-280	25.00000	Quadratic	<-
50 1,2,4-Trichlorobenzene	0.34075	0.35770	0.35770	0.010	-4.97193	25.00000	Averaged	
51 Naphthalene	1.05766	1.13531	1.13531	0.010	-7.34172	25.00000	Averaged	
52 4-Chloroaniline	0.41036	0.33596	0.33596	0.010	18.12926	25.00000	Averaged	
54 2,6-Dichlorophenol	0.29694	0.28780	0.28780	0.010	3.07992	25.00000	Averaged	
56 Hexachlorobutadiene	0.20295	0.20565	0.20565	0.010	-1.33076	20.00000	Averaged	
221 Caprolactam	0.08615	0.08761	0.08761	0.010	-1.68865	25.00000	Averaged	
59 4-Chloro-3-Methylphenol	0.29657	0.29461	0.29461	0.010	0.65971	20.00000	Averaged	
62 2-Methylnaphthalene	0.70006	0.69024	0.69024	0.010	1.40301	25.00000	Averaged	
205 1-Methylnaphthalene	0.67473	0.70485	0.70485	0.010	-4.46309	25.00000	Averaged	
64 Hexachlorocyclopentadiene	4.00000	3.62115	0.25424	0.050	9.47121	25.00000	Quadratic	
65 1,2,4,5-Tetrachlorobenzene	0.52207	0.59000	0.59000	0.010	-13.01237	25.00000	Averaged	
66 2,4,6-Trichlorophenol	0.37985	0.35988	0.35988	0.010	5.25632	20.00000	Averaged	
67 2,4,5-Trichlorophenol	0.38378	0.37608	0.37608	0.010	2.00714	25.00000	Averaged	
222 1,1'-Biphenyl	1.51728	1.59158	1.59158	0.010	-4.89684	25.00000	Averaged	

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 722.i Injection Date: 24-AUG-2010 05:45
Lab File ID: F08240C2.D Init. Cal. Date(s): 13-AUG-2010 18-AUG-2010
Analysis Type: Init. Cal. Times: 06:08 02:51
Lab Sample ID: sstd4 Quant Type: ISTD
Method: \\PITSVR06\d\chem\722.i\082410.b\LL.m

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
70 2-Chloronaphthalene	1.18811	1.20578	1.20578	0.010	-1.48739	25.00000	Averaged	
73 2-Nitroaniline	0.32323	0.31255	0.31255	0.010	3.30311	25.00000	Averaged	
76 Dimethylphthalate	1.25536	1.27628	1.27628	0.010	-1.66588	25.00000	Averaged	
78 2,6-Dinitrotoluene	0.27836	0.26843	0.26843	0.010	3.56550	25.00000	Averaged	
79 Acenaphthylene	1.68161	1.75561	1.75561	0.010	-4.40062	25.00000	Averaged	
81 3-Nitroaniline	0.30049	0.25886	0.25886	0.010	13.85245	25.00000	Averaged	
82 Acenaphthene	1.17444	1.21726	1.21726	0.010	-3.64577	20.00000	Averaged	
83 2,4-Dinitrophenol	10.00000	13.54106	0.11391	0.050	-35.41063	25.00000	Quadratic	<-
85 4-Nitrophenol	0.18122	0.15046	0.15046	0.050	16.97528	25.00000	Averaged	
86 Dibenzofuran	1.61951	1.64750	1.64750	0.010	-1.72786	25.00000	Averaged	
87 2,4-Dinitrotoluene	0.36497	0.34863	0.34863	0.010	4.47815	25.00000	Averaged	
91 2,3,5,6-Tetrachlorophenol	4.00000	4.31399	0.31211	0.010	-7.84967	25.00000	Quadratic	
88 2,3,4,6-Tetrachlorophenol	0.30399	0.31845	0.31845	0.010	-4.75821	25.00000	Averaged	
92 2-Naphthylamine	4.00000	1.93991	0.24464	0.010	51.50215	25.00000	Quadratic	<-
93 Diethylphthalate	1.20869	1.23814	1.23814	0.010	-2.43648	25.00000	Averaged	
94 Fluorene	1.32661	1.30768	1.30768	0.010	1.42700	25.00000	Averaged	
95 4-Chlorophenyl-phenylether	0.65102	0.63253	0.63253	0.010	2.84140	25.00000	Averaged	
96 4-Nitroaniline	0.29745	0.25804	0.25804	0.010	13.24757	25.00000	Averaged	
98 4,6-Dinitro-2-methylphenol	10.00000	10.15027	0.11900	0.010	-1.50274	25.00000	Quadratic	
99 N-Nitrosodiphenylamine	0.58848	0.60095	0.60095	0.010	-2.11883	20.00000	Averaged	
100 1,2-Diphenylhydrazine	0.88846	0.96310	0.96310	0.010	-8.40191	25.00000	Averaged	
106 4-Bromophenyl-phenylether	0.23031	0.23583	0.23583	0.010	-2.39664	25.00000	Averaged	
107 Hexachlorobenzene	0.22539	0.23283	0.23283	0.010	-3.30271	25.00000	Averaged	
223 Atrazine	0.11077	0.07341	0.07341	0.010	33.72733	25.00000	Averaged	<-
111 Pentachlorophenol	10.00000	11.69567	0.15109	0.025	-16.95674	20.00000	Quadratic	
115 Phenanthrene	1.14073	1.24668	1.24668	0.010	-9.28756	25.00000	Averaged	
116 Anthracene	1.14503	1.19916	1.19916	0.010	-4.72787	25.00000	Averaged	
119 Carbazole	1.00915	1.04089	1.04089	0.010	-3.14475	25.00000	Averaged	
120 Di-n-Butylphthalate	1.22599	1.32948	1.32948	0.010	-8.44119	25.00000	Averaged	
123 Fluoranthene	1.11768	1.13581	1.13581	0.010	-1.62159	20.00000	Averaged	
124 Benzidine	++++	++++	0.00000	0.010	++++	25.00000	Quadratic	<-
125 Pyrene	1.29042	1.35074	1.35074	0.010	-4.67453	25.00000	Averaged	
131 Butylbenzylphthalate	0.57769	0.53933	0.53933	0.010	6.64064	25.00000	Averaged	
135 3,3'-Dichlorobenzidine	0.38682	0.37020	0.37020	0.010	4.29552	25.00000	Averaged	
136 Benzo(a)Anthracene	1.11835	1.12815	1.12815	0.010	-0.87596	25.00000	Averaged	
137 Chrysene	1.12044	1.18729	1.18729	0.010	-5.96626	25.00000	Averaged	
139 bis(2-ethylhexyl)Phthalate	0.80253	0.84868	0.84868	0.010	-5.75060	25.00000	Averaged	
140 Di-n-octylphthalate	1.42169	1.23516	1.23516	0.010	13.12075	20.00000	Averaged	
141 Benzo(b)fluoranthene	1.27559	1.15425	1.15425	0.010	9.51255	25.00000	Averaged	
142 Benzo(k)fluoranthene	1.35972	1.29319	1.29319	0.010	4.89239	25.00000	Averaged	
143 7,12-dimethylbenz[a]anthrac	0.59548	0.55451	0.55451	0.010	6.88028	25.00000	Averaged	
146 Benzo(a)pyrene	1.06004	1.02813	1.02813	0.010	3.00999	20.00000	Averaged	

Test America Pittsburgh

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 722.i Injection Date: 24-AUG-2010 05:45
Lab File ID: F08240C2.D Init. Cal. Date(s): 13-AUG-2010 18-AUG-2010
Analysis Type: Init. Cal. Times: 06:08 02:51
Lab Sample ID: sstd4 Quant Type: ISTD
Method: \\PITSVR06\d\chem\722.i\082410.b\LL.m

COMPOUND	RRF / AMOUNT	RF4	CCAL RRF4	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
149 Indeno(1,2,3-cd)pyrene	4.00000	4.33868	1.18044	0.010	-8.46700	25.00000	Quadratic
150 Dibenz(a,h)anthracene	4.00000	4.37528	0.97255	0.010	-9.38210	25.00000	Quadratic
151 Benzo(g,h,i)perylene	4.00000	4.50241	1.10648	0.010	-12.56020	25.00000	Quadratic
$ 154 Nitrobenzene-d5	0.39484	0.41965	0.41965	0.010	-6.28231	25.00000	Averaged
$ 155 2-Fluorobiphenyl	1.33044	1.40931	1.40931	0.010	-5.92825	25.00000	Averaged
$ 156 Terphenyl-d14	0.85341	0.88052	0.88052	0.010	-3.17660	25.00000	Averaged
$ 157 Phenol-d5	1.62031	1.60491	1.60491	0.010	0.95079	25.00000	Averaged
$ 158 2-Fluorophenol	1.30430	1.20924	1.20924	0.010	7.28826	25.00000	Averaged
$ 159 2,4,6-Tribromophenol	0.08713	0.08350	0.08350	0.010	4.16263	25.00000	Averaged
$ 186 2-Chlorophenol-d4	1.44482	1.49215	1.49215	0.010	-3.27625	25.00000	Averaged
$ 187 1,2-Dichlorobenzene-d4	1.00580	1.02522	1.02522	0.010	-1.93116	25.00000	Averaged

SW846 8270C SURROGATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H180480

Extraction: XXA4F4201

	CLIENT ID.	SRG01	SRG02	SRG03	SRG04	SRG05	SRG06	TOT OUT
01	SD-90-SS	81	78	84	76	75	81	00
02	SD-90-01	69	69	73	58	60	77	00
03	SD-90-02	73	65	77	66	68	82	00
04	SD-90-02 RE-1	0 D	0 D	0 D	0 D	0 D	0 D	06
05	SD-90-04	66	60	63	57	56	77	00
06	SD-91-SS	45	51	48	39	44	65	00
07	SD-91-01	48	59	56	42	46	66	00
08	SD-94-SS	82	73	71	77	71	84	00
09	SD-94-01	63	63	63	61	56	72	00
10	SD-94-02	91	77	84	89	82	83	00
11	SD-94-04	108	99	107	97	93	108	00
12	SD-97-SS	80	69	78	72	71	82	00
13	SD-97-01	86	77	82	75	73	80	00
14	SD-97-02	70	59	65	64	64	64	00
15	SD-97-04	75	63	69	72	67	76	00
16	METHOD BLK. L5X051AA	80	78	77	75	79	77	00
17	LCS L5X051AC	79	74	84	76	79	88	00
18	LCSD L5X051AD	78	72	80	75	76	83	00

SURROGATES		QC LIMITS
SRG01	= Nitrobenzene-d5	(27-110)
SRG02	= Terphenyl-d14	(21-130)
SRG03	= 2-Fluorobiphenyl	(28-108)
SRG04	= 2-Fluorophenol	(28-107)
SRG05	= Phenol-d5	(30-112)
SRG06	= 2,4,6-Tribromophenol	(21-116)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8270C CHECK SAMPLE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H200000 WO #: L5X051AC
BATCH: 0232395

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENT. (ug/kg)	% REC	QC LIMITS REC	QUAL
Phenol	333	238	71	39 - 105	
2-Chlorophenol	333	263	79	40 - 105	
1,4-Dichlorobenzene	333	258	77	41 - 101	
N-Nitrosodi-n-propylamine	333	255	77	42 - 108	
1,2,4-Trichlorobenzene	333	256	77	41 - 105	
4-Chloro-3-methylphenol	333	264	79	43 - 110	
Acenaphthene	333	264	79	42 - 104	
4-Nitrophenol	333	255	77	27 - 131	
2,4-Dinitrotoluene	333	291	87	48 - 118	
Pentachlorophenol	333	252	76	18 - 125	
Pyrene	333	237	71	39 - 113	
4-Methylphenol	667	492	74	43 - 107	
Hexachloroethane	333	255	77	40 - 102	
Naphthalene	333	259	78	42 - 104	
4-Bromophenyl phenyl ethe	333	264	79	43 - 111	
Butyl benzyl phthalate	333	254	76	40 - 117	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 16 outside limits

COMMENTS:

FORM III

SW846 8270C CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Laboratories, Inc. Client: Tetra Tech NUS, Inc

Lab Code: TALPIT SDG No:

Lot #: C0H200000 WO #: L5X051AD
BATCH: 0232395

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENT. (ug/kg)	% REC	QC LIMITS REC	QUAL
Phenol	333	244	73	39 - 105	
2-Chlorophenol	333	268	80	40 - 105	
1,4-Dichlorobenzene	333	258	77	41 - 101	
N-Nitrosodi-n-propylamine	333	254	76	42 - 108	
1,2,4-Trichlorobenzene	333	262	79	41 - 105	
4-Chloro-3-methylphenol	333	267	80	43 - 110	
Acenaphthene	333	267	80	42 - 104	
4-Nitrophenol	333	255	76	27 - 131	
2,4-Dinitrotoluene	333	286	86	48 - 118	
Pentachlorophenol	333	273	82	18 - 125	
Pyrene	333	231	69	39 - 113	
4-Methylphenol	667	492	74	43 - 107	
Hexachloroethane	333	269	81	40 - 102	
Naphthalene	333	262	79	42 - 104	
4-Bromophenyl phenyl ethe	333	267	80	43 - 111	
Butyl benzyl phthalate	333	241	72	40 - 117	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 16 outside limits

COMMENTS:

FORM III

SW846 8270C METHOD BLANK SUMMARY

BLANK WORKORDER NO.: L5X051AA

Lab Name: TestAmerica Laboratories, Inc.

Lab Code: TALPIT

SDG Number:

Lab File ID: F0824006.

Lot Number: C0H180480

Date Analyzed: 08/24/10

Time Analyzed: 08:01

Matrix: SOLID

Date Extracted:08/20/10

GC Column: HP5MS ID: .25

Extraction Method:

Instrument ID: 722

Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SD-90-SS	L5QXW1AD	F0824009.	08/24/10	09:00
02	SD-90-01	L5QX01AH	F0824010.	08/24/10	09:20
03	SD-90-02	L5QX11AH	F0824011.	08/24/10	09:39
04	SD-90-02	L5QX12AH	F0825005.	08/25/10	06:12
05	SD-90-04	L5QX21AC	F0824012.	08/24/10	09:59
06	SD-91-SS	L5QX31AC	F0824013.	08/24/10	10:19
07	SD-91-01	L5QX41AC	F0824014.	08/24/10	10:38
08	SD-94-SS	L5QX61AC	F0824015.	08/24/10	10:58
09	SD-94-01	L5QX71AC	F0824016.	08/24/10	11:17
10	SD-94-02	L5QX81AC	F0824017.	08/24/10	11:37
11	SD-94-04	L5QX91AC	F0824018.	08/24/10	11:56
12	SD-97-SS	L5Q0C1AC	F0824019.	08/24/10	12:16
13	SD-97-01	L5Q0D1AC	F0824020.	08/24/10	12:35
14	SD-97-02	L5Q0F1AC	F0824021.	08/24/10	12:55
15	SD-97-04	L5Q0K1AC	F0824022.	08/24/10	13:14
16	CHECK SAMPLE	L5X051AC C	F0824007.	08/24/10	08:21
17	DUPLICATE CHECK	L5X051AD L	F0824008.	08/24/10	08:40
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COMMENTS:

FORM IV

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.:

Lab File ID: F0813DF1 DFTPP Injection Date: 08/13/10

Instrument ID: 722 DFTPP Injection Time: 0531

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	38.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	54.6
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	56.5
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.6
275	10.0 - 30.0% of mass 198	23.6
365	Greater than 1.0% of mass 198	2.76
441	Present, but less than mass 443	8.3
442	40.0 - 100.0% of mass 198	48.5
443	17.0 - 23.0% of mass 442	10.0 (20.7)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD2	SSTD2	F08130C2	08/13/10	0608
02	SSTD4	SSTD4	F08130C3	08/13/10	0629
03	SSTD10	SSTD10	F08130C4	08/13/10	0650
04	SSTD20	SSTD20	F08130C5	08/13/10	0710
05	SSTD40	SSTD40	F08130C6	08/13/10	0731
06	SSTD60	SSTD60	F08130C7	08/13/10	0752
07	SSTD80	SSTD80	F08130C8	08/13/10	0813
08	SSTD.4	SSTD.4	F08130C9	08/13/10	0833
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FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.:

Lab File ID: F0824DF1 DFTPP Injection Date: 08/24/10

Instrument ID: 722 DFTPP Injection Time: 0511

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	43.1
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	57.8
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	57.2
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.9
275	10.0 - 30.0% of mass 198	24.0
365	Greater than 1.0% of mass 198	2.79
441	Present, but less than mass 443	9.4
442	40.0 - 100.0% of mass 198	47.4
443	17.0 - 23.0% of mass 442	9.6 (20.3)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD4	SSTD4	F08240C2	08/24/10	0545
02	INTRA-LAB BL	L5X051AA	F0824006	08/24/10	0801
03	INTRA-LAB CH	L5X051AC	F0824007	08/24/10	0821
04	INTRA-LAB CH	L5X051AD	F0824008	08/24/10	0840
05	SD-90-SS	L5QXW1AD	F0824009	08/24/10	0900
06	SD-90-01	L5QX01AH	F0824010	08/24/10	0920
07	SD-90-02	L5QX11AH	F0824011	08/24/10	0939
08	SD-90-04	L5QX21AC	F0824012	08/24/10	0959
09	SD-91-SS	L5QX31AC	F0824013	08/24/10	1019
10	SD-91-01	L5QX41AC	F0824014	08/24/10	1038
11	SD-94-SS	L5QX61AC	F0824015	08/24/10	1058
12	SD-94-01	L5QX71AC	F0824016	08/24/10	1117
13	SD-94-02	L5QX81AC	F0824017	08/24/10	1137
14	SD-94-04	L5QX91AC	F0824018	08/24/10	1156
15	SD-97-SS	L5Q0C1AC	F0824019	08/24/10	1216
16	SD-97-01	L5Q0D1AC	F0824020	08/24/10	1235
17	SD-97-02	L5Q0F1AC	F0824021	08/24/10	1255
18	SD-97-04	L5Q0K1AC	F0824022	08/24/10	1314
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22					

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.:

Lab File ID: F0825DF1 DFTPP Injection Date: 08/25/10

Instrument ID: 722 DFTPP Injection Time: 0340

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	39.4
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	52.7
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	55.2
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.8
275	10.0 - 30.0% of mass 198	23.7
365	Greater than 1.0% of mass 198	2.87
441	Present, but less than mass 443	8.3
442	40.0 - 100.0% of mass 198	43.5
443	17.0 - 23.0% of mass 442	9.2 (21.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD4	SSTD4	F08250C1	08/25/10	0354
02	SD-90-02	L5QX12AH	F0825005	08/25/10	0612
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
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14					
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22					

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.: C0H180480

Lab File ID (Standard): F08240C2 Date Analyzed: 08/24/10

Instrument ID: 722 Time Analyzed: 0545

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	69462	4.26	254629	5.27	136668	6.65
	UPPER LIMIT	138924	4.76	509258	5.77	273336	7.15
	LOWER LIMIT	34731	3.76	127315	4.77	68334	6.15
	CLIENT SAMPLE NO.						
01	INTRA-LAB BL	73932	4.26	271969	5.27	151271	6.64
02	INTRA-LAB CH	76038	4.26	275499	5.27	138774	6.65
03	INTRA-LAB CH	70608	4.27	253178	5.27	130021	6.65
04	SD-90-SS	61973	4.26	216219	5.27	121858	6.65
05	SD-90-01	60642	4.26	202843	5.27	115005	6.64
06	SD-90-02	59990	4.26	213391	5.27	125437	6.65
07	SD-90-04	64023	4.27	211327	5.28	124013	6.65
08	SD-91-SS	66001	4.27	227981	5.28	129501	6.65
09	SD-91-01	66078	4.26	224324	5.27	127548	6.64
10	SD-94-SS	61739	4.26	204932	5.27	120655	6.64
11	SD-94-01	54600	4.26	185216	5.27	100145	6.64
12	SD-94-02	51687	4.27	180412	5.27	107091	6.64
13	SD-94-04	44440	4.26	144980	5.27	81381	6.64
14	SD-97-SS	67549	4.26	224336	5.27	126786	6.64
15	SD-97-01	63457	4.26	207324	5.27	120711	6.64
16	SD-97-02	59806	4.26	213143	5.27	129196	6.64
17	SD-97-04	56313	4.27	200978	5.27	125830	6.65
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.: C0H180480

Lab File ID (Standard): F08250C1 Date Analyzed: 08/25/10

Instrument ID: 722 Time Analyzed: 0354

		IS4(PHN) AREA	#	RT	#	IS5(CRY) AREA	#	RT	#	IS6(PRY) AREA	#	RT	#
	12 HOUR STD	239899		7.79		203714		10.13		183184		11.69	
	UPPER LIMIT	479798		8.29		407428		10.63		366368		12.19	
	LOWER LIMIT	119950		7.29		101857		9.63		91592		11.19	
	CLIENT SAMPLE NO.												
01	SD-90-02	292824		7.79		326638		10.13		340690		11.70	
02													
03													
04													
05													
06													
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: TESTAMERICA PITTSBURGH Contract:

Lab Code: TA Case No.: SAS No.: SDG No.: C0H180480

Lab File ID (Standard): F08240C2 Date Analyzed: 08/24/10

Instrument ID: 722 Time Analyzed: 0545

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD	192017		7.82		167205		10.18		172299		11.76	
	UPPER LIMIT	384034		8.32		334410		10.68		344598		12.26	
	LOWER LIMIT	96009		7.32		83603		9.68		86150		11.26	
	CLIENT SAMPLE NO.												
01	INTRA-LAB BL	209182		7.81		183816		10.17		189637		11.74	
02	INTRA-LAB CH	210053		7.81		222164		10.17		213914		11.74	
03	INTRA-LAB CH	195051		7.81		215407		10.17		219580		11.74	
04	SD-90-SS	201213		7.81		254207		10.17		282473		11.74	
05	SD-90-01	195987		7.81		275332		10.18		324677		11.76	
06	SD-90-02	222321		7.82		363690*		10.18		433305*		11.77	
07	SD-90-04	211980		7.82		287039		10.17		357221*		11.74	
08	SD-91-SS	210954		7.81		270746		10.17		314650		11.74	
09	SD-91-01	209394		7.81		277865		10.17		310415		11.74	
10	SD-94-SS	202410		7.81		265691		10.16		304998		11.72	
11	SD-94-01	174021		7.81		221566		10.16		258048		11.72	
12	SD-94-02	180068		7.81		237687		10.16		269374		11.72	
13	SD-94-04	136551		7.80		181877		10.15		210827		11.73	
14	SD-97-SS	208294		7.81		281734		10.16		312485		11.73	
15	SD-97-01	203948		7.80		258579		10.16		304924		11.72	
16	SD-97-02	228642		7.81		309309		10.16		393755*		11.73	
17	SD-97-04	216847		7.80		283032		10.16		346389*		11.72	
18													
19													
20													
21													
22													

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-02

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-003	Work Order #...:	L5QX11AH	Matrix.....:	SOLID
Date Sampled...:	08/17/10 10:20	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	09:39		
Dilution Factor:	2.48	Initial Wgt/Vol:	30.2 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	58	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	230	40	ug/kg	3.4
Acenaphthylene	460	40	ug/kg	4.6
Acenaphthene	410	40	ug/kg	3.8
Fluorene	560	40	ug/kg	5.2
Phenanthrene	4600	40	ug/kg	6.3
Anthracene	1300	40	ug/kg	3.9
Fluoranthene	13000 E	40	ug/kg	4.3
✓ Pyrene	7300	40	ug/kg	4.0
✓ Benzo(a)anthracene	5000	40	ug/kg	5.0
✓ Chrysene	5400	40	ug/kg	4.7
✓ Benzo(b)fluoranthene	7300	40	ug/kg	6.3
✓ Benzo(k)fluoranthene	ND	40	ug/kg	8.0
✓ Benzo(a)pyrene	5100	40	ug/kg	4.0
✓ Indeno(1,2,3-cd)pyrene	2900	40	ug/kg	4.1
✓ Dibenzo(a,h)anthracene	1000	40	ug/kg	4.4
✓ Benzo(ghi)perylene	3100	40	ug/kg	4.0

J, N

J, N

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	73	(27 - 110)
Terphenyl-d14	65	(21 - 130)
2-Fluorobiphenyl	77	(28 - 108)
2-Fluorophenol	66	(28 - 107)
Phenol-d5	68	(30 - 112)
2,4,6-Tribromophenol	82	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

E Estimated result. Result concentration exceeds the calibration range.

Tetra Tech NUS, Inc

Client Sample ID: SD-90-04

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-004	Work Order #...:	L5QX21AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 10:30	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	09:59		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	43	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	8.5 J	30	ug/kg	2.5
Acenaphthylene	27 J	30	ug/kg	3.4
Acenaphthene	10 J	30	ug/kg	2.8
Fluorene	24 J	30	ug/kg	3.9
Phenanthrene	56	30	ug/kg	4.7
Anthracene	26 J	30	ug/kg	2.9
Fluoranthene	160	30	ug/kg	3.1
Pyrene	120	30	ug/kg	3.0
Benzo(a)anthracene	73	30	ug/kg	3.7
Chrysene	82	30	ug/kg	3.5
Benzo(b)fluoranthene	93 → J, N	30	ug/kg	4.6
Benzo(k)fluoranthene	X ND	30	ug/kg	5.9
Benzo(a)pyrene	63	30	ug/kg	2.9
Indeno(1,2,3-cd)pyrene	78	30	ug/kg	3.0
Dibenzo(a,h)anthracene	51	30	ug/kg	3.3
Benzo(ghi)perylene	69	30	ug/kg	2.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	66	(27 - 110)
Terphenyl-d14	60	(21 - 130)
2-Fluorobiphenyl	63	(28 - 108)
2-Fluorophenol	57	(28 - 107)
Phenol-d5	56	(30 - 112)
2,4,6-Tribromophenol	77	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-02

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-013	Work Order #...:	L5Q0F1AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 12:30	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	12:55		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	61	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	43	ug/kg	3.7
Acenaphthylene	11 J	43	ug/kg	4.9
Acenaphthene	ND	43	ug/kg	4.1
Fluorene	ND	43	ug/kg	5.6
Phenanthrene	40 J	43	ug/kg	6.8
Anthracene	17 J	43	ug/kg	4.2
Fluoranthene	150	43	ug/kg	4.6
Pyrene	100	43	ug/kg	4.3
Benzo(a)anthracene	48	43	ug/kg	5.3
Chrysene	90	43	ug/kg	5.1
Benzo(b)fluoranthene	67 — J,N	43	ug/kg	6.7
Benzo(k)fluoranthene	ND	43	ug/kg	8.6
Benzo(a)pyrene	34 J — J,N	43	ug/kg	4.3
Indeno(1,2,3-cd)pyrene	82 — J,N	43	ug/kg	4.4
Dibenzo(a,h)anthracene	ND	43	ug/kg	4.7
Benzo(ghi)perylene	80 — J,N	43	ug/kg	4.2

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	70	(27 - 110)
Terphenyl-d14	59	(21 - 130)
2-Fluorobiphenyl	65	(28 - 108)
2-Fluorophenol	64	(28 - 107)
Phenol-d5	64	(30 - 112)
2,4,6-Tribromophenol	64	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Tetra Tech NUS, Inc

Client Sample ID: SD-97-04

GC/MS Semivolatiles

Lot-Sample #...:	C0H180480-014	Work Order #...:	L5Q0K1AC	Matrix.....:	SOLID
Date Sampled...:	08/17/10 12:35	Date Received..:	08/18/10 10:00	MS Run #.....:	
Prep Date.....:	08/20/10	Analysis Date..:	08/24/10		
Prep Batch #...:	0232395	Analysis Time..:	13:14		
Dilution Factor:	2.5	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	0.5 mL
% Moisture.....:	59	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	41	ug/kg	3.5
Acenaphthylene	ND	41	ug/kg	4.7
Acenaphthene	ND	41	ug/kg	3.9
Fluorene	ND	41	ug/kg	5.4
Phenanthrene	ND	41	ug/kg	6.5
Anthracene	ND	41	ug/kg	4.0
Fluoranthene	ND	41	ug/kg	4.4
Pyrene	ND	41	ug/kg	4.1
Benzo(a)anthracene	ND	41	ug/kg	5.1
Chrysene	ND	41	ug/kg	4.9
Benzo(b)fluoranthene	ND	41	ug/kg	6.4
Benzo(k)fluoranthene	ND	41	ug/kg	8.2
Benzo(a)pyrene	ND	41	ug/kg	4.1
Indeno(1,2,3-cd)pyrene	ND	41	ug/kg	4.2
Dibenzo(a,h)anthracene	ND	41	ug/kg	4.5
Benzo(ghi)perylene	ND	41	ug/kg	4.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	75	(27 - 110)
Terphenyl-d14	63	(21 - 130)
2-Fluorobiphenyl	69	(28 - 108)
2-Fluorophenol	72	(28 - 107)
Phenol-d5	67	(30 - 112)
2,4,6-Tribromophenol	76	(21 - 116)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Simulate Run Sequence Tue Aug 24 06:38:41 2010

Instrument Name: GC/MS Instrument #1
Sequence File: C:\HPCHEM\1\SEQUENCE\082410.S
Comment: STL- PITT HP5973-2 LOG 2ul inj 100ul+1ul int
Operator: 007062
Data Path: d:\HPCHEM\1\DATA\082410.b\
Method Path: C:\HPCHEM\1\METHODS\

8270 (7) 8/24/10 KBB

Line	Type	Vial	DataFile	Method	Sample Name
1)	Sample	99	F0824CL1	FFAST	Clean Out Blank
2)	Sample	99	F0824CL2	FFAST	Clean Out Blank
3)	Sample	1	F0824DF1	DFTPP	DFTPP050 (25ug/ml) BNA0170-10
4)	Sample	2	F08240C1	FFAST	SSTD4 (2ug/ml) BNA0668-10
5)	Sample	2	F08240C2	FFAST	SSTD4 (2ug/ml) BNA0668-10
6)	Sample	100	F08240B6	FFAST	Clean Out Blank
7)	Sample	3	F0824001	FFAST	C0H190402-BLK 8/23/10 TCLP (0235244)
8)	Sample	4	F0824002	FFAST	C0H190402-LCS 8/23/10 TCLP (0235244)
9)	Sample	5	F0824003	FFAST	C0H190402-LCSD 8/23/10 TCLP (0235244)
10)	Sample	6	F0824004	FFAST	C0H190402-001 8/23/10 TCLP (0235244)
11)	Sample	7	F0824005	FFAST	C0H120570-007 8/23/10 TCLP (0235244)
12)	Sample	8	F0824006	FFAST	C0H180480-BLK 8/20/10 Soil (0232395)
13)	Sample	9	F0824007	FFAST	C0H180480-LCS 8/20/10 Soil (0232395)
14)	Sample	10	F0824008	FFAST	C0H180480-LCSD 8/20/10 Soil (0232395)
15)	Sample	11	F0824009	FFAST	C0H180480-001 x5 8/20/10 Soil (0232395)
16)	Sample	12	F0824010	FFAST	C0H180480-002 x5 8/20/10 Soil (0232395)
17)	Sample	13	F0824011	FFAST	C0H180480-003 x5 8/20/10 Soil (0232395)
18)	Sample	14	F0824012	FFAST	C0H180480-004 x5 8/20/10 Soil (0232395)
19)	Sample	15	F0824013	FFAST	C0H180480-005 x5 8/20/10 Soil (0232395)
20)	Sample	16	F0824014	FFAST	C0H180480-006 x5 8/20/10 Soil (0232395)
21)	Sample	17	F0824015	FFAST	C0H180480-007 x5 8/20/10 Soil (0232395)
22)	Sample	18	F0824016	FFAST	C0H180480-008 x5 8/20/10 Soil (0232395)
23)	Sample	19	F0824017	FFAST	C0H180480-009 x5 8/20/10 Soil (0232395)
24)	Sample	20	F0824018	FFAST	C0H180480-010 x5 8/20/10 Soil (0232395)
25)	Sample	21	F0824019	FFAST	C0H180480-011 x5 8/20/10 Soil (0232395)
26)	Sample	22	F0824020	FFAST	C0H180480-012 x5 8/20/10 Soil (0232395)
27)	Sample	23	F0824021	FFAST	C0H180480-013 x5 8/20/10 Soil (0232395)
28)	Sample	24	F0824022	FFAST	C0H180480-014 x5 8/20/10 Soil (0232395)
29)	Sample	25	F0824023	FFAST	C0H110453-BLK 2/21/10 TCLP C18 (0233078)
30)	Sample	26	F0824024	FFAST	C0H110453-LCS 2/21/10 TCLP C18 (0233078)
31)	Sample	27	F0824025	FFAST	C0H110453-LCSD 2/21/10 TCLP C18 (0233078)
32)	Sample	28	F0824026	FFAST	C0H110453-001 2/21/10 TCLP C18 (0233078)
33)	Sample	29	F0824027	FFAST	C0H130589-001 2/21/10 TCLP C18 (0233078)
34)	Sample	30	F0824028	FFAST	C0H170462-001 2/21/10 TCLP C18 (0233078)
35)	Sample	31	F0824029	FFAST	C0H190546-001 2/21/10 TCLP C18 (0233078)
36)	Sample	32	F0824030	FFAST	C0H180471-001 x100 8/20/10 2g/1ml (0232379)
37)	Sample	100	F08240B1	FFAST	Clean Out Blank
38)	Sample	100	F08240B2	FFAST	Clean Out Blank
39)	Sample	100	F08240B3	FFAST	Clean Out Blank
40)	Sample	100	F08240B4	FFAST	Clean Out Blank
41)	Sample	100	F08240B5	FFAST	Clean Out Blank

Bytes Needed: 2000565 Space on drive D: 1023932928
Sequence Verification Done!

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: C0H180480 Work Order #...: L5X051AC-LCS Matrix.....: SOLID
LCS Lot-Sample#: C0H200000-395 L5X051AD-LCSD
Prep Date.....: 08/20/10 Analysis Date..: 08/24/10
Prep Batch #...: 0232395 Analysis Time..: 08:21
Dilution Factor: 0.5 Initial Wgt/Vol: 30 g Final Wgt/Vol..: 0.5 mL
Analyst ID.....: 007062 Instrument ID..: 722

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Naphthalene	78	(42 - 104)			SW846 8270C
	79	(42 - 104)	0.86	(0-25)	SW846 8270C
Phenol	71	(39 - 105)			SW846 8270C
	73	(39 - 105)	2.6	(0-40)	SW846 8270C
2-Chlorophenol	79	(40 - 105)			SW846 8270C
	80	(40 - 105)	1.7	(0-37)	SW846 8270C
Acenaphthene	79	(42 - 104)			SW846 8270C
	80	(42 - 104)	0.99	(0-34)	SW846 8270C
1,4-Dichlorobenzene	77	(41 - 101)			SW846 8270C
	77	(41 - 101)	0.080	(0-32)	SW846 8270C
N-Nitrosodi-n-propyl-amine	77	(42 - 108)			SW846 8270C
	76	(42 - 108)	0.60	(0-32)	SW846 8270C
1,2,4-Trichloro-benzene	77	(41 - 105)			SW846 8270C
	79	(41 - 105)	2.3	(0-36)	SW846 8270C
Pyrene	71	(39 - 113)			SW846 8270C
	69	(39 - 113)	2.3	(0-28)	SW846 8270C
4-Chloro-3-methylphenol	79	(43 - 110)			SW846 8270C
	80	(43 - 110)	1.3	(0-31)	SW846 8270C
4-Nitrophenol	77	(27 - 131)			SW846 8270C
	76	(27 - 131)	0.21	(0-33)	SW846 8270C
2,4-Dinitrotoluene	87	(48 - 118)			SW846 8270C
	86	(48 - 118)	1.6	(0-33)	SW846 8270C
Pentachlorophenol	76	(18 - 125)			SW846 8270C
	82	(18 - 125)	7.8	(0-34)	SW846 8270C
4-Methylphenol	74	(43 - 107)			SW846 8270C
	74	(43 - 107)	0.070	(0-36)	SW846 8270C
Hexachloroethane	77	(40 - 102)			SW846 8270C
	81	(40 - 102)	5.2	(0-34)	SW846 8270C
4-Bromophenyl phenyl ether	79	(43 - 111)			SW846 8270C
	80	(43 - 111)	1.2	(0-20)	SW846 8270C
Butyl benzyl phthalate	76	(40 - 117)			SW846 8270C
	72	(40 - 117)	5.3	(0-34)	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: C0H180480 **Work Order #...:** L5X051AC-LCS **Matrix.....:** SOLID
LCS Lot-Sample#: C0H200000-395 L5X051AD-LCSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	79	(27 - 110)
	78	(27 - 110)
Terphenyl-d14	74	(21 - 130)
	72	(21 - 130)
2-Fluorobiphenyl	84	(28 - 108)
	80	(28 - 108)
2-Fluorophenol	76	(28 - 107)
	75	(28 - 107)
Phenol-d5	79	(30 - 112)
	76	(30 - 112)
2,4,6-Tribromophenol	88	(21 - 116)
	83	(21 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: C0H180480	**Work Order #...:** L5X051AA	**Matrix.....:** SOLID
MB Lot-Sample #: C0H200000-395		
	Prep Date.....: 08/20/10	**Analysis Time..:** 08:01
Analysis Date..: 08/24/10	**Prep Batch #...:** 0232395	**Final Wgt/Vol..:** 0.5 mL
Dilution Factor: 0.5	**Initial Wgt/Vol:** 30 g	**Instrument ID..:** 722
	Analyst ID.....: 007062	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Naphthalene	ND	3.4	ug/kg	SW846 8270C
Acenaphthylene	ND	3.4	ug/kg	SW846 8270C
Acenaphthene	ND	3.4	ug/kg	SW846 8270C
Fluorene	ND	3.4	ug/kg	SW846 8270C
Phenanthrene	ND	3.4	ug/kg	SW846 8270C
Anthracene	ND	3.4	ug/kg	SW846 8270C
Fluoranthene	ND	3.4	ug/kg	SW846 8270C
Pyrene	ND	3.4	ug/kg	SW846 8270C
Benzo(a)anthracene	ND	3.4	ug/kg	SW846 8270C
Chrysene	ND	3.4	ug/kg	SW846 8270C
Benzo(b)fluoranthene	ND	3.4	ug/kg	SW846 8270C
Benzo(k)fluoranthene	ND	3.4	ug/kg	SW846 8270C
Benzo(a)pyrene	ND	3.4	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	3.4	ug/kg	SW846 8270C
Dibenzo(a,h)anthracene	ND	3.4	ug/kg	SW846 8270C
Benzo(ghi)perylene	ND	3.4	ug/kg	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	80	(27 - 110)
Terphenyl-d14	78	(21 - 130)
2-Fluorobiphenyl	77	(28 - 108)
2-Fluorophenol	75	(28 - 107)
Phenol-d5	79	(30 - 112)
2,4,6-Tribromophenol	77	(21 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Test America Pittsburgh
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH **SDG No.:** C0H180480

Initial Calibration Source: Inorganic **Instrument:** ICPMS

Continuing Calibration Source: HIPUR

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV1			**ICV1 MET4061-10**						
	Antimony	0.0829	0.0800	103.6	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Arsenic	0.0794	0.0800	99.2	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Barium	0.0814	0.0800	101.7	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Beryllium	0.0815	0.0800	101.9	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Cadmium	0.0807	0.0800	100.9	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Chromium	0.0788	0.0800	98.5	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Copper	0.0802	0.0800	100.2	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Lead	0.0802	0.0800	100.2	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Nickel	0.0793	0.0800	99.1	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Selenium	0.0804	0.0800	100.5	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Silver	0.0817	0.0800	102.1	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Thallium	0.0833	0.0800	104.1	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
	Zinc	0.0807	0.0800	100.9	90.0 - 110.0	MS	8/28/2010	15:32	M00828A, gen
CCV1			**CCV1-1 MET4282-10**						
	Antimony	0.0955	0.1000	95.5	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Arsenic	0.0979	0.1000	97.9	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Barium	0.0958	0.1000	95.8	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Beryllium	0.1025	0.1000	102.5	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Cadmium	0.0979	0.1000	97.9	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Chromium	0.0975	0.1000	97.5	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Copper	0.0985	0.1000	98.5	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Lead	0.1006	0.1000	100.6	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Nickel	0.0985	0.1000	98.5	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Selenium	0.1010	0.1000	101.0	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Silver	0.0991	0.1000	99.1	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Thallium	0.1006	0.1000	100.6	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen
	Zinc	0.1017	0.1000	101.7	90.0 - 110.0	MS	8/28/2010	16:00	M00828A, gen

Test America Pittsburgh

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH **SDG No.:** C0H180480

Initial Calibration Source: Inorganic **Instrument:** ICPMS

Continuing Calibration Source: HIPUR

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV2			CCV1-2						
	Antimony	0.0938	0.1000	93.8	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Arsenic	0.0986	0.1000	98.6	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Barium	0.0950	0.1000	95.0	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Beryllium	0.0995	0.1000	99.5	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Cadmium	0.0984	0.1000	98.4	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Chromium	0.0998	0.1000	99.8	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Copper	0.1009	0.1000	100.9	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Lead	0.1041	0.1000	104.1	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Nickel	0.1008	0.1000	100.8	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Selenium	0.1008	0.1000	100.8	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Silver	0.0986	0.1000	98.6	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Thallium	0.1037	0.1000	103.7	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
	Zinc	0.1057	0.1000	105.7	90.0 - 110.0	MS	8/28/2010	17:06	M00828A, gen
CCV3			CCV1-3						
	Antimony	0.0947	0.1000	94.7	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Arsenic	0.0977	0.1000	97.7	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Barium	0.0950	0.1000	95.0	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Beryllium	0.0997	0.1000	99.7	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Cadmium	0.0993	0.1000	99.3	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Chromium	0.0992	0.1000	99.2	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Copper	0.0996	0.1000	99.6	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Lead	0.1037	0.1000	103.7	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Nickel	0.0997	0.1000	99.7	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Selenium	0.1006	0.1000	100.6	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Silver	0.0984	0.1000	98.4	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Thallium	0.1034	0.1000	103.4	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen
	Zinc	0.1062	0.1000	106.2	90.0 - 110.0	MS	8/28/2010	18:07	M00828A, gen

Test America Pittsburgh
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH

SDG No.: C0H180480

Initial Calibration Source: Inorganic

Instrument: ICPMS

Continuing Calibration Source: HIPUR

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV4			CCV1-4						
	Antimony	0.0947	0.1000	94.7	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Arsenic	0.0967	0.1000	96.7	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Barium	0.0961	0.1000	96.1	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Beryllium	0.0983	0.1000	98.3	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Cadmium	0.1003	0.1000	100.3	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Chromium	0.0968	0.1000	96.8	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Copper	0.0976	0.1000	97.6	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Lead	0.1039	0.1000	103.9	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Nickel	0.0984	0.1000	98.4	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Selenium	0.0979	0.1000	97.9	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Silver	0.1012	0.1000	101.2	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Thallium	0.1036	0.1000	103.6	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
	Zinc	0.1050	0.1000	105.0	90.0 - 110.0	MS	8/28/2010	19:10	M00828A, gen
CCV5			CCV1-5						
	Antimony	0.0951	0.1000	95.1	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Arsenic	0.0986	0.1000	98.6	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Barium	0.0960	0.1000	96.0	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Beryllium	0.0979	0.1000	97.9	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Cadmium	0.0983	0.1000	98.3	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Chromium	0.0995	0.1000	99.5	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Copper	0.0998	0.1000	99.8	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Lead	0.1028	0.1000	102.8	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Nickel	0.0993	0.1000	99.3	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Selenium	0.1003	0.1000	100.3	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Silver	0.0980	0.1000	98.0	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Thallium	0.1027	0.1000	102.7	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen
	Zinc	0.1062	0.1000	106.2	90.0 - 110.0	MS	8/28/2010	20:11	M00828A, gen

Test America Pittsburgh
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH **SDG No.:** C0H180480

Initial Calibration Source: Inorganic **Instrument:** ICPMS

Continuing Calibration Source: HIPUR

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV6			CCV1-6						
	Antimony	0.0953	0.1000	95.3	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Arsenic	0.0979	0.1000	97.9	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Barium	0.0958	0.1000	95.8	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Beryllium	0.0959	0.1000	95.9	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Cadmium	0.0974	0.1000	97.4	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Chromium	0.1000	0.1000	100.0	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Copper	0.0983	0.1000	98.3	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Lead	0.1018	0.1000	101.8	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Nickel	0.0990	0.1000	99.0	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Selenium	0.1015	0.1000	101.5	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Silver	0.0973	0.1000	97.3	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Thallium	0.1018	0.1000	101.8	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
	Zinc	0.1054	0.1000	105.4	90.0 - 110.0	MS	8/28/2010	21:15	M00828A, gen
CCV7			CCV1-7						
	Antimony	0.0954	0.1000	95.4	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Arsenic	0.0987	0.1000	98.7	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Barium	0.0953	0.1000	95.3	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Beryllium	0.0979	0.1000	97.9	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Cadmium	0.0977	0.1000	97.7	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Chromium	0.0998	0.1000	99.8	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Copper	0.0999	0.1000	99.9	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Lead	0.1003	0.1000	100.3	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Nickel	0.1000	0.1000	100.0	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Selenium	0.1009	0.1000	100.9	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Silver	0.0968	0.1000	96.8	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Thallium	0.1001	0.1000	100.1	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen
	Zinc	0.1054	0.1000	105.4	90.0 - 110.0	MS	8/28/2010	22:12	M00828A, gen

Test America Pittsburgh

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: TETRA TECH **SDG No.:** C0H180480

Initial Calibration Source: Inorganic **Instrument:** ICPMS

Continuing Calibration Source: HIPUR

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV8			**CCV1-8**						
	Antimony	0.0956	0.1000	95.6	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Arsenic	0.0979	0.1000	97.9	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Barium	0.0956	0.1000	95.6	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Beryllium	0.0956	0.1000	95.6	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Cadmium	0.0967	0.1000	96.7	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Chromium	0.0985	0.1000	98.5	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Copper	0.0981	0.1000	98.1	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Lead	0.0991	0.1000	99.1	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Nickel	0.0979	0.1000	97.9	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Selenium	0.1010	0.1000	101.0	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Silver	0.0966	0.1000	96.6	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Thallium	0.0992	0.1000	99.2	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
	Zinc	0.1032	0.1000	103.2	90.0 - 110.0	MS	8/28/2010	22:56	M00828A, gen
ICV1			**ICV1 MET4061-10**						
	Copper	0.0810	0.0800	101.2	90.0 - 110.0	MS	8/30/2010	14:52	M00830A, gen
CCV1			**CCV1-1 MET4282-10**						
	Copper	0.0996	0.1000	99.6	90.0 - 110.0	MS	8/30/2010	15:19	M00830A, gen
CCV2			**CCV1-2**						
	Copper	0.0995	0.1000	99.5	90.0 - 110.0	MS	8/30/2010	16:20	M00830A, gen

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: C0H180480 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Beryllium	ND	0.050	mg/kg	SW846 6020	08/27-08/28/10	L57DV1AD
		Dilution Factor: 0.5				
		Analysis Time..: 20:42		Analyst ID.....: 400149	Instrument ID..: ICP	
Cadmium	ND	0.050	mg/kg	SW846 6020	08/27-08/28/10	L57DV1AE
		Dilution Factor: 0.5				
		Analysis Time..: 20:42		Analyst ID.....: 400149	Instrument ID..: ICP	
Chromium	**0.025 B**	**0.10**	**mg/kg**	**SW846 6020**	**08/27-08/28/10**	**L57DV1AF**
		Dilution Factor: 0.5				
		Analysis Time..: 20:42		Analyst ID.....: 400149	Instrument ID..: ICP	
Copper	**0.15**	**0.10**	**mg/kg**	**SW846 6020**	**08/27-08/30/10**	**L57DV1AG**
		Dilution Factor: 0.5				
		Analysis Time..: 16:13		Analyst ID.....: 400149	Instrument ID..: ICP	
Lead	ND	0.050	mg/kg	SW846 6020	08/27-08/28/10	L57DV1AJ
		Dilution Factor: 0.5				
		Analysis Time..: 20:42		Analyst ID.....: 400149	Instrument ID..: ICP	
Nickel	ND	0.050	mg/kg	SW846 6020	08/27-08/28/10	L57DV1AH
		Dilution Factor: 0.5				
		Analysis Time..: 20:42		Analyst ID.....: 400149	Instrument ID..: ICP	
Selenium	ND	0.25	mg/kg	SW846 6020	08/27-08/28/10	L57DV1AL
		Dilution Factor: 0.5				
		Analysis Time..: 20:42		Analyst ID.....: 400149	Instrument ID..: ICP	
Silver	ND	0.050	mg/kg	SW846 6020	08/27-08/28/10	L57DV1AA
		Dilution Factor: 0.5				
		Analysis Time..: 20:42		Analyst ID.....: 400149	Instrument ID..: ICP	
Thallium	ND	0.050	mg/kg	SW846 6020	08/27-08/28/10	L57DV1AM
		Dilution Factor: 0.5				
		Analysis Time..: 20:42		Analyst ID.....: 400149	Instrument ID..: ICP	
Zinc	ND	0.25	mg/kg	SW846 6020	08/27-08/28/10	L57DV1AN
		Dilution Factor: 0.5				
		Analysis Time..: 20:42		Analyst ID.....: 400149	Instrument ID..: ICP	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

Test America Pittsburgh

- 4 -

INTERFERENCE CHECK SAMPLE

Client: TETRA TECH

SDG No.: C0H180480

ICS Source: EPA

Instrument ID: ICPMS

Sample ID / Analyte	WL/Mass	Result mg/L	Qual	True Value mg/L	% Recovery	Acceptance Window	Analysis Date	Analysis Time	Run Number
ICSA MET4063-10									
Antimony	121Sb	0.00021				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Arsenic	75As	0.00045				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Barium	137Ba	0.00036				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Beryllium	9Be	0.00017				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Cadmium	111Cd	0.00084				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Chromium	52Cr	0.00003				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Copper	65Cu	0.00291				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Lead	208Pb	0.00034				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Nickel	60Ni	0.00092				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Selenium	82Se	0.00068				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Silver	107Ag	0.00021				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Thallium	205Tl	0.00027				0.0 - 0.0	8/28/2010	15:48	M00828A, g
Zinc	66Zn	0.00509				0.0 - 0.0	8/28/2010	15:48	M00828A, g
ICSAB MET3848-10									
Antimony	121Sb	0.02086		0.02000	104.3	80 - 120%	8/28/2010	15:52	M00828A, g
Arsenic	75As	0.02116		0.02000	105.8	80 - 120%	8/28/2010	15:52	M00828A, g
Barium	137Ba	0.02060		0.02000	103.0	80 - 120%	8/28/2010	15:52	M00828A, g
Beryllium	9Be	0.02043		0.02000	102.2	80 - 120%	8/28/2010	15:52	M00828A, g
Cadmium	111Cd	0.02079		0.02000	104.0	80 - 120%	8/28/2010	15:52	M00828A, g
Chromium	52Cr	0.01951		0.02000	97.6	80 - 120%	8/28/2010	15:52	M00828A, g
Copper	65Cu	0.02281		0.02000	114.0	80 - 120%	8/28/2010	15:52	M00828A, g
Lead	208Pb	0.01909		0.02000	95.4	80 - 120%	8/28/2010	15:52	M00828A, g
Nickel	60Ni	0.02064		0.02000	103.2	80 - 120%	8/28/2010	15:52	M00828A, g
Selenium	82Se	0.05154		0.05000	103.1	80 - 120%	8/28/2010	15:52	M00828A, g
Silver	107Ag	0.02047		0.02000	102.4	80 - 120%	8/28/2010	15:52	M00828A, g
Thallium	205Tl	0.01902		0.02000	95.1	80 - 120%	8/28/2010	15:52	M00828A, g
Zinc	66Zn	0.02588		0.02500	103.5	80 - 120%	8/28/2010	15:52	M00828A, g
ICSA MET4063-10									
Copper	65Cu	0.00256				0.0 - 0.0	8/30/2010	15:07	M00830A, g
ICSAB MET3848-10									
Copper	65Cu	0.02278		0.02000	113.9	80 - 120%	8/30/2010	15:12	M00830A, g

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: C0H180480 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Chromium	100	(80 - 120)			EPA SEM	08/24-08/25/10	0236124
	102	(80 - 120)	1.9	(0-20)	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1			Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA					
Silver	92	(80 - 120)			EPA SEM	08/24-08/25/10	0236124
	92	(80 - 120)	0.62	(0-20)	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1			Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA					
Cadmium	90	(80 - 120)			EPA SEM	08/24-08/25/10	0236124
	93	(80 - 120)	2.9	(0-20)	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1			Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA					
Copper	98	(80 - 120)			EPA SEM	08/24-08/25/10	0236124
	99	(80 - 120)	1.3	(0-20)	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1			Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA					
Nickel	97	(80 - 120)			EPA SEM	08/24-08/25/10	0236124
	98	(80 - 120)	1.7	(0-20)	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1			Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA					
Lead	97	(80 - 120)			EPA SEM	08/24-08/25/10	0236124
	98	(80 - 120)	1.6	(0-20)	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1			Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA					
Zinc	102	(80 - 120)			EPA SEM	08/24-08/25/10	0236124
	104	(80 - 120)	2.0	(0-20)	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1			Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: C0H180480 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chromium	0.0962	0.0962	umoles/g	100		EPA SEM	08/24-08/25/10	0236124
	0.0962	0.0981	umoles/g	102	1.9	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1				Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA						
Silver	0.0116	0.0106	umoles/g	92		EPA SEM	08/24-08/25/10	0236124
	0.0116	0.0107	umoles/g	92	0.62	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1				Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA						
Cadmium	0.0111	0.00999	umoles/g	90		EPA SEM	08/24-08/25/10	0236124
	0.0111	0.0103	umoles/g	93	2.9	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1				Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA						
Copper	0.0984	0.0964	umoles/g	98		EPA SEM	08/24-08/25/10	0236124
	0.0984	0.0977	umoles/g	99	1.3	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1				Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA						
Nickel	0.213	0.206	umoles/g	97		EPA SEM	08/24-08/25/10	0236124
	0.213	0.210	umoles/g	98	1.7	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1				Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA						
Lead	0.0603	0.0583	umoles/g	97		EPA SEM	08/24-08/25/10	0236124
	0.0603	0.0592	umoles/g	98	1.6	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1				Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA						
Zinc	0.191	0.195	umoles/g	102		EPA SEM	08/24-08/25/10	0236124
	0.191	0.198	umoles/g	104	2.0	EPA SEM	08/24-08/25/10	0236124
		Dilution Factor: 1				Analysis Time..: 19:14	Analyst ID.....: 403938	
		Instrument ID..: TRA						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C0H180480 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: C0H240000-022 **Prep Batch #...:** 0236022					
Mercury	97	(80 - 120)	SW846 7471A	08/24/10	L52CP1AC
		Dilution Factor: 0.5	Analysis Time..: 08:46	Analyst ID.....: 031043	
		Instrument ID..: HGHYDRA			
LCS Lot-Sample#: C0H270000-078 **Prep Batch #...:** 0239078					
Silver	99	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1AP
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Arsenic	91	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1AQ
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Beryllium	94	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1AR
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Cadmium	98	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1AT
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Chromium	100	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1AU
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Copper	103	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1AV
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Nickel	101	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1AW
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Lead	102	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1AX
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Antimony	94	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1A0
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C0H180480 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	99	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1A1
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Thallium	100	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1A2
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			
Zinc	103	(80 - 120)	SW846 6020	08/27-08/28/10	L57DV1A3
		Dilution Factor: 0.5	Analysis Time..: 20:47	Analyst ID.....: 400149	
		Instrument ID..: ICPMS2			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: C0H180480 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: C0H240000-022 **Prep Batch #...:** 0236022							
Mercury	0.208	0.202	mg/kg	97	SW846 7471A	08/24/10	L52CP1AC
			Dilution Factor: 0.5		Analysis Time..: 08:46	Analyst ID.....: 031043	
			Instrument ID..: HGHYDRA				
LCS Lot-Sample#: C0H270000-078 **Prep Batch #...:** 0239078							
Silver	2.50	2.47	mg/kg	99	SW846 6020	08/27-08/28/10	L57DV1AP
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				
Arsenic	2.00	1.82	mg/kg	91	SW846 6020	08/27-08/28/10	L57DV1AQ
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				
Beryllium	2.50	2.34	mg/kg	94	SW846 6020	08/27-08/28/10	L57DV1AR
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				
Cadmium	2.50	2.45	mg/kg	98	SW846 6020	08/27-08/28/10	L57DV1AT
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				
Chromium	10.0	10.0	mg/kg	100	SW846 6020	08/27-08/28/10	L57DV1AU
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				
Copper	12.5	12.9	mg/kg	103	SW846 6020	08/27-08/28/10	L57DV1AV
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				
Nickel	25.0	25.3	mg/kg	101	SW846 6020	08/27-08/28/10	L57DV1AW
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				
Lead	1.00	1.02	mg/kg	102	SW846 6020	08/27-08/28/10	L57DV1AX
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				
Antimony	25.0	23.6	mg/kg	94	SW846 6020	08/27-08/28/10	L57DV1A0
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: C0H180480 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	0.500	0.494	mg/kg	99	SW846 6020	08/27-08/28/10	L57DV1A1
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				
Thallium	2.50	2.51	mg/kg	100	SW846 6020	08/27-08/28/10	L57DV1A2
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				
Zinc	25.0	25.8	mg/kg	103	SW846 6020	08/27-08/28/10	L57DV1A3
			Dilution Factor: 0.5		Analysis Time..: 20:47	Analyst ID.....: 400149	
			Instrument ID..: ICPMS2				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C0H180480
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: C0H180480-001 **Prep Batch #...:** 0239078							
Antimony	60 N	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1CV
	60 N	(75 - 125)	0.25	(0-20)	SW846 6020	08/27-08/28/10	L5QXW1CW
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					
Arsenic	83	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1CE
	86	(75 - 125)	0.99	(0-20)	SW846 6020	08/27-08/28/10	L5QXW1CF
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					
Beryllium	91	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1CG
	91	(75 - 125)	0.01	(0-20)	SW846 6020	08/27-08/28/10	L5QXW1CH
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					
Cadmium	92	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1CJ
	93	(75 - 125)	0.55	(0-20)	SW846 6020	08/27-08/28/10	L5QXW1CK
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					
Chromium	125	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1CL
	113	(75 - 125)	2.9	(0-20)	SW846 6020	08/27-08/28/10	L5QXW1CM
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					
Copper	72 N	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1CN
	76	(75 - 125)	1.1	(0-20)	SW846 6020	08/27-08/28/10	L5QXW1CP
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					
Lead	NC	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1CT
	NC	(75 - 125)		(0-20)	SW846 6020	08/27-08/28/10	L5QXW1CU
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					

% Moisture.....: 73

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C0H180480 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Nickel	88	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1CQ
	89	(75 - 125)	0.20	(0-20)	SW846 6020	08/27-08/28/10	L5QXW1CR
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					
Selenium	87	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1CX
	90	(75 - 125)	1.6	(0-20)	SW846 6020	08/27-08/28/10	L5QXW1C0
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					
Silver	86	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1CC
	83	(75 - 125)	2.0	(0-20)	SW846 6020	08/27-08/28/10	L5QXW1CD
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					
Thallium	91	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1C1
	91	(75 - 125)	0.45	(0-20)	SW846 6020	08/27-08/28/10	L5QXW1C2
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					
Zinc	NC	(75 - 125)			SW846 6020	08/27-08/28/10	L5QXW1C3
	NC	(75 - 125)		(0-20)	SW846 6020	08/27-08/28/10	L5QXW1C4
		Dilution Factor: 0.5					
		Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149	
		MS Run #.....: 0239051					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

NC The recovery and/or RPD were not calculated.

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: C0H180480 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: C0H180480-001 **Prep Batch #...:** 0239078									
								% Moisture.....: 73	
Antimony									
	1.4	91.8	57.0 N	mg/kg	60		SW846 6020	08/27-08/28/10	L5QXW1CV
	1.4	91.8	56.8 N	mg/kg	60	0.25	SW846 6020	08/27-08/28/10	L5QXW1CW
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149		
			MS Run #.....: 0239051						
Arsenic									
	8.9	7.35	15.0	mg/kg	83		SW846 6020	08/27-08/28/10	L5QXW1CE
	8.9	7.35	15.2	mg/kg	86	0.99	SW846 6020	08/27-08/28/10	L5QXW1CF
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149		
			MS Run #.....: 0239051						
Beryllium									
	1.8	9.18	10.2	mg/kg	91		SW846 6020	08/27-08/28/10	L5QXW1CG
	1.8	9.18	10.2	mg/kg	91	0.01	SW846 6020	08/27-08/28/10	L5QXW1CH
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149		
			MS Run #.....: 0239051						
Cadmium									
	5.2	9.18	13.6	mg/kg	92		SW846 6020	08/27-08/28/10	L5QXW1CJ
	5.2	9.18	13.7	mg/kg	93	0.55	SW846 6020	08/27-08/28/10	L5QXW1CK
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149		
			MS Run #.....: 0239051						
Chromium									
	110	36.7	156	mg/kg	125		SW846 6020	08/27-08/28/10	L5QXW1CL
	110	36.7	151	mg/kg	113	2.9	SW846 6020	08/27-08/28/10	L5QXW1CM
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149		
			MS Run #.....: 0239051						
Copper									
	116	45.9	149 N	mg/kg	72		SW846 6020	08/27-08/28/10	L5QXW1CN
	116	45.9	150	mg/kg	76	1.1	SW846 6020	08/27-08/28/10	L5QXW1CP
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2		Analyst ID.....: 400149		
			MS Run #.....: 0239051						

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: C0H180480 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Lead									
	111	3.67	118 NC	mg/kg			SW846 6020	08/27-08/28/10	L5QXW1CT
	111	3.67	115 NC	mg/kg			SW846 6020	08/27-08/28/10	L5QXW1CU
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2			Analyst ID.....: 400149	
			MS Run #.....: 0239051						
Nickel									
	36.4	91.8	118	mg/kg	88		SW846 6020	08/27-08/28/10	L5QXW1CQ
	36.4	91.8	118	mg/kg	89	0.20	SW846 6020	08/27-08/28/10	L5QXW1CR
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2			Analyst ID.....: 400149	
			MS Run #.....: 0239051						
Selenium									
	1.8	1.84	3.40	mg/kg	87		SW846 6020	08/27-08/28/10	L5QXW1CX
	1.8	1.84	3.46	mg/kg	90	1.6	SW846 6020	08/27-08/28/10	L5QXW1C0
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2			Analyst ID.....: 400149	
			MS Run #.....: 0239051						
Silver									
	2.8	9.18	10.6	mg/kg	86		SW846 6020	08/27-08/28/10	L5QXW1CC
	2.8	9.18	10.4	mg/kg	83	2.0	SW846 6020	08/27-08/28/10	L5QXW1CD
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2			Analyst ID.....: 400149	
			MS Run #.....: 0239051						
Thallium									
	0.24	9.18	8.56	mg/kg	91		SW846 6020	08/27-08/28/10	L5QXW1C1
	0.24	9.18	8.60	mg/kg	91	0.45	SW846 6020	08/27-08/28/10	L5QXW1C2
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2			Analyst ID.....: 400149	
			MS Run #.....: 0239051						
Zinc									
	382	91.8	473 NC	mg/kg			SW846 6020	08/27-08/28/10	L5QXW1C3
	382	91.8	464 NC	mg/kg			SW846 6020	08/27-08/28/10	L5QXW1C4
			Dilution Factor: 0.5						
			Analysis Time..: 21:03		Instrument ID..: ICPMS2			Analyst ID.....: 400149	
			MS Run #.....: 0239051						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

NC The recovery and/or RPD were not calculated.

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C0H180480 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: C0H180480-002 **Prep Batch #...:** 0236022							
						% Moisture.....: 62	
Mercury	NC	(75 - 125)			SW846 7471A	08/24/10	L5QX01A8
	NC	(75 - 125)		(0-20)	SW846 7471A	08/24/10	L5QX01A9

Dilution Factor: 0.5
Analysis Time..: 08:55 Instrument ID..: HGHYDRA Analyst ID.....: 031043
MS Run #.....: 0236010

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

NC The recovery and/or RPD were not calculated.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: C0H180480 **Matrix.....:** SOLID
Date Sampled...: 08/17/10 **Date Received..:** 08/18/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: C0H180480-002 **Prep Batch #...:** 0236022									
								% Moisture.....: 62	
Mercury									
	2.0	0.443	1.21	NC mg/kg			SW846 7471A	08/24/10	L5QX01A8
	2.0	0.443	1.22	NC mg/kg			SW846 7471A	08/24/10	L5QX01A9

Dilution Factor: 0.5
Analysis Time..: 08:55 Instrument ID..: HGHYDRA Analyst ID.....: 031043
MS Run #.....: 0236010

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

NC The recovery and/or RPD were not calculated.

Test America Pittsburgh

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SERIAL DILUTION SAMPLE SUMMARY

Client: TETRA TECH **SDG No.:** C0H180480

Sample ID: L5QXW **Serial Dilution ID:** SD-90-SSL **Client ID:** SD-90-SSL

Batch Number: 0236079 **Prep Date:** 8/24/2010 **Matrix:** SOIL

Initial Wt/Vol: 2.00 **Final Vol:** 100.0

% Solids: 27.2 **Instrument:** ICPMS

TOTAL METALS

Analyte	Init Dil	Initial Result mg/L	C	Init Date/Time	SD Dil	Serial Result mg/L	C	SD Date/Time	% Diff	Qual	SD Limits
Antimony	1	1.43497		8/28/2010 20:55	5	1.12968	J	8/28/2010 20:59	21.3	E	10.00 %
Arsenic	1	8.89236		8/28/2010 20:55	5	8.40007		8/28/2010 20:59	5.5		10.00 %
Beryllium	1	1.82678		8/28/2010 20:55	5	1.67524		8/28/2010 20:59	8.3		10.00 %
Cadmium	1	5.17267		8/28/2010 20:55	5	4.72447		8/28/2010 20:59	8.7		10.00 %
Chromium	1	109.91920		8/28/2010 20:55	5	103.32480		8/28/2010 20:59	6.0		10.00 %
Copper	1	115.72370		8/28/2010 20:55	5	111.03970		8/28/2010 20:59	4.0		10.00 %
Lead	1	111.13150		8/28/2010 20:55	5	97.72227		8/28/2010 20:59	12.1	E	10.00 %
Nickel	1	36.42543		8/28/2010 20:55	5	34.93755		8/28/2010 20:59	4.1		10.00 %
Selenium	1	1.81190		8/28/2010 20:55	5	2.58817	J	8/28/2010 20:59	42.8		10.00 %
Silver	1	2.76268		8/28/2010 20:55	5	2.57991		8/28/2010 20:59	6.6		10.00 %
Thallium	1	0.24431		8/28/2010 20:55	5	0.21767	J	8/28/2010 20:59	10.9	E	10.00 %
Zinc	1	381.70470		8/28/2010 20:55	5	373.62230		8/28/2010 20:59	2.1		10.00 %

TestAmerica Pittsburgh | ***Sulfide AVS Distillation Worksheet*** | **Batch No: 0236079**

Method Sulfide AVS	**Matrix** Solid	**Lot Numbers** C0H110578, C0H120575, C0H130459, C0H170539, C0H180480
Start Time 07:40	**Stop Time** 08:40	
Start Temp. 20.2	**Stop Temp.** 21.3	
Analyst Dennis Baker	**Date** 08/24/2010	
Analyst Sign: D Baker		

Sample ID	Initial Wt/Vol g/mL	Final Vol mL	Expiration Date	Sulfide Present (Y/N) [1]	Comments
L52E01AA B	10.0g	250		NA	GLASS BEADS WC 3168-10
L52E01AC C					" " + 2.5ml 2145-10
L52E01AD L					" " + " " " "
L5FQJ1CH					
L5HKV1CG					
L5HLD1CH					
L5HLF1CH					
L5HLG1CH					
L5JMA1CH			2010-08-26		
L5PA21CF			2010-08-27		
L5QX01AE			2010-08-31		
L5QX11AE			2010-08-31		
L5QX21A2			2010-08-31		
L5QXW1A3	↓	↓	2010-08-31	↓	

DB 8-24-10

DB 8-24-10

DB 8-24-10

[1] If sulfides are present, treat sample with powdered cadmium or lead carbonate until there is no reaction to the lead acetate paper.

SAMPLE CODING: B-Blank C-Check L-Check Duplicate S-Matrix Spike D-Matrix Spike Duplicate X-Sample Duplicate

Reagents:

Sulfide Stock, Std 2717-09, Standards Log
Zinc Acetate, Std 1911-10, StandardsLog
Sulfide LCS, WC 4204-10, Standards Log
Sulfide CCV, WC 4205-10, Standards Log

NOTE: Distillates are disposed of 14 days after analysis

Balance ID:	25606
Pipet #:	H30608
LCS True Value:	2.9944 umoles
LCS StdsLogID:	WC 4204-10
MS/MSD Conc.:	2.9944 umoles
MS/MSD StdsLogID:	WC 4204-10
Glass or Plastic Beads:	Standard ID

Digestate(s)	(Received) Date	Time	Analyst	Location	(Relinquished) Date	Time	Analyst	Location
All Above	8-24-10	0900	DB	WC	8-24-10	0900	DB	metals
All above	08-25-10	0912	AC	E3	08-27-10	0936	AC	E3

Additional Comments:

Reviewed By: J Johnson 4048 **Date:** 8-24-10

WC-97-0236079

C0H180480

TestAmerica Pittsburgh *Metals Preparation Log*

Batch No. 0239078

v1.0.5 - Last Revised 12/30/2005

Method 6020 Soil	**Matrix** Solid	**Start Time** 0750	**SDG** -
Analyst Caitlyn Haluck	**Date** 8/27/10	**Lot Numbers**	
MS TAPITT-MS-C, TAPITT-MS-ICPMS		C0H180480	
Lab Lot # -met4267-10, met2846-10			
Analyst Sign: CaitlynHaluck			

Sample ID	Initial Wt/Vol g/mL	Final Vol mL	Comments
L5Q0C	2.0g	100mL	
L5Q0D			
L5Q0F			
L5Q0K			
L5QX0			
L5QX1			
L5QX2			
L5QX3			
L5QX4			
L5QX6			
L5QX7			
L5QX8			
L5QX9			
L5QXW			
L5QXW S			+1.0mL MS-C, MS-ICP
L5QXW D			
L57DV B	2.0g chips		CH 8/27/10
L57DV C			+1.0mL MS-C, MS-ICP
			CH 8/27/10

SAMPLE CODING: B-Blank C-Check L-Check Duplicate S-Matrix Spike D-Matrix Spike Duplicate X-Sample Duplicate

NOTE: Samples marked with an asterisk (*) required filtration after digestion and prior to analysis
Samples marked with a plus sign (+) required additional Conc.HNO3 in digestion process, brown fumes were observed

Reagents: 5 ml Optima Conc HNO3, 6901 J08N59, JT Baker
10 ml 1:1 Optima HNO3, MET 4111-10, Stds. Log
10ml Opt. Conc. HCl, V078 J02N57, Mallinckrodt
10 ml 30% H2O2, 3408 H47A18, Mallinckrodt

Minimum digestion times have been met (analyst initials): CH

Hot Plate/Block Temp	Correction Factor
#10/94°C	±0.0°C

Digestate(s)	Date	Time	(Received)	Analyst	Location	Date	Time	(Relinquished)	Analyst	Location
all above	8-27-10	1200		CH	Peep	8/27/10	1310		CH	A3
All Above	8-28-10	1425		WK	A3	8-29-10	1610		WK	A3
All Above	8-30-10	1320		WK	A3	8-30-10	1455		WK	A3

	Lot Number	Manufacturer	
Initial Digestion Vessel:	1005282	Environmental Express	**Pipet #:** 03F95602
Final Digestion Vessel:	100504	Corning	**Balance #:** P1856710
Filter Paper:	K11597490	Whatman	Printed on: 27-Aug-10 9:44:57 AM

Reviewed By: [signature] C.Cz **Date:** 8/27/10 **MET-153-0239078**

TestAmerica Pittsburgh

Metals Data Reporting Form

Initial Calibration Verification Standar

Instrument: ICPST **Units:** ug/L

Chart Number: T00825B.ARC **Acceptable Range:** 90% - 110%

Standard Source: Inorganic Ventures **Standard ID:** MET4711-09

Element	WL/ Mass	True Conc	ICV1-1 8/25/2010 12:42 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Cadmium	226.502	250.0	248.96	**99.6**								
Chromium	267.716	1000.0	1010.46	**101.0**								
Copper	324.753	1000.0	1024.72	**102.5**								
Lead	220.353	250.0	252.70	**101.1**								
Nickel	231.604	1000.0	983.44	**98.3**								
Silver	328.068	500.0	501.21	**100.2**								
Zinc	213.856	1000.0	1013.18	**101.3**								

TestAmerica Pittsburgh

Metals Data Reporting Form

Initial Calibration Verification Standar

Instrument: ICPST **Units:** ug/L

Chart Number: T00826C.ARC **Acceptable Range:** 90% - 110%

Standard Source: Inorganic Ventures **Standard ID:** MET4711-09

Element	WL/ Mass	True Conc	ICV1-1 8/26/2010 5:19 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Zinc	213.856	1000.0	1011.85	**101.2**								

5.11.0

Form 2A Equivalent

TestAmerica Pittsburgh

Metals Data Reporting Form

Initial Calibration Verification Standar

Instrument: CVAA **Units:** ug/L

Chart Number: G00825B.PRN **Acceptable Range:** 90% - 110%

Standard Source: Ultra **Standard ID:** MET4412-10

Element	WL/ Mass	True Conc	ICV6-1 8/25/2010 3:13 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	2.5	2.54	**101.6**								

5.11.0

Form 2A Equivalent

TestAmerica Pittsburgh

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: ICPST

Units: ug/L

Chart Number: T00825B.ARC

Acceptable Range: 90% - 110%

Standard Source: Inorganic Ventures

Standard ID: MET5054-09

Element	WL/ Mass	True Conc	CCV1-1 8/25/2010 1:10 PM Found	% Rec	CCV1-2 8/25/2010 2:09 PM Found	% Rec	CCV1-3 8/25/2010 3:23 PM Found	% Rec	CCV1-4 8/25/2010 4:29 PM Found	% Rec	CCV1-5 8/25/2010 5:35 PM Found	% Rec
Cadmium	226.502	500.0	486.12	**97.2**	481.18	**96.2**	491.14	**98.2**	489.53	**97.9**	490.69	**98.1**
Chromium	267.716	2000.0	1974.24	**98.7**	1946.59	**97.3**	1988.05	**99.4**	1987.92	**99.4**	1989.28	**99.5**
Copper	324.753	2000.0	2025.18	**101.3**	1995.92	**99.8**	2030.49	**101.5**	2049.53	**102.5**	2030.26	**101.5**
Lead	220.353	500.0	490.48	**98.1**	484.42	**96.9**	494.00	**98.8**	491.21	**98.2**	490.65	**98.1**
Nickel	231.604	2000.0	1957.73	**97.9**	1937.56	**96.9**	1975.39	**98.8**	1967.71	**98.4**	1967.05	**98.4**
Silver	328.068	1000.0	1013.78	**101.4**	1001.33	**100.1**	1013.54	**101.4**	1014.06	**101.4**	1004.16	**100.4**
Zinc	213.856	2000.0	2019.91	**101.0**	1980.01	**99.0**	2007.62	**100.4**	2001.39	**100.1**	1998.09	**99.9**

TestAmerica Pittsburgh

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: ICPST

Units: ug/L

Chart Number: T00825B.ARC

Acceptable Range: 90% - 110%

Standard Source: Inorganic Ventures

Standard ID: MET5054-09

Element	WL/ Mass	True Conc	CCV1-6 8/25/2010 6:41 PM Found	% Rec	CCV1-7 8/25/2010 7:47 PM Found	% Rec	CCV1-8 8/25/2010 8:36 PM Found	% Rec	Found	% Rec	Found	% Rec
Cadmium	226.502	500.0	497.45	**99.5**	499.68	**99.9**	498.32	**99.7**				
Chromium	267.716	2000.0	2013.64	**100.7**	2019.38	**101.0**	2027.36	**101.4**				
Copper	324.753	2000.0	2040.20	**102.0**	2049.74	**102.5**	2046.33	**102.3**				
Lead	220.353	500.0	499.94	**100.0**	504.49	**100.9**	500.46	**100.1**				
Nickel	231.604	2000.0	1991.90	**99.6**	2000.58	**100.0**	1995.22	**99.8**				
Silver	328.068	1000.0	1007.87	**100.8**	1011.61	**101.2**	1004.90	**100.5**				
Zinc	213.856	2000.0	2015.53	**100.8**	2016.50	**100.8**	2016.82	**100.8**				

TestAmerica Pittsburgh

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: ICPST **Units:** ug/L

Chart Number: T00826C.ARC **Acceptable Range:** 90% - 110%

Standard Source: Inorganic Ventures **Standard ID:** MET5054-09

Element	WL/ Mass	True Conc	CCV1-1 8/26/2010 5:48 PM Found	% Rec	CCV1-2 8/26/2010 6:53 PM Found	% Rec	CCV1-3 8/26/2010 7:59 PM Found	% Rec	CCV1-4 8/26/2010 9:05 PM Found	% Rec	CCV1-5 8/26/2010 10:11 PM Found	% Rec
Zinc	213.856	2000.0	2056.89	**102.8**	2025.58	**101.3**	2010.04	**100.5**	1997.35	**99.9**	2019.42	**101.0**

TestAmerica Pittsburgh

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: ICPST **Units:** ug/L

Chart Number: T00826C.ARC **Acceptable Range:** 90% - 110%

Standard Source: Inorganic Ventures **Standard ID:** MET5054-09

Element	WL/ Mass	True Conc	CCV1-6 8/26/2010 11:16 PM		CCV1-7 8/27/2010 12:22 AM		CCV1-8 8/27/2010 1:28 AM		CCV1-9 8/27/2010 2:12 AM			
			Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Zinc	213.856	2000.0	2004.87	**100.2**	2001.03	**100.1**	1993.78	**99.7**	2009.61	**100.5**		

TestAmerica Pittsburgh

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA **Units:** ug/L

Chart Number: G00825B.PRN **Acceptable Range:** 80% - 120%

Standard Source: Inorganic Ventures **Standard ID:** MET4414-10

Element	WL/ Mass	True Conc	CCV6-1 8/25/2010 3:18 PM		CCV6-2 8/25/2010 3:38 PM		CCV6-3 8/25/2010 4:00 PM		CCV6-4 8/25/2010 4:20 PM		CCV6-5 8/25/2010 4:40 PM	
			Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	5.0	4.80	**96.0**	4.84	**96.8**	4.75	**95.0**	4.82	**96.4**	4.71	**94.2**

TestAmerica Pittsburgh

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA

Units: ug/L

Chart Number: G00825B.PRN

Acceptable Range: 80% - 120%

Standard Source: Inorganic Ventures

Standard ID: MET4414-10

Element	WL/ Mass	True Conc	CCV6-6 8/25/2010 4:50 PM Found	% Rec	CCV6-7 8/25/2010 5:01 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	5.0	4.75	**95.0**	4.82	**96.4**						

5.11.0

Form 2A Equivalent

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: C0H180480 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: C0H240000-022 **Prep Batch #...:** 0236022						
Mercury	ND	0.016	mg/kg	SW846 7471A	08/24/10	L52CP1AA
		Dilution Factor: 0.5				
		Analysis Time..: 08:44	Analyst ID.....: 031043	Instrument ID..: HGH		
MB Lot-Sample #: C0H240000-124 **Prep Batch #...:** 0236124						
Chromium	**0.00071 B**	**0.0024**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L52H41AT**
		Dilution Factor: 1				
		Analysis Time..: 19:08	Analyst ID.....: 403938	Instrument ID..: TRA		
Silver	ND	0.0012	umoles/gm	EPA SEM	08/24-08/25/10	L52H41AU
		Dilution Factor: 1				
		Analysis Time..: 19:08	Analyst ID.....: 403938	Instrument ID..: TRA		
Cadmium	ND	0.0011	umoles/gm	EPA SEM	08/24-08/25/10	L52H41AA
		Dilution Factor: 1				
		Analysis Time..: 19:08	Analyst ID.....: 403938	Instrument ID..: TRA		
Copper	ND	0.0098	umoles/gm	EPA SEM	08/24-08/25/10	L52H41AC
		Dilution Factor: 1				
		Analysis Time..: 19:08	Analyst ID.....: 403938	Instrument ID..: TRA		
Nickel	ND	0.017	umoles/gm	EPA SEM	08/24-08/25/10	L52H41AD
		Dilution Factor: 1				
		Analysis Time..: 19:08	Analyst ID.....: 403938	Instrument ID..: TRA		
Lead	ND	0.00072	umoles/gm	EPA SEM	08/24-08/25/10	L52H41AE
		Dilution Factor: 1				
		Analysis Time..: 19:08	Analyst ID.....: 403938	Instrument ID..: TRA		
Zinc	**0.0059 B**	**0.038**	**umoles/gm**	**EPA SEM**	**08/24-08/25/10**	**L52H41AF**
		Dilution Factor: 1				
		Analysis Time..: 19:08	Analyst ID.....: 403938	Instrument ID..: TRA		
MB Lot-Sample #: C0H270000-078 **Prep Batch #...:** 0239078						
Antimony	ND	0.10	mg/kg	SW846 6020	08/27-08/28/10	L57DV1AK
		Dilution Factor: 0.5				
		Analysis Time..: 20:42	Analyst ID.....: 400149	Instrument ID..: ICP		
Arsenic	ND	0.050	mg/kg	SW846 6020	08/27-08/28/10	L57DV1AC
		Dilution Factor: 0.5				
		Analysis Time..: 20:42	Analyst ID.....: 400149	Instrument ID..: ICP		

(Continued on next page)

TestAmerica Pittsburgh

Metals Data Reporting Form

Interference Check Standard A

Instrument: ICPST **Units:** ug/L

Chart Number: T00825B.ARC **Acceptable Range:** 0% - 0%

Standard Source: Inorganic Ventures **Standard ID:** MET4850-09

Element	WL/ Mass	Reporting Limit	True Conc	ICSA 8/25/2010 12:59 PM Found	Found	Found	Found	Found
Cadmium	226.502	5		-2				
Chromium	267.716	5		-1				
Copper	324.753	25		0				
Lead	220.353	3		3				
Nickel	231.604	40		1				
Silver	328.068	5		0				
Zinc	213.856	20		6				

TestAmerica Pittsburgh

Metals Data Reporting Form

Interference Check Standard A

Instrument: ICPST **Units:** ug/L

Chart Number: T00826C.ARC **Acceptable Range:** 0% - 0%

Standard Source: Inorganic Ventures **Standard ID:** MET4850-09

Element	WL/ Mass	Reporting Limit	True Conc	ICSA 8/26/2010 5:37 PM Found	Found	Found	Found	Found
Zinc	213.856	20		-4				

5.11.0

U Result is less than the MDL

B Result is between MDL and RL

Form 4 Equivalent

TestAmerica Pittsburgh

Metals Data Reporting Form

Interference Check Standard AB

Instrument: ICPST **Units:** ug/L

Chart Number: T00825B.ARC **Acceptable Range:** 80% - 120%

Standard Source: Inorganic Ventures **Standard ID:** MET4851-09

Element	WL/ Mass	True Conc	ICSAB 8/25/2010 1:04 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Cadmium	226.502	1000	924.7	**92.5**								
Chromium	267.716	500	483.1	**96.6**								
Copper	324.753	500	532.5	**106.5**								
Lead	220.353	1000	949.2	**94.9**								
Nickel	231.604	1000	926.4	**92.6**								
Silver	328.068	1000	1065.6	**106.6**								
Zinc	213.856	1000	1012.3	**101.2**								

TestAmerica Pittsburgh

Metals Data Reporting Form

Interference Check Standard AB

Instrument: ICPST **Units:** ug/L

Chart Number: T00826C.ARC **Acceptable Range:** 80% - 120%

Standard Source: Inorganic Ventures **Standard ID:** MET4851-09

Element	WL/ Mass	True Conc	ICSAB 8/26/2010 5:42 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Zinc	213.856	1000	1010.3	**101.0**								

5.11.0

NC Percent recovery was not calculated
U Result is less than the MDL
B Result is between MDL and RL

Form 4 Equivalent

TestAmerica Pittsburgh

Metals Data Reporting Form

Contract Required Detection Limit Standard

Instrument: ICPST **Units:** ug/L

Chart Number: T00825B.ARC **Acceptable Range:** 50% - 150%

Standard Source: Inorganic Ventures **Standard ID:** MET4939-09

Element	WL/ Mass	True Conc	CRA/RLV 8/25/2010 12:53 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Cadmium	226.502	2.5 5.0	4.87	**97.4**								
Chromium	267.716	2.5 5.0	4.89	**97.8**								
Copper	324.753	12.5 25.0	24.71	**98.8**								
Lead	220.353	1.5 3.0	3.48	**116.0**								
Nickel	231.604	20 40.0	40.75	**101.9**								
Silver	328.068	2.5 5.0	4.92	**98.4**								
Zinc	213.856	10 20.0	22.60	**113.0**								

CRDL CRDL @ 25% Solids

Pb 0.00018 0.000721

Zn 0.00378 0.01512

5.11.0

Form 2B Equivalent

TestAmerica Pittsburgh

Metals Data Reporting Form

Contract Required Detection Limit Standard

Instrument: ICPST **Units:** ug/L

Chart Number: T00826C.ARC **Acceptable Range:** 50% - 150%

Standard Source: Inorganic Ventures **Standard ID:** MET4939-09

Element	WL/ Mass	True Conc	CRA/RLV 8/26/2010 5:31 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Zinc	213.856	20.0	10.65	53.3								

NO ACTION

1 SAMPLE ANALYZED
ON 8/26/10 @ 0201 (AM)

5.11.0 *Form 2B Equivalent*

TestAmerica Pittsburgh

Metals Data Reporting Form

Contract Required Detection Limit Standard

Instrument: CVAA **Units:** ug/L

Chart Number: G00825B.PRN **Acceptable Range:** 50% - 150%

Standard Source: Ultra **Standard ID:** MET4413-10

Element	WL/ Mass	True Conc	CRA/RLV 8/25/2010 3:16 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	0.2	0.21	**105.5**								

5.11.0

Form 2B Equivalent

TestAmerica Pittsburgh

Metals Data Reporting Form

Instrument Detection Limits

Instrument: ICPST **Units:** ppb

Element	Wavelength	Reporting Limit	MDL	Date of MDL
Cadmium	226.502	5.0	0.16	10/18/2006
Chromium	267.716	5.0	0.44	10/18/2006
Copper	324.753	25.0	2.2	10/18/2006
Lead	220.353	3.0	2.0	10/18/2006
Nickel	231.604	40.0	1.2	10/18/2006
Silver	328.068	5.0	0.58	10/18/2006
Zinc	213.856	20.0	7.4	10/18/2006

Test America Pittsburgh
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METHOD DETECTION LIMITS

Client: TETRA TECH

SDG No.: C0H180480

	Analyte	Mass	MDL ug/L	CRQL ug/L
ICPMS		**MDL Date:**	6/6/2009	
	Antimony	121	0.026	2
	Arsenic	75	0.18	1
	Barium	137	0.1	10
	Beryllium	9	0.075	1
	Cadmium	111	0.070	1
	Chromium	52	0.06	2
	Copper	65	0.33	2
	Lead	208	0.038	1
	Nickel	60	0.1	1
	Selenium	82	0.50	5
	Silver	107	0.04	1
	Thallium	205	0.020	1
	Zinc	66	0.65	5

GENERAL CHEMISTRY SUMMARY

Tetra Tech Middle River, MD

Acid Volatile Sulfide

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	EPA AVS
Client Name:	Tetra Tech NUS, Inc	**Report ID:**	C0H180480
Matrix:	SOLID	**Date/Time Received:**	8/11/2010 10:15:00AM

Client Sample ID	Sample Number	Workorder	Result	Units	Reporting Limit	Prep Date-Analysis Date/Time	QC Batch	RPD / Limit (%)
BLK - C0H240000079B	079 MB	L52E01AA	ND	umoles/g	0.50	8/24/2010 - 8/24/2010 09:05	0236079	

Tetra Tech Middle River, MD

Ratio for SEM/AVS

Lab Name:	TESTAMERICA PITTSBURGH	**Lot Number:**	C0H180480
Client Name:	Tetra Tech NUS, Inc	**Date Received:**	8/18/10
Matrix:	SOLID		

Client Sample ID	Sample Number	Ratio
SD-90-SS	001	0.2013
SD-90-01	002	0.2717
SD-90-02	003	0.3305
SD-90-04	004	NA

Tetra Tech Middle River, MD

Acid Volatile Sulfide

Lab Name: TESTAMERICA PITTSBURGH
Client Name: Tetra Tech NUS, Inc
Matrix: SOLID

Method: EPA AVS
Lot Number: C0H180480

AMBIENT MICRO-MIDI ACID PURGE

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
SD-90-SS	C0H180480 001	L5QXW1A3	22.6	umoles/g —	0.57	1.8	1	8/24/2010 - 8/24/2010 09:05	0236079
SD-90-01	C0H180480 002	L5QX01AE	19.0	umoles/g —	0.41	1.3	1	8/24/2010 - 8/24/2010 09:05	0236079
SD-90-02	C0H180480 003	L5QX11AE	18.7	umoles/g —	0.37	1.2	1	8/24/2010 - 8/24/2010 09:05	0236079
SD-90-04	C0H180480 004	L5QX21A2	ND	umoles/g —	0.27	0.88	1	8/24/2010 - 8/24/2010 09:05	0236079

Tetra Tech Middle River, MD

Percent Solids

Lab Name: TESTAMERICA PITTSBURGH
Client Name: Tetra Tech NUS, Inc
Matrix: SOLID
Method: SM20 2540G
Lot Number: C0H180480

NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
SD-90-SS	C0H180480 001	L5QXW1AA	27.2	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-90-01	C0H180480 002	L5QX01AF	37.7	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-90-02	C0H180480 003	L5QX11AF	41.6	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-90-04	C0H180480 004	L5QX21AA	56.7	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-91-SS	C0H180480 005	L5QX31AA	70.3	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-91-01	C0H180480 006	L5QX41AA	75.2	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-94-SS	C0H180480 007	L5QX61AA	35.8	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-94-01	C0H180480 008	L5QX71AA	40.4	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-94-02	C0H180480 009	L5QX81AA	45.8	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-94-04	C0H180480 010	L5QX91AA	59.7	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-97-SS	C0H180480 011	L5Q0C1AA	23.3	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-97-01	C0H180480 012	L5Q0D1AA	27.2	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-97-02	C0H180480 013	L5Q0F1AA	39.1	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265
SD-97-04	C0H180480 014	L5Q0K1AA	40.9	%	0.0	1.0	1	8/19/2010 - 8/20/2010 06:00	0231265

Tetra Tech Middle River, MD

TOC

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	EPA Lloyd Kahn
Client Name:	Tetra Tech NUS, Inc	**Lot Number:**	C0H180480
Matrix:	SOLID		

Total Organic Carbon by Lloyd Kahn

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
SD-90-SS	C0H180480 001	L5QXW1AC	28000	mg/kg	1980	7270	1.98	8/19/2010 - 8/21/2010 02:18	0231116
SD-90-01	C0H180480 002	L5QX01AG	35900	mg/kg	1420	5200	1.96	8/19/2010 - 8/21/2010 03:01	0231116
SD-90-02	C0H180480 003	L5QX11AG	35900	mg/kg	1280	4710	1.96	8/19/2010 - 8/21/2010 03:15	0231116

Tetra Tech Middle River, MD

Acid Volatile Sulfide

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	EPA AVS
Client Name:	Tetra Tech NUS, Inc	**Report ID:**	C0H180480
Matrix:	SOLID	**Date/Time Received:**	8/11/2010 10:15:00AM

Client Sample ID	Sample Number	Workorder	Result	Units	Reporting Limit	Prep Date-Analysis Date/Time	QC Batch	RPD / Limit (%)
BLK - C0H240000079B	079 MB	L52E01AA	ND	umoles/g	0.50	8/24/2010 - 8/24/2010 09:05	0236079	

Tetra Tech Middle River, MD

Percent Solids

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	SM20 2540G
Client Name:	Tetra Tech NUS, Inc	**Report ID:**	C0H180480
Matrix:	SOLID	**Date/Time Received:**	8/17/2010 9:30:00AM

Client Sample ID	Sample Number	Workorder	Result	Units	Reporting Limit	Prep Date-Analysis Date/Time	QC Batch	RPD / Limit (%)
INTRA-LAB QC	007 DUP	L5N141CE	39.6	%	1.0	8/19/2010 - 8/20/2010 06:00	0231265	1.2 / 20

Tetra Tech Middle River, MD

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Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	EPA Lloyd Kahn
Client Name:	Tetra Tech NUS, Inc	**Report ID:**	C0H180480
Matrix:	SOLID	**Date/Time Received:**	8/17/2010 10:10:00AM

Client Sample ID	Sample Number	Workorder	Result	Units	Reporting Limit	Prep Date-Analysis Date/Time	QC Batch	RPD / Limit (%)
INTRA-LAB QC	006 DUP	L5PC81EH	104000	mg/kg	12900	8/19/2010 - 8/21/2010 00:51	0231116	0.20 / 20
BLK - C0H190000116B	116 MB	L5R351AA	ND	mg/kg	2000	8/19/2010 - 8/20/2010 22:11	0231116	

Tetra Tech Middle River, MD

Acid Volatile Sulfide

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	EPA AVS
Client Name:	Tetra Tech NUS, Inc	**Lot Number:**	C0H240000
Matrix:	SOLID	**Date/Time Received:**	8/11/2010 10:15:00AM

Client Sample ID	QC Sample Type	Workorder	Recovery (%)	Control Limits (%)	Prep Date - Analysis Date/Time	QC Batch	RPD / Limit (%)
CHECK SAMPLE	LCS	L52E01AC	100	85 - 115	8/24/2010 - 8/24/2010 09:05	0236079	1.3 / 20
DUPLICATE CHECK	LCSD	L52E01AD	98	85 - 115	8/24/2010 - 8/24/2010 09:05	0236079	1.3 / 20

Tetra Tech Middle River, MD

TOC

Lab Name:	TESTAMERICA PITTSBURGH	**Method:**	EPA Lloyd Kahn
Client Name:	Tetra Tech NUS, Inc	**Lot Number:**	C0H170543
Matrix:	SOLID	**Date/Time Received:**	8/17/2010 10:10:00AM

Client Sample ID	QC Sample Type	Workorder	Recovery (%)	Control Limits (%)	Prep Date - Analysis Date/Time	QC Batch	RPD / Limit (%)
LAB MS/MSD	MS	L5PC81AX	105	75 - 125	8/19/2010 - 8/21/2010 01:05	0231116	1.6 / 20
LAB MS/MSD	MSD	L5PC81A0	98	75 - 125	8/19/2010 - 8/21/2010 01:20	0231116	1.6 / 20
DUPLICATE CHECK	LCSD	L5R351AD	96	75 - 125	8/19/2010 - 8/20/2010 22:40	0231116	5.2 / 20
CHECK SAMPLE	LCS	L5R351AC	91	75 - 125	8/19/2010 - 8/20/2010 22:26	0231116	5.2 / 20

Tetra Tech Middle River, MD

Ratio for SEM/AVS

Lab Name:	TESTAMERICA PITTSBURGH	**Lot Number:**	C0H180480
Client Name:	Tetra Tech NUS, Inc	**Date Received:**	8/18/10
Matrix:	SOLID		

Client Sample ID	Sample Number	Ratio
SD-90-SS	001	0.2013
SD-90-01	002	0.2717
SD-90-02	003	0.3305
SD-90-04	004	NA

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **M. MARTIN** **DATE: NOVEMBER 16, 2010**

FROM: **TERRI L. SOLOMON** **COPIES:** **DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – SELECT TOTAL METALS**
MIDDLE RIVER CENTER
SAMPLE DELIVERY GROUP (SDG) – A0J150598

SAMPLES: 2/Aqueous/

MRC-SW-1 MSA-SW-1

1/Sediment/

MRC-SED-1

Overview

The sample set for Middle River Center, SDG A0J150598, consists of one (1) sediment and two (2) aqueous environmental samples. No field duplicate pairs were included within this SDG.

All samples were analyzed for select total metals. The samples were collected by Tetra Tech on October 14, 2010 and analyzed by Test America. Metals analyses were conducted using SW-846 method 6020. Mercury analyses were conducted using SW-846 method 7471A.

The findings offered in this report are based upon a general review of all available data. The data review was based on data completeness, holding times, MS tuning, initial and continuing calibration verification results, laboratory method / preparation blank results, ICP interference results, laboratory control sample recoveries, matrix spike / matrix spike duplicate recoveries, internal standards, detection limits and analyte quantitation.

Areas of concern with respect to data quality are listed below.

Major Problems – None.

Minor Problems

- The contract required detection limit (CRDL) percent recoveries for cadmium were < 90% quality control limit and copper, iron, manganese, nickel, silver and thallium were > 110% quality control limit affecting samples MRC-SW-1 and MSA-SW-1. The nondetected results reported for cadmium were qualified as biased low, "UL". No validation actions were required for copper, iron, manganese, nickel, silver and thallium as all sample results were either > 2X CRDL, nondetects or were qualified as a result of blank contamination.

- The CRDL percent recoveries for iron and silver were > 110% quality control limit and selenium was < 90% quality control limit affecting sample MRC-SED-1. The positive results < 2X CRDL for selenium and silver were qualified as estimated, "J". No validation actions were required for iron as the sample result was > 2X CRDL.

- The following contaminants were detected in the laboratory method/preparation blanks at the following maximum concentrations:

Affecting samples MRC-SW-1 and MSA-SW-1:

Analyte	Maximum Concentration	Action Level
Antimony	0.045 ug/L	0.225 ug/L
Barium[(1)]	0.84 ug/L	4.2 ug/L
Beryllium	0.038 ug/L	0.19 ug/L
Cadmium	0.042 ug/L	0.21 ug/L
Cobalt	0.027 ug/L	0.135 ug/L
Copper[(1)]	0.52 ug/L	2.6 ug/L
Iron	10 ug/L	50 ug/L
Lead	0.038 ug/L	0.19 ug/L
Silver	0.032 ug/L	0.16 ug/L
Thallium	0.6 ug/L	3.0 ug/L
Zinc[(1)]	5.8 ug/L	29 ug/L

Affecting sample MRC-SED-1:

Analyte	Maximum Concentration	Action Level
Antimony	0.052 ug/L	0.026 mg/kg
Barium[(1)]	0.091 mg/kg	0.455 mg/kg
Beryllium	0.029 ug/L	0.0145 mg/kg
Cadmium	0.034 ug/L	0.017 mg/kg
Chromium[(1)]	0.062 mg/kg	0.31 mg/kg
Cobalt	0.034 ug/L	0.017 mg/kg
Copper[(1)]	0.18 mg/kg	0.9 mg/kg
Lead	0.11 ug/L	0.055 mg/kg
Iron[(1)]	3.9 mg/kg	19.5 mg/kg
Manganese[(1)]	1.3 mg/kg	6.5 mg/kg
Nickel[(1)]	0.032 mg/kg	0.16 mg/kg
Silver	0.035 ug/L	0.0175 mg/kg
Thallium	0.27 ug/L	0.135 mg/kg

[(1)] Maximum concentration present in a preparation blank.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Sample aliquot, percent solids and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. Positive results less than the blank action level reported for thallium were qualified "B" as a result of laboratory blank contamination.

- The interfering analyte iron was present in sample MRC-SED-1 at a concentration comparable to the concentration of iron in the interference check sample (ICS) solution. Several analytes namely, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, silver and vanadium were present in the ICS solution at a concentration that exceeded the absolute value of the instrument detection limit (IDL). Interference effects exist for cadmium and silver in the affected sample. The positive results reported for cadmium and silver were qualified as estimated, "J", as a result of conflicting noncompliances.

- Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) were qualified as estimated, "J".

Notes

The CRDL percent recovery for mercury was > 120% quality control limit affecting samples MRC-SW-1 and MSA-SW-1. No validation actions were required as all results were nondetects.

Executive Summary

Laboratory Performance: Several CRDL percent recoveries were outside the 90-110% quality control limits. Several contaminants were present in the method / preparation blanks.

Other Factors Affecting Data Quality: The interfering analyte iron was present in sample MRC-SED-1. Positive results reported below the RL but above the MDL were qualified as estimated.

The data for these analyses were reviewed with reference to Region III modifications to the "National Functional Guidelines for Inorganic Data Validation", April 1993.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Terri L. Solomon
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS-GFAA MSA's r < 0.995 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O - Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DOT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02903	NSAMPLE	MRC-SW-1	MSA-SW-1
SDG: A0J150598	LAB_ID	A0J150598001	A0J150598002
FRACTION: M	SAMP_DATE	10/14/2010	10/14/2010
MEDIA: WATER	QC_TYPE	NM	NM
	UNITS	UG/L	UG/L
	PCT_SOLIDS	0.0	0.0
	DUP_OF		

PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY	2			1	J	P
ARSENIC	2.6	J	P	1.2	J	P
BARIUM	28.3			40.7		
BERYLLIUM	0.2	U		0.2	U	
CADMIUM	0.13	UL	C	0.13	UL	C
CHROMIUM	6.7			4		
COBALT	0.4	J	P	0.55	J	P
COPPER	23.2			8.8		
IRON	603			676		
LEAD	4			3		
MANGANESE	23.6			41		
MERCURY	0.12	U		0.12	U	
MOLYBDENUM	2.8			2.5		
NICKEL	2.4	K	C	2.8	K	C
SELENIUM	1.2	U		1.2	U	
SILVER	0.08	U		0.08	U	
THALLIUM	0.19	B	A	0.18	B	A
VANADIUM	3.7	J	P	3.1	J	P
ZINC	47.8			42.6		

PROJ_NO: 02903	NSAMPLE	MRC-SED-1
SDG: A0J150598	LAB_ID	A0J150598003
FRACTION: M	SAMP_DATE	10/14/2010
MEDIA: SEDIMENT	QC_TYPE	NM
	UNITS	MG/KG
	PCT_SOLIDS	80.0
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
ANTIMONY	1.9		
ARSENIC	2.9		
BARIUM	57.5		
BERYLLIUM	0.26		
CADMIUM	0.12	J	KP
CHROMIUM	122		
COBALT	4.8		
COPPER	255		
IRON	33700		
LEAD	5.8		
MANGANESE	518		
MERCURY	0.034	J	P
MOLYBDENUM	4		
NICKEL	32.3		
SELENIUM	0.26	J	CP
SILVER	0.057	J	CKP
THALLIUM	0.023	B	A
VANADIUM	13.4		
ZINC	53.4		

APPENDIX B
RESULTS AS REPORTED BY THE LABORATORY

Tetra Tech NUS, Inc

Client Sample ID: MRC-SW-1

TOTAL Metals

Lot-Sample #...: A0J150598-001 Matrix.....: WG
Date Sampled...: 10/14/10 10:15 Date Received..: 10/15/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0291016						
Silver	ND	1.0 Dilution Factor: 1 Instrument ID..: I8	ug/L	SW846 6020 Analysis Time..: 18:07	10/18-10/19/10 Analyst ID.....: 000079	L8K1C1AQ
Arsenic	2.6 B	5.0 Dilution Factor: 1 Instrument ID..: I8	ug/L	SW846 6020 Analysis Time..: 18:07	10/18-10/19/10 Analyst ID.....: 000079	L8K1C1AC
Barium	28.3 J	1.0 Dilution Factor: 1 Instrument ID..: I8	ug/L	SW846 6020 Analysis Time..: 18:07	10/18-10/19/10 Analyst ID.....: 000079	L8K1C1AD
Beryllium	ND	1.0 Dilution Factor: 1 Instrument ID..: I8	ug/L	SW846 6020 Analysis Time..: 18:07	10/18-10/19/10 Analyst ID.....: 000079	L8K1C1AE
Cadmium	ND	1.0 Dilution Factor: 1 Instrument ID..: I8	ug/L	SW846 6020 Analysis Time..: 18:07	10/18-10/19/10 Analyst ID.....: 000079	L8K1C1AF
Cobalt	0.40 B	1.0 Dilution Factor: 1 Instrument ID..: I8	ug/L	SW846 6020 Analysis Time..: 18:07	10/18-10/19/10 Analyst ID.....: 000079	L8K1C1AG
Chromium	6.7	2.0 Dilution Factor: 1 Instrument ID..: I8	ug/L	SW846 6020 Analysis Time..: 18:07	10/18-10/19/10 Analyst ID.....: 000079	L8K1C1AV
Copper	23.2 J	2.0 Dilution Factor: 1 Instrument ID..: I8	ug/L	SW846 6020 Analysis Time..: 18:07	10/18-10/19/10 Analyst ID.....: 000079	L8K1C1AH
Iron	603	50.0 Dilution Factor: 1 Instrument ID..: I8	ug/L	SW846 6020 Analysis Time..: 18:07	10/18-10/19/10 Analyst ID.....: 000079	L8K1C1AJ
Manganese	23.6	1.0 Dilution Factor: 1 Instrument ID..: I8	ug/L	SW846 6020 Analysis Time..: 18:07	10/18-10/19/10 Analyst ID.....: 000079	L8K1C1AL

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: MRC-SW-1

TOTAL Metals

Lot-Sample #...: A0J150598-001 Matrix.....: WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Molybdenum	2.8	2.0	ug/L	SW846 6020	10/18-10/19/10	L8K1C1AM
		Dilution Factor: 1		Analysis Time..: 18:07	Analyst ID.....: 000079	
		Instrument ID..: I8				
Nickel	2.4	2.0	ug/L	SW846 6020	10/18-10/19/10	L8K1C1AN
		Dilution Factor: 1		Analysis Time..: 18:07	Analyst ID.....: 000079	
		Instrument ID..: I8				
Lead	4.0	1.0	ug/L	SW846 6020	10/18-10/19/10	L8K1C1AK
		Dilution Factor: 1		Analysis Time..: 18:07	Analyst ID.....: 000079	
		Instrument ID..: I8				
Antimony	2.0	2.0	ug/L	SW846 6020	10/18-10/19/10	L8K1C1AA
		Dilution Factor: 1		Analysis Time..: 18:07	Analyst ID.....: 000079	
		Instrument ID..: I8				
Selenium	ND	5.0	ug/L	SW846 6020	10/18-10/19/10	L8K1C1AP
		Dilution Factor: 1		Analysis Time..: 18:07	Analyst ID.....: 000079	
		Instrument ID..: I8				
Thallium	0.19 B	1.0	ug/L	SW846 6020	10/18-10/19/10	L8K1C1AR
		Dilution Factor: 1		Analysis Time..: 18:07	Analyst ID.....: 000079	
		Instrument ID..: I8				
Vanadium	3.7 B	20.0	ug/L	SW846 6020	10/18-10/19/10	L8K1C1AT
		Dilution Factor: 1		Analysis Time..: 18:07	Analyst ID.....: 000079	
		Instrument ID..: I8				
Zinc	47.8 J	20.0	ug/L	SW846 6020	10/18-10/19/10	L8K1C1AU
		Dilution Factor: 1		Analysis Time..: 18:07	Analyst ID.....: 000079	
		Instrument ID..: I8				
Mercury	ND	0.20	ug/L	SW846 7470A	10/18/10	L8K1C1AW
		Dilution Factor: 1		Analysis Time..: 17:43	Analyst ID.....: 001576	
		Instrument ID..: H4				

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: MRQ-SW-1 SA

TOTAL Metals

Lot-Sample #...: A0J150598-002 Matrix.....: WG
Date Sampled...: 10/14/10 10:11 Date Received..: 10/15/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0291016						
Silver	ND	1.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AQ
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
		Instrument ID..: I8				
Arsenic	**1.2 B**	**5.0**	**ug/L**	**SW846 6020**	**10/18-10/19/10**	**L8K1Q1AC**
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
		Instrument ID..: I8				
Barium	**40.7 J**	**1.0**	**ug/L**	**SW846 6020**	**10/18-10/19/10**	**L8K1Q1AD**
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
		Instrument ID..: I8				
Beryllium	ND	1.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AE
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
		Instrument ID..: I8				
Cadmium	ND	1.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AF
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
		Instrument ID..: I8				
Cobalt	**0.55 B**	**1.0**	**ug/L**	**SW846 6020**	**10/18-10/19/10**	**L8K1Q1AG**
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
		Instrument ID..: I8				
Chromium	**4.0**	**2.0**	**ug/L**	**SW846 6020**	**10/18-10/19/10**	**L8K1Q1AV**
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
		Instrument ID..: I8				
Copper	**8.8 J**	**2.0**	**ug/L**	**SW846 6020**	**10/18-10/19/10**	**L8K1Q1AH**
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
		Instrument ID..: I8				
Iron	**676**	**50.0**	**ug/L**	**SW846 6020**	**10/18-10/19/10**	**L8K1Q1AJ**
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
		Instrument ID..: I8				
Manganese	**41.0**	**1.0**	**ug/L**	**SW846 6020**	**10/18-10/19/10**	**L8K1Q1AL**
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
		Instrument ID..: I8				

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Tetra Tech NUS, Inc

Client Sample ID: MBC-SW-1

TOTAL Metals

Lot-Sample #...: A0J150598-002 Matrix.....: WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Molybdenum	2.5	2.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AM
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
Nickel	2.8	2.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AN
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
Lead	3.0	1.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AK
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
Antimony	1.0 B	2.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AA
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
Selenium	ND	5.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AP
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
Thallium	0.18 B	1.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AR
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
Vanadium	3.1 B	20.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AT
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
Zinc	42.6 J	20.0	ug/L	SW846 6020	10/18-10/19/10	L8K1Q1AU
		Dilution Factor: 1		Analysis Time..: 18:11	Analyst ID.....: 000079	
Mercury	ND	0.20	ug/L	SW846 7470A	10/18/10	L8K1Q1AW
		Dilution Factor: 1		Analysis Time..: 17:48	Analyst ID.....: 001576	

Instrument ID..: I8 (Molybdenum)
Instrument ID..: I8 (Nickel)
Instrument ID..: I8 (Lead)
Instrument ID..: I8 (Antimony)
Instrument ID..: I8 (Selenium)
Instrument ID..: I8 (Thallium)
Instrument ID..: I8 (Vanadium)
Instrument ID..: I8 (Zinc)
Instrument ID..: H4 (Mercury)

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: MRC-SED-1

TOTAL Metals

Lot-Sample #...: A0J150598-003
Date Sampled...: 10/14/10 13:00 Date Received..: 10/15/10
% Moisture.....: 20
Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0292022						
Silver	0.057 B	0.13 Dilution Factor: 1 Instrument ID..: I8	mg/kg	SW846 6020 Analysis Time..: 21:57	10/19-10/20/10 Analyst ID.....: 000079	L8K1R1AR
Arsenic	2.9	0.63 Dilution Factor: 1 Instrument ID..: I8	mg/kg	SW846 6020 Analysis Time..: 21:57	10/19-10/20/10 Analyst ID.....: 000079	L8K1R1AD
Barium	57.5 J	0.13 Dilution Factor: 1 Instrument ID..: I8	mg/kg	SW846 6020 Analysis Time..: 21:57	10/19-10/20/10 Analyst ID.....: 000079	L8K1R1AE
Beryllium	0.26	0.13 Dilution Factor: 1 Instrument ID..: I8	mg/kg	SW846 6020 Analysis Time..: 21:57	10/19-10/20/10 Analyst ID.....: 000079	L8K1R1AF
Cadmium	0.12 B	0.13 Dilution Factor: 1 Instrument ID..: I8	mg/kg	SW846 6020 Analysis Time..: 21:57	10/19-10/20/10 Analyst ID.....: 000079	L8K1R1AG
Cobalt	4.8	0.13 Dilution Factor: 1 Instrument ID..: I8	mg/kg	SW846 6020 Analysis Time..: 21:57	10/19-10/20/10 Analyst ID.....: 000079	L8K1R1AH
Chromium	122 J	0.25 Dilution Factor: 1 Instrument ID..: I8	mg/kg	SW846 6020 Analysis Time..: 21:57	10/19-10/20/10 Analyst ID.....: 000079	L8K1R1AW
Copper	255 J	0.25 Dilution Factor: 1 Instrument ID..: I8	mg/kg	SW846 6020 Analysis Time..: 15:29	10/19-10/21/10 Analyst ID.....: 000079	L8K1R1AJ
Iron	33700 J	6.3 Dilution Factor: 1 Instrument ID..: I8	mg/kg	SW846 6020 Analysis Time..: 21:57	10/19-10/20/10 Analyst ID.....: 000079	L8K1R1AK
Manganese	518 J	0.13 Dilution Factor: 1 Instrument ID..: I8	mg/kg	SW846 6020 Analysis Time..: 21:57	10/19-10/20/10 Analyst ID.....: 000079	L8K1R1AM

(Continued on next page)

Tetra Tech NUS, Inc

Client Sample ID: MRC-SED-1

TOTAL Metals

Lot-Sample #...: A0J150598-003 Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Molybdenum	4.0	0.25	mg/kg	SW846 6020	10/19-10/20/10	L8K1R1AN
		Dilution Factor: 1		Analysis Time..: 21:57	Analyst ID.....: 000079	
		Instrument ID..: I8				
Nickel	32.3 J	0.13	mg/kg	SW846 6020	10/19-10/20/10	L8K1R1AP
		Dilution Factor: 1		Analysis Time..: 21:57	Analyst ID.....: 000079	
		Instrument ID..: I8				
Lead	5.8	0.13	mg/kg	SW846 6020	10/19-10/20/10	L8K1R1AL
		Dilution Factor: 1		Analysis Time..: 21:57	Analyst ID.....: 000079	
		Instrument ID..: I8				
Antimony	1.9	0.25	mg/kg	SW846 6020	10/19-10/20/10	L8K1R1AC
		Dilution Factor: 1		Analysis Time..: 21:57	Analyst ID.....: 000079	
		Instrument ID..: I8				
Selenium	0.26 B	0.63	mg/kg	SW846 6020	10/19-10/20/10	L8K1R1AQ
		Dilution Factor: 1		Analysis Time..: 21:57	Analyst ID.....: 000079	
		Instrument ID..: I8				
Thallium	0.023 B	0.13	mg/kg	SW846 6020	10/19-10/20/10	L8K1R1AT
		Dilution Factor: 1		Analysis Time..: 21:57	Analyst ID.....: 000079	
		Instrument ID..: I8				
Vanadium	13.4	0.63	mg/kg	SW846 6020	10/19-10/20/10	L8K1R1AU
		Dilution Factor: 1		Analysis Time..: 21:57	Analyst ID.....: 000079	
		Instrument ID..: I8				
Zinc	53.4	2.5	mg/kg	SW846 6020	10/19-10/20/10	L8K1R1AV
		Dilution Factor: 1		Analysis Time..: 21:57	Analyst ID.....: 000079	
		Instrument ID..: I8				
Mercury	0.034 B	0.13	mg/kg	SW846 7471A	10/19-10/25/10	L8K1R1AX
		Dilution Factor: 1		Analysis Time..: 15:13	Analyst ID.....: 001576	
		Instrument ID..: H1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

APPENDIX C
SUPPORT DOCUMENTATION

CASE NARRATIVE

A0J150598

The following report contains the analytical results for one solid sample and two water samples submitted to TestAmerica North Canton by Tetra Tech NUS, Inc from the MRC/MSA STORMWATER/SEDIMENT Site, project number 112IC02903. The samples were received October 15, 2010, according to documented sample acceptance procedures.

TestAmerica utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. Preliminary results were provided to Dev Murali, Kelly Carper, and Tobrena Skeen on October 26, 2010. A summary of QC data for these analyses is included at the back of the report.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by a dry weight adjustment footnote at the bottom of the analytical report page. The list of parameters which are never reported on a dry weight basis is included on the Sample Summary.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

All parameters were evaluated to the method detection limit and include qualified results where applicable.

Please refer to the Quality Control Elements Narrative following this case narrative for additional quality control information.

If you have any questions, please call the Project Manager, Patrick J. O'Meara, at 330-497-9396.

This report is sequentially paginated. The final page of the report is labeled as "END OF REPORT."

CASE NARRATIVE (continued)

SUPPLEMENTAL QC INFORMATION

SAMPLE RECEIVING

The temperature of the cooler upon sample receipt was 2.0°C.

METALS

The sample(s) that contain results between the MDL and the RL were flagged with "B". There is the possibility of false positive or mis-identification at these quantitation levels. The acceptance criteria for the ICB, CCB, and Method Blank are +/- the standard reporting limit (SRL).

The sample(s) that contained concentrations of target analyte(s) at a reportable level in the associated Method Blank(s) were flagged with "J". Refer to the sample report pages for the affected analyte(s).

Matrix spike recovery and relative percent difference (RPD) data were not calculated for some analytes for batch(es) 0291016 and 0292022 due to the sample concentration reading greater than four times the spike amount. See the Matrix Spike Report for the affected analytes which will be flagged with "NC, MSB".

The matrix spike/matrix spike duplicate(s) for batch(es) 0292022 had recoveries outside acceptance limits. However, since the associated method blank(s) and laboratory control sample(s) were in control, no corrective action was necessary.

No ICP MS Form IX provided for batch(es) 0291016 and 0292022. The serial dilutions were performed on a different sample from the same QC batch(es).

Based on SW846 6020 method requirements an IDL must be analyzed quarterly. The quarterly IDL study was analyzed but the ICPMS IDL form in this data package reflects the previous quarter IDL study. A current IDL can be provided upon request.

GENERAL CHEMISTRY

The analytical results met the requirements of the laboratory's QA/QC program.

QUALITY CONTROL ELEMENTS NARRATIVE

TestAmerica conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program, which is described in detail in QA Policy, QA-003. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data. Program or agency specific requirements take precedence over the requirements listed in this narrative.

QC BATCH

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. TestAmerica North Canton requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples.

For SW846/RCRA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

For 600 series/CWA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE (MS). An MS is prepared and analyzed at a 10% frequency for GC Methods and at a 5% frequency for GC/MS methods.

LABORATORY CONTROL SAMPLE

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. Multi peak responders may not be included in the target spike list due to co-elution. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. All control analytes indicated by a bold type in the LCS must meet acceptance criteria. Failure to meet the established recovery guidelines requires the repreparation and reanalysis of all samples in the QC batch. Comparison of only the failed parameters from the first batch are evaluated. The only exception to the rework requirement is that if the LCS recoveries are biased high and the associated sample is ND (non-detected) for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). If the RPD fails for an LCS/LCSD and yet the recoveries are within acceptance criteria, the batch is still acceptable.

METHOD BLANK

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except under the following circumstances:

- Common organic contaminants may be present at concentrations up to 5 times the reporting limits. Common metals contaminants may be present at concentrations up to 2 times the reporting limit, or the reported blank concentration must be twenty fold less than the concentration reported in the associated environmental samples. (See common laboratory contaminants listed in the table.)

Volatile (GC or GC/MS)	Semivolatile (GC/MS)	Metals ICP-MS	Metals ICP Trace
Methylene Chloride, Acetone, 2-Butanone	Phthalate Esters	Copper, Iron, Zinc, Lead, Calcium, Magnesium, Potassium, Sodium, Barium, Chromium, Manganese	Copper, Iron, Zinc, Lead

- Organic blanks will be accepted if compounds detected in the blank are present in the associated samples at levels 10 times the blank level. Inorganic blanks will be accepted if elements detected in the blank are present in the associated samples at 20 times the blank level.

- Blanks will be accepted if the compounds/elements detected are not present in any of the associated environmental samples.

Failure to meet these Method Blank criteria requires the repreparation and reanalysis of all samples in the QC batch.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. Due to the potential variability of the matrix of each sample, the MS/MSD results may not have an immediate bearing on any samples except the one spiked; therefore, the associated batch MS/MSD may not reflect the same compounds as the samples contained in the analytical report. When these MS/MSD results fail to meet acceptance criteria, the data is evaluated. If the LCS is within acceptance criteria, the batch is considered acceptable.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch. However, a Sample Duplicate is less likely to provide usable precision statistics depending on the likelihood of finding concentrations below the standard reporting limit. When the Sample Duplicate result fails to meet acceptance criteria, the data is evaluated.

For certain methods (600 series methods/CWA), a Matrix Spike is required in place of a Matrix Spike/Matrix Spike Duplicate (MS/MSD) or Matrix Spike/Sample Duplicate (MS/DU).

The acceptance criteria do not apply to samples that are diluted.

SURROGATE COMPOUNDS

In addition to these batch-related QC indicators, each organic environmental and QC sample is spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

If surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank, and the associated sample(s) are ND, the batch is acceptable. Otherwise, if the LCS, LCSD, or Method Blank surrogate(s) fail to meet recovery criteria, the entire sample batch is reprepared and reanalyzed. If the surrogate recoveries are outside criteria for environmental samples, the samples will be reprepared and reanalyzed unless there is objective evidence of matrix interference or if the sample dilution is greater than the threshold outlined in the associated method SOP.

The acceptance criteria do not apply to samples that are diluted. All other surrogate recoveries will be reported.

For the GC/MS BNA methods, the surrogate criterion is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide and PCB methods, the surrogate criterion is that one of two surrogate compounds must meet acceptance criteria. The second surrogate must have a recovery of 10% or greater.

TestAmerica Certifications and Approvals:

The laboratory is certified for the analytes listed on the documents below. These are available upon request.
California (#01144CA), Connecticut (#PH-0590), Florida (#E87225),
Illinois (#200004), Kansas (#E10336), Minnesota (#39-999-348), New Jersey (#OH001), New York (#10975), Nevada (#OH-000482008A), OhioVAP (#CL0024), Pennsylvania (#008), West Virginia (#210), Wisconsin (#999518190),NAVY, ARMY, USDA Soil Permit

ANALYTICAL METHODS SUMMARY

A0J150598

PARAMETER	ANALYTICAL METHOD
ICP-MS (6020)	SW846 6020
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A
Total Residue as Percent Solids	MCAWW 160.3 MOD

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

GPL LABORATORIES, LLLP

7210A Corporate Court
Frederick, MD 21703
(301) 694-5310
Fax (301) 620-0731

Contract #/Billing Reference

1 of 1 Pgs.

Project: MRC/MSA Storm Water/Sediment Sampling
Client: Tetra Tech
Send Results To: Mike Martin
Address: 20251 Century Blvd Ste 200
Germantown MD 20874
Phone: (301)528-5552

Sample ID#	Date Sampled	Time Sampled	Sample Matrix	Sampler's Initials	Turnaround Time	# of Containers	Container Type	Preservative Used	Type of Analysis: Total Metals	Type of Analysis: Total Metals	Lab Cooler No.	CLIENT COMMENTS
						1 each	1 each					
						Plastic	Glass					
						HNO3	None					
MRC-SW-1	10-14-10	1015	Aqueous	SBC					X	✓		
MSA-SW-1	10-14-10	1011	Aqueous	SBC					X	✓		
MRC-SED-1	10-14-10	1300	Sed	SBC						X ✓		

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
	10/14/10 1400				10/15/10 0930

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

G.P. W.O. _____

North Canton

HOLD TIME

SDG A0J150598

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
HG	MG/KG	MRC-SED-1	A0J150598003	NM	10/14/2010	10/19/2010	10/25/2010	5	6	11
HG	UG/L	MSA-SW-1	A0J150598002	NM	10/14/2010	10/18/2010	10/18/2010	4	0	4
HG	UG/L	MRC-SW-1	A0J150598001	NM	10/14/2010	10/18/2010	10/18/2010	4	0	4
M	MG/KG	MRC-SED-1	A0J150598003	NM	10/14/2010	10/19/2010	10/21/2010	5	2	7
M	MG/KG	MRC-SED-1	A0J150598003	NM	10/14/2010	10/19/2010	10/20/2010	5	1	6
M	UG/L	MSA-SW-1	A0J150598002	NM	10/14/2010	10/18/2010	10/19/2010	4	1	5
M	UG/L	MRC-SW-1	A0J150598001	NM	10/14/2010	10/18/2010	10/19/2010	4	1	5

SAMPLE SUMMARY

A0J150598

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L8K1C	001	MRC-SW-1	10/14/10	10:15
L8K1Q	002	MRC-SW-1	10/14/10	10:11
L8K1R	003	MRC-SED-1	10/14/10	13:00

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

TestAmerica North Canton

Metals Data Reporting Form

Initial Calibration Verification Standard

Instrument: CVAA **Units:** ug/L

Chart Number: hg11025b.prn **Acceptable Range:** 90% - 110%

Standard Source: Ultra **Standard ID:**

Element	WL/ Mass	True Conc	Ck5ICV 10/25/10 1:03 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	2.5	2.59	**103.6**								

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA **Units:** ug/L

Chart Number: hg11025b.prn **Acceptable Range:** 80% - 120%

Standard Source: Ultra **Standard ID:**

Element	WL/ Mass	True Conc	Ck2CCV 10/25/10 1:06 PM		Ck2CCV 10/25/10 1:21 PM		Ck2CCV 10/25/10 1:35 PM		Ck2CCV 10/25/10 1:50 PM		Ck2CCV 10/25/10 2:05 PM	
			Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	5.0	5.09	**101.8**	5.05	**101.0**	4.91	**98.2**	4.81	**96.1**	4.91	**98.2**

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA

Units: ug/L

Chart Number: hg11025b.prn

Acceptable Range: 80% - 120%

Standard Source: Ultra

Standard ID:

Element	WL/ Mass	True Conc	Ck2CCV 10/25/10 2:19 PM Found	% Rec	Ck2CCV 10/25/10 2:33 PM Found	% Rec	Ck2CCV 10/25/10 2:49 PM Found	% Rec	Ck2CCV 10/25/10 3:03 PM Found	% Rec	Ck2CCV 10/25/10 3:16 PM Found	% Rec
Mercury	253.7	5.0	4.88	**97.6**	4.75	**94.9**	4.80	**96.1**	4.85	**97.0**	4.71	**94.1**

TestAmerica North Canton

Metals Data Reporting Form

Initial Calibration Verification Standard

Instrument: CVAA **Units:** ug/L

Chart Number: hg41018a.prn **Acceptable Range:** 90% - 110%

Standard Source: Ultra **Standard ID:**

Element	WL/ Mass	True Conc	Ck2ICV 10/18/10 11:06 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	2.5	2.32	**92.6**								

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA

Units: ug/L

Chart Number: hg41018a.prn

Acceptable Range: 80% - 120%

Standard Source: Ultra

Standard ID:

Element	WL/ Mass	True Conc	Ck6CCV 10/18/10 11:15 AM		Ck6CCV 10/18/10 11:37 AM		Ck6CCV 10/18/10 11:55 AM		Ck6CCV 10/18/10 12:09 PM		Ck6CCV 10/18/10 12:16 PM	
			Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	5.0	5.20	**104.0**	5.42	**108.3**	5.47	**109.3**	5.49	**109.9**	5.41	**108.1**

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA

Units: ug/L

Chart Number: hg41018a.prn

Acceptable Range: 80% - 120%

Standard Source: Ultra

Standard ID:

Element	WL/ Mass	True Conc	Ck6CCV 10/18/10 12:23 PM		Ck6CCV 10/18/10 12:28 PM		Ck6CCV 10/18/10 12:47 PM		Ck6CCV 10/18/10 1:07 PM		Ck6CCV 10/18/10 1:27 PM	
			Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	5.0	5.29	**105.7**	5.51	**110.2**	5.38	**107.6**	5.45	**109.0**	5.26	**105.2**

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA

Units: ug/L

Chart Number: hg41018a.prn

Acceptable Range: 80% - 120%

Standard Source: Ultra

Standard ID:

Element	WL/ Mass	True Conc	Ck6CCV 10/18/10 1:47 PM		Ck6CCV 10/18/10 2:01 PM		Ck6CCV 10/18/10 2:13 PM		Ck6CCV 10/18/10 2:35 PM		Ck6CCV 10/18/10 2:55 PM	
			Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	5.0	5.53	**110.6**	5.33	**106.6**	5.21	**104.2**	5.38	**107.5**	5.49	**109.7**

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA

Units: ug/L

Chart Number: hg41018a.prn

Acceptable Range: 80% - 120%

Standard Source: Ultra

Standard ID:

Element	WL/ Mass	True Conc	Ck6CCV 10/18/10 3:07 PM		Ck6CCV 10/18/10 3:15 PM		Ck6CCV 10/18/10 3:34 PM		Ck6CCV 10/18/10 3:39 PM		Ck6CCV 10/18/10 4:03 PM	
			Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	5.0	5.39	**107.7**	5.28	**105.6**	5.57	**111.3**	5.54	**110.7**	5.42	**108.5**

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA

Units: ug/L

Chart Number: hg41018a.prn

Acceptable Range: 80% - 120%

Standard Source: Ultra

Standard ID:

Element	WL/ Mass	True Conc	Ck6CCV 10/18/10 4:12 PM		Ck6CCV 10/18/10 4:32 PM		Ck6CCV 10/18/10 4:52 PM		Ck6CCV 10/18/10 5:12 PM		Ck6CCV 10/18/10 5:30 PM	
			Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	5.0	5.40	**108.0**	5.46	**109.1**	5.43	**108.6**	2.78	**55.7**	5.10	**102.0**

No Samples Affected

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: CVAA

Units: ug/L

Chart Number: hg41018a.prn

Acceptable Range: 80% - 120%

Standard Source: Ultra

Standard ID:

Element	WL/ Mass	True Conc	Ck6CCV 10/18/10 5:50 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	5.0	5.47	**109.3**								

TestAmerica North Canton

Metals Data Reporting Form

Initial Calibration Verification Standard

Instrument: ICPMS **Units:** ug/L

Chart Number: I81019A.csv **Acceptable Range:** 90% - 110%

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	True Conc	ICV 10/19/10 10:07 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Antimony	121	80.0	81.15	**101.4**								
Arsenic	75	80.0	81.81	**102.3**								
Barium	137	80.0	79.73	**99.7**								
Beryllium	9	80.0	82.40	**103.0**								
Cadmium	111	80.0	84.49	**105.6**								
Chromium	52	80.0	81.48	**101.9**								
Cobalt	59	80.0	81.15	**101.4**								
Copper	65	80.0	83.14	**103.9**								
Iron	56	20000.0	20316.67	**101.6**								
Lead	208	80.0	81.23	**101.5**								
Manganese	55	400.0	422.87	**105.7**								
Molybdenum	95	80.0	80.13	**100.2**								
Nickel	60	80.0	82.34	**102.9**								
Selenium	78	80.0	81.09	**101.4**								
Silver	107	80.0	82.94	**103.7**								
Thallium	205	80.0	81.27	**101.6**								
Vanadium	51	80.0	81.37	**101.7**								
Zinc	66	80.0	86.46	**108.1**								

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: ICPMS

Units: ug/L

Chart Number: I81019A.csv

Acceptable Range: 90% - 110%

Standard Source: _____

Standard ID: _____

Element	WL/ Mass	True Conc	CCV 10/19/10 10:35 AM Found	% Rec	CCV 6 10/19/10 4:34 PM Found	% Rec	CCV 7 10/19/10 5:43 PM Found	% Rec	CCV 8 10/19/10 6:48 PM Found	% Rec	Found	% Rec
Antimony	121	100.0	101.83	**101.8**	103.03	**103.0**	103.17	**103.2**	104.20	**104.2**		
Arsenic	75	100.0	101.73	**101.7**	101.30	**101.3**	100.94	**100.9**	102.50	**102.5**		
Barium	137	100.0	100.65	**100.7**	102.44	**102.4**	101.61	**101.6**	104.77	**104.8**		
Beryllium	9	100.0	100.77	**100.8**	98.57	**98.6**	99.93	**99.9**	99.90	**99.9**		
Cadmium	111	100.0	103.63	**103.6**	104.47	**104.5**	105.53	**105.5**	105.40	**105.4**		
Chromium	52	100.0	100.88	**100.9**	99.52	**99.5**	101.62	**101.6**	102.13	**102.1**		
Cobalt	59	100.0	102.16	**102.2**	101.72	**101.7**	101.43	**101.4**	103.03	**103.0**		
Copper	65	100.0	103.97	**104.0**	103.80	**103.8**	103.13	**103.1**	104.00	**104.0**		
Iron	56	25000.0	25573.33	**102.3**	25406.67	**101.6**	25743.33	**103.0**	26233.33	**104.9**		
Lead	208	100.0	100.79	**100.8**	103.07	**103.1**	103.00	**103.0**	103.47	**103.5**		
Manganese	55	500.0	521.77	**104.4**	524.10	**104.8**	527.90	**105.6**	529.87	**106.0**		
Molybdenum	95	100.0	104.97	**105.0**	106.17	**106.2**	104.80	**104.8**	106.70	**106.7**		
Nickel	60	100.0	103.83	**103.8**	102.77	**102.8**	102.40	**102.4**	104.00	**104.0**		
Selenium	78	100.0	101.20	**101.2**	101.94	**101.9**	101.76	**101.8**	101.90	**101.9**		
Silver	107	100.0	102.27	**102.3**	106.47	**106.5**	105.20	**105.2**	106.43	**106.4**		
Thallium	205	100.0	104.90	**104.9**	106.43	**106.4**	104.60	**104.6**	105.27	**105.3**		
Vanadium	51	100.0	98.95	**98.9**	100.70	**100.7**	100.48	**100.5**	101.30	**101.3**		
Zinc	66	100.0	105.17	**105.2**	104.20	**104.2**	104.17	**104.2**	105.03	**105.0**		

TestAmerica North Canton

Metals Data Reporting Form

Initial Calibration Verification Standard

Instrument: ICPMS **Units:** ug/L

Chart Number: I81020A.csv **Acceptable Range:** 90% - 110%

Standard Source: **Standard ID:**

Element	WL/ Mass	True Conc	ICV 10/20/10 1:46 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Antimony	121	80.0	81.52	**101.9**								
Arsenic	75	80.0	80.26	**100.3**								
Barium	137	80.0	78.69	**98.4**								
Beryllium	9	80.0	80.31	**100.4**								
Cadmium	111	80.0	83.61	**104.5**								
Chromium	52	80.0	77.55	**96.9**								
Cobalt	59	80.0	81.05	**101.3**								
Iron	56	20000.0	19800.00	**99.0**								
Lead	208	80.0	78.95	**98.7**								
Manganese	55	400.0	407.90	**102.0**								
Molybdenum	95	80.0	81.52	**101.9**								
Nickel	60	80.0	80.75	**100.9**								
Selenium	78	80.0	81.17	**101.5**								
Silver	107	80.0	82.09	**102.6**								
Thallium	205	80.0	82.49	**103.1**								
Vanadium	51	80.0	78.07	**97.6**								
Zinc	66	80.0	81.80	**102.3**								

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: ICPMS

Units: ug/L

Chart Number: I81020A.csv

Acceptable Range: 90% - 110%

Standard Source: _____

Standard ID: _____

Element	WL/ Mass	True Conc	CCV 10/20/10 2:20 PM Found	% Rec	CCV 10/20/10 7:31 PM Found	% Rec	CCV 3 10/20/10 8:05 PM Found	% Rec	CCV 4 10/20/10 9:07 PM Found	% Rec	CCV 5 10/20/10 10:12 PM Found	% Rec
Antimony	121	100.0	102.83	**102.8**	101.57	**101.6**	101.70	**101.7**	100.59	**100.6**	101.60	**101.6**
Arsenic	75	100.0	99.57	**99.6**	100.23	**100.2**	100.67	**100.7**	101.73	**101.7**	99.63	**99.6**
Barium	137	100.0	98.74	**98.7**	100.14	**100.1**	100.43	**100.4**	102.37	**102.4**	98.50	**98.5**
Beryllium	9	100.0	100.31	**100.3**	101.36	**101.4**	100.69	**100.7**	104.03	**104.0**	99.42	**99.4**
Cadmium	111	100.0	104.47	**104.5**	104.43	**104.4**	102.78	**102.8**	102.20	**102.2**	103.70	**103.7**
Chromium	52	100.0	97.62	**97.6**	100.69	**100.7**	99.06	**99.1**	103.10	**103.1**	101.67	**101.7**
Cobalt	59	100.0	98.07	**98.1**	100.49	**100.5**	99.36	**99.4**	103.07	**103.1**	99.89	**99.9**
Iron	56	25000.0	24673.33	**98.7**	25193.33	**100.8**	24936.67	**99.7**	26223.33	**104.9**	25350.00	**101.4**
Lead	208	100.0	101.33	**101.3**	101.63	**101.6**	101.83	**101.8**	101.23	**101.2**	102.07	**102.1**
Manganese	55	500.0	507.67	**101.5**	505.67	**101.1**	504.93	**101.0**	508.33	**101.7**	513.80	**102.8**
Molybdenum	95	100.0	106.00	**106.0**	104.97	**105.0**	105.87	**105.9**	106.33	**106.3**	105.37	**105.4**
Nickel	60	100.0	100.13	**100.1**	102.40	**102.4**	100.59	**100.6**	104.10	**104.1**	100.99	**101.0**
Selenium	78	100.0	101.20	**101.2**	99.91	**99.9**	99.94	**99.9**	99.38	**99.4**	98.90	**98.9**
Silver	107	100.0	104.87	**104.9**	104.70	**104.7**	104.27	**104.3**	102.37	**102.4**	104.50	**104.5**
Thallium	205	100.0	107.70	**107.7**	103.87	**103.9**	105.33	**105.3**	101.53	**101.5**	105.37	**105.4**
Vanadium	51	100.0	98.99	**99.0**	101.09	**101.1**	99.19	**99.2**	100.87	**100.9**	102.47	**102.5**
Zinc	66	100.0	103.07	**103.1**	102.10	**102.1**	101.10	**101.1**	100.79	**100.8**	102.67	**102.7**

TestAmerica North Canton

Metals Data Reporting Form

Initial Calibration Verification Standard

Instrument: ICPMS **Units:** ug/L

Chart Number: I81021A.csv **Acceptable Range:** 90% - 110%

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	True Conc	ICV 10/21/10 10:55 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Copper	65	80.0	82.84	**103.6**								
Manganese	55	400.0	410.97	**102.7**								

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Verification

Instrument: ICPMS

Units: ug/L

Chart Number: I81021A.csv

Acceptable Range: 90% - 110%

Standard Source: _____

Standard ID: _____

Element	WL/ Mass	True Conc	CCV 10/21/10 11:25 AM Found	% Rec	CCV 10/21/10 11:43 AM Found	% Rec	CCV 2 10/21/10 1:35 PM Found	% Rec	CCV 3 10/21/10 2:39 PM Found	% Rec	CCV 4 10/21/10 3:44 PM Found	% Rec
Copper	65	100.0	101.53	**101.5**	102.47	**102.5**	102.37	**102.4**	104.93	**104.9**	101.73	**101.7**
Manganese	55	500.0	512.07	**102.4**	512.73	**102.5**	507.17	**101.4**	509.87	**102.0**	514.20	**102.8**

TestAmerica North Canton

Metals Data Reporting Form

Contract Required Detection Limit Standard

Instrument: CVAA **Units:** ug/L

Chart Number: hg11025b.prn **Acceptable Range:** 50% - 150%

Standard Source: Ultra **Standard ID:**

Element	WL/ Mass	True Conc	Ck3CRA\MRL 10/25/10 1:05 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	0.2	0.21	**105.7**								

TestAmerica North Canton

Metals Data Reporting Form

Contract Required Detection Limit Standard

Instrument: CVAA **Units:** ug/L

Chart Number: hg41018a.prn **Acceptable Range:** 50% - 150%

Standard Source: Ultra **Standard ID:**

Element	WL/ Mass	True Conc	Ck4CRA\MRL 10/18/10 11:13 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Mercury	253.7	0.2	0.27	136.3								

TestAmerica North Canton

Metals Data Reporting Form

Contract Required Detection Limit Standard

Instrument: ICPMS **Units:** ug/L

Chart Number: I81019A.csv **Acceptable Range:** 50% - 150%

Standard Source: **Standard ID:**

Element	WL/ Mass	True Conc	CRI 10/19/10 10:19 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Antimony	121	2.0	2.04	**102.0**								
Arsenic	75	2.0	1.96	**97.8**								
Barium	137	1.0	1.03	**102.9**								
Beryllium	9	1.0	1.06	**105.8**								
Cadmium	111	0.5	0.44	**88.7**								
Chromium	52	2.0	2.10	**105.2**								
Cobalt	59	1.0	1.03	**103.0**								
Copper	65	2.0	2.26	**112.8**								
Iron	56	50.0	62.20	**124.4**								
Lead	208	1.0	1.02	**101.7**								
Manganese	55	1.0	1.42	**141.9**								
Molybdenu	95	10.0	9.49	**94.9**								
Nickel	60	2.0	2.36	**118.2**								
Selenium	78	2.0	1.83	**91.4**								
Silver	107	0.5	0.56	**111.8**								
Thallium	205	1.0	1.18	**117.7**								
Vanadium	51	5.0	5.20	**104.0**								
Zinc	66	10.0	10.60	**106.0**								

TestAmerica North Canton

Metals Data Reporting Form

Contract Required Detection Limit Standard

Instrument: ICPMS **Units:** ug/L

Chart Number: I81020A.csv **Acceptable Range:** 50% - 150%

Standard Source: **Standard ID:**

Element	WL/ Mass	True Conc	CRI 10/20/10 2:04 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Antimony	121	2.0	2.01	**100.5**								
Arsenic	75	2.0	1.87	**93.3**								
Barium	137	1.0	0.95	**94.6**								
Beryllium	9	1.0	1.03	**102.6**								
Cadmium	111	0.5	0.48	**95.6**								
Chromium	52	2.0	1.93	**96.5**								
Cobalt	59	1.0	0.97	**97.4**								
Iron	56	50.0	57.49	**115.0**								
Lead	208	1.0	0.96	**95.8**								
Manganese	55	1.0	1.10	**110.1**								
Molybdenu	95	10.0	9.82	**98.2**								
Nickel	60	2.0	1.94	**96.8**								
Selenium	78	2.0	1.65	**82.4**								
Silver	107	0.5	0.56	**111.7**								
Thallium	205	1.0	1.01	**100.8**								
Vanadium	51	5.0	4.85	**97.0**								
Zinc	66	10.0	8.93	**89.3**								

TestAmerica North Canton

Metals Data Reporting Form

Contract Required Detection Limit Standard

Instrument: ICPMS **Units:** ug/L

Chart Number: I81021A.csv **Acceptable Range:** 50% - 150%

Standard Source: **Standard ID:**

Element	WL/ Mass	True Conc	CRI 10/21/10 11:38 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Copper	65	2.0	1.95	**97.7**								
Manganese	55	1.0	1.10	**109.8**								

TestAmerica North Canton

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg11025b.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck4ICB 10/25/10 1:04 PM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	0.2	0.1	U								

U Result is less than the IDL

B Result is between IDL and RL

Form 3 Equivalent

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg11025b.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck1CCB 10/25/10 1:08 PM		Ck1CCB 10/25/10 1:23 PM		Ck1CCB 10/25/10 1:36 PM		Ck1CCB 10/25/10 1:51 PM		Ck1CCB 10/25/10 2:06 PM	
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	0.2	0.1	U	0.1	U	**0.1**	**B**	0.1	U	0.1	U

U Result is less than the IDL

B Result is between IDL and RL

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg11025b.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck1CCB 10/25/10 2:20 PM Found	Q	Ck1CCB 10/25/10 2:34 PM Found	Q	Ck1CCB 10/25/10 2:50 PM Found	Q	Ck1CCB 10/25/10 3:05 PM Found	Q	Ck1CCB 10/25/10 3:17 PM Found	Q
Mercury	253.7	0.2	**0.1**	**B**	0.1	U	0.1	U	0.1	U	0.1	U

U Result is less than the IDL

B Result is between IDL and RL

TestAmerica North Canton

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg41018a.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck3ICB 10/18/10 11:08 AM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	0.2	0.1	U								

5.04.5

U Result is less than the IDL

B Result is between IDL and RL

Form 3 Equivalent

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg41018a.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck5CCB 10/18/10 11:17 AM Found	Q	Ck5CCB 10/18/10 11:38 AM Found	Q	Ck5CCB 10/18/10 11:57 AM Found	Q	Ck5CCB 10/18/10 12:10 PM Found	Q	Ck5CCB 10/18/10 12:18 PM Found	Q
Mercury	253.7	0.2	**-0.2**	**B**	**-0.1**	**B**	0.1	U	0.1	U	0.1	U

U Result is less than the IDL

B Result is between IDL and RL

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg41018a.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck5CCB 10/18/10 12:24 PM Found	Q	Ck5CCB 10/18/10 12:30 PM Found	Q	Ck5CCB 10/18/10 12:50 PM Found	Q	Ck5CCB 10/18/10 1:09 PM Found	Q	Ck5CCB 10/18/10 1:29 PM Found	Q
Mercury	253.7	0.2	**-0.2**	**B**	**-0.2**	**B**	0.1	U	0.1	U	**-0.4**	

5.04.5

U Result is less than the IDL

B Result is between IDL and RL

Form 3 Equivalent

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg41018a.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck5CCB 10/18/10 1:49 PM		Ck5CCB 10/18/10 2:03 PM		Ck5CCB 10/18/10 2:15 PM		Ck5CCB 10/18/10 2:37 PM		Ck5CCB 10/18/10 2:56 PM	
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	0.2	0.1	U	**-0.3**		**-0.1**	**B**	0.1	U	0.1	U

U Result is less than the IDL

B Result is between IDL and RL

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg41018a.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck5CCB 10/18/10 3:08 PM		Ck5CCB 10/18/10 3:17 PM		Ck5CCB 10/18/10 3:35 PM		Ck5CCB 10/18/10 3:41 PM		Ck5CCB 10/18/10 4:04 PM	
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	0.2	**-0.1**	**B**	0.1	U	0.1	U	**-0.1**	**B**	**-0.2**	

5.04.5

U Result is less than the IDL

B Result is between IDL and RL

Form 3 Equivalent

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg41018a.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck5CCB 10/18/10 4:14 PM Found	Q	Ck5CCB 10/18/10 4:33 PM Found	Q	Ck5CCB 10/18/10 4:53 PM Found	Q	Ck5CCB 10/18/10 5:13 PM Found	Q	Ck5CCB 10/18/10 5:32 PM Found	Q
Mercury	253.7	0.2	0.1	U	0.1	U	**-0.3**		**-0.5**		0.1	U

U Result is less than the IDL

B Result is between IDL and RL

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg41018a.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck5CCB 10/18/10 5:52 PM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	0.2	**-0.1**	**B**								

5.04.5

U Result is less than the IDL

B Result is between IDL and RL

Form 3 Equivalent

TestAmerica North Canton

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: ICPMS **Units:** ug/L

Chart Number: I81019A.csv

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	ICB 10/19/10 10:14 AM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Antimony	121	2	**0.042**	**B**								
Arsenic	75	5	0.2	U								
Barium	137	1	0.058	U								
Beryllium	9	1	**0.0083**	**B**								
Cadmium	111	1	0.0074	U								
Chromium	52	2	0.12	U								
Cobalt	59	1	0.0066	U								
Copper	65	2	0.29	U								
Iron	56	50	3.2	U								
Lead	208	1	0.017	U								
Manganese	55	1	0.39	U								
Molybdenum	95	2	0.34	U								
Nickel	60	1	0.33	U								
Selenium	78	5	0.54	U								
Silver	107	1	0.0048	U								
Thallium	205	1	**0.44**	**B**								
Vanadium	51	5	0.24	U								
Zinc	66	20	8	U								

U Result is less than the IDL
B Result is between IDL and RL

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: ICPMS **Units:** ug/L

Chart Number: I81019A.csv

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB 10/19/10 10:42 AM Found	Q	CCB 6 10/19/10 4:41 PM Found	Q	CCB 7 10/19/10 5:50 PM Found	Q	CCB 8 10/19/10 6:55 PM Found	Q	Found	Q
Antimony	121	2	0.038	U	**0.045**	**B**	**0.045**	**B**	**0.042**	**B**		
Arsenic	75	5	0.2	U	0.2	U	0.2	U	0.2	U		
Barium	137	1	0.058	U	0.058	U	0.058	U	0.058	U		
Beryllium	9	1	**0.012**	**B**	**0.023**	**B**	**0.027**	**B**	**0.038**	**B**		
Cadmium	111	1	0.0074	U	**0.017**	**B**	**0.042**	**B**	**0.03**	**B**		
Chromium	52	2	0.12	U	0.12	U	0.12	U	0.12	U		
Cobalt	59	1	0.0066	U	**0.02**	**B**	**0.021**	**B**	**0.027**	**B**		
Copper	65	2	0.29	U	0.29	U	0.29	U	0.29	U		
Iron	56	50	3.2	U	**7.7**	**B**	**8.6**	**B**	**10**	**B**		
Lead	208	1	0.017	U	**0.026**	**B**	**0.038**	**B**	**0.038**	**B**		
Manganese	55	1	0.39	U	0.39	U	0.39	U	0.39	U		
Molybdenum	95	2	0.34	U	0.34	U	0.34	U	0.34	U		
Nickel	60	1	0.33	U	0.33	U	0.33	U	0.33	U		
Selenium	78	5	0.54	U	0.54	U	0.54	U	0.54	U		
Silver	107	1	**0.0083**	**B**	**0.021**	**B**	**0.031**	**B**	**0.032**	**B**		
Thallium	205	1	**0.51**	**B**	**0.56**	**B**	**0.6**	**B**	**0.49**	**B**		
Vanadium	51	5	0.24	U	**-0.27**	**B**	0.24	U	**-0.49**	**B**		
Zinc	66	20	8	U	8	U	8	U	8	U		

U Result is less than the IDL

B Result is between IDL and RL

TestAmerica North Canton

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: ICPMS **Units:** ug/L

Chart Number: I81020A.csv

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	ICB 10/20/10 1:53 PM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Antimony	121	2	0.038	U								
Arsenic	75	5	0.2	U								
Barium	137	1	0.058	U								
Beryllium	9	1	**0.009**	**B**								
Cadmium	111	1	0.0074	U								
Chromium	52	2	0.12	U								
Cobalt	59	1	0.0066	U								
Iron	56	50	3.2	U								
Lead	208	1	0.017	U								
Manganese	55	1	0.39	U								
Molybdenum	95	2	0.34	U								
Nickel	60	1	0.33	U								
Selenium	78	5	0.54	U								
Silver	107	1	0.0048	U								
Thallium	205	1	**0.25**	**B**								
Vanadium	51	5	**-0.73**	**B**								
Zinc	66	20	8	U								

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: ICPMS **Units:** ug/L

Chart Number: I81020A.csv

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB 10/20/10 2:27 PM Found	Q	CCB 10/20/10 7:38 PM Found	Q	CCB 3 10/20/10 8:12 PM Found	Q	CCB 4 10/20/10 9:14 PM Found	Q	CCB 5 10/20/10 10:19 PM Found	Q
Antimony	121	2	0.038	U	0.038	U	**0.06**	**B**	0.038	U	**0.052**	**B**
Arsenic	75	5	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Barium	137	1	0.058	U	0.058	U	0.058	U	0.058	U	0.058	U
Beryllium	9	1	**0.0077**	**B**	**0.0077**	**B**	**0.021**	**B**	**0.029**	**B**	**0.026**	**B**
Cadmium	111	1	0.0074	U	0.0074	U	**0.024**	**B**	**0.034**	**B**	**0.025**	**B**
Chromium	52	2	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
Cobalt	59	1	0.0066	U	**0.02**	**B**	**0.018**	**B**	**0.016**	**B**	**0.034**	**B**
Iron	56	50	3.2	U	**6.3**	**B**	**7.2**	**B**	**9.3**	**B**	**11.5**	**B**
Lead	208	1	0.017	U	0.017	U	0.017	U	**0.11**	**B**	**0.082**	**B**
Manganese	55	1	0.39	U	0.39	U	0.39	U	0.39	U	0.39	U
Molybdenum	95	2	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
Nickel	60	1	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Selenium	78	5	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U
Silver	107	1	0.0048	U	**0.022**	**B**	**0.018**	**B**	**0.035**	**B**	**0.029**	**B**
Thallium	205	1	**0.29**	**B**	**0.26**	**B**	**0.31**	**B**	**0.22**	**B**	**0.27**	**B**
Vanadium	51	5	0.24	U	0.24	U	**-0.46**	**B**	**-0.75**	**B**	**-0.42**	**B**
Zinc	66	20	8	U	8	U	8	U	8	U	8	U

U Result is less than the IDL

B Result is between IDL and RL

TestAmerica North Canton

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: ICPMS **Units:** ug/L

Chart Number: I81021A.csv

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	ICB 10/21/10 11:02 AM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Copper	65	2	0.29	U								
Manganese	55	1	0.39	U								

5.04.5

U Result is less than the IDL

B Result is between IDL and RL

Form 3 Equivalent

TestAmerica North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: ICPMS **Units:** ug/L

Chart Number: I81021A.csv

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB 10/21/10 11:31 AM Found	Q	CCB 10/21/10 11:50 AM Found	Q	CCB 2 10/21/10 1:42 PM Found	Q	CCB 3 10/21/10 2:46 PM Found	Q	CCB 4 10/21/10 3:51 PM Found	Q
Copper	65	2	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U
Manganese	55	1	0.39	U	0.39	U	0.39	U	0.39	U	0.39	U

U Result is less than the IDL

B Result is between IDL and RL

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: A0J180000-016 **Prep Batch #...:** 0291016						
Antimony	ND	2.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1CT
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Arsenic	ND	5.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1CL
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Barium	0.84 B	**1.0**	**ug/L**	**SW846 6020**	**10/18-10/19/10**	**L8L7H1C3**
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Beryllium	ND	1.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1CM
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Cadmium	ND	1.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1CN
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Chromium	ND	2.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1DA
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Cobalt	ND	1.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1CP
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Copper	0.52 B	**2.0**	**ug/L**	**SW846 6020**	**10/18-10/19/10**	**L8L7H1CQ**
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Iron	ND	50.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1C4
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Lead	ND	1.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1CR
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Manganese	ND	1.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1C5
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Molybdenum	ND	2.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1C6
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Nickel	ND	2.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1C7
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Selenium	ND	5.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1CU
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Silver	ND	1.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1CK
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Thallium	ND	1.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1C8
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Vanadium	ND	20.0	ug/L	SW846 6020	10/18-10/19/10	L8L7H1CV
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Zinc	**5.8 B**	**20.0**	**ug/L**	**SW846 6020**	**10/18-10/19/10**	**L8L7H1C9**
		Dilution Factor: 1				
		Analysis Time..: 17:12		Analyst ID.....: 000079	Instrument ID..: I8	
Mercury	ND	0.20	ug/L	SW846 7470A	10/18/10	L8L7H1CW
		Dilution Factor: 1				
		Analysis Time..: 17:36		Analyst ID.....: 001576	Instrument ID..: H4	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: A0J190000-022 **Prep Batch #...:** 0292022						
Antimony	ND	0.20	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1AD
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Arsenic	ND	0.50	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1CL
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Barium	0.091 B	**0.10**	**mg/kg**	**SW846 6020**	**10/19-10/20/10**	**L8NTR1CM**
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Beryllium	ND	0.10	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1CN
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Cadmium	ND	0.10	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1CP
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Chromium	0.062 B	**0.20**	**mg/kg**	**SW846 6020**	**10/19-10/20/10**	**L8NTR1C3**
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Cobalt	ND	0.10	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1AA
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Copper	0.18 B	**0.20**	**mg/kg**	**SW846 6020**	**10/19-10/21/10**	**L8NTR1CQ**
		Dilution Factor: 1				
		Analysis Time..: 13:53		Analyst ID.....: 000079	Instrument ID..: I8	
Iron	3.9 B	**5.0**	**mg/kg**	**SW846 6020**	**10/19-10/20/10**	**L8NTR1CR**
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Lead	ND	0.10	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1CT
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Manganese	1.3	**0.10**	**mg/kg**	**SW846 6020**	**10/19-10/21/10**	**L8NTR1CU**
		Dilution Factor: 1				
		Analysis Time..: 13:53		Analyst ID.....: 000079	Instrument ID..: I8	

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Molybdenum	ND	0.20	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1CV
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Nickel	**0.032 B**	**0.10**	**mg/kg**	**SW846 6020**	**10/19-10/20/10**	**L8NTR1CW**
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Selenium	ND	0.50	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1CX
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Silver	ND	0.10	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1C0
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Thallium	ND	0.10	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1AC
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Vanadium	ND	0.50	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1C1
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Zinc	ND	2.0	mg/kg	SW846 6020	10/19-10/20/10	L8NTR1C2
		Dilution Factor: 1				
		Analysis Time..: 19:53		Analyst ID.....: 000079	Instrument ID..: I8	
Mercury	ND	0.10	mg/kg	SW846 7471A	10/19-10/25/10	L8NTR1DM
		Dilution Factor: 1				
		Analysis Time..: 14:54		Analyst ID.....: 001576	Instrument ID..: H1	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

SDG A0J150598

Soil

Affected Analyte	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Sb	MRC-SED-1	1.9		Fe	50900	0.11	33700	0.07	na	na
As		2.9			50900	0.34	33700	0.23	na	na
Ba		57.5			50900	0.094	33700	0.06	na	na
Be		0.26			50900	0.011	33700	0.01	na	na
Cd		0.12			50900	-0.67	33700	-0.44	J	na
Cr		122			50900	0.57	33700	0.38	na	na
Co		4.8			50900	0.073	33700	0.05	na	na
Cu		255			50900	1	33700	0.66	na	na
Pb		5.8			50900	0.11	33700	0.07	na	na
Ni		32.3			50900	0.44	33700	0.29	na	na
Ag		0.057			50900	0.076	33700	0.05	J	na
V		13.4			50900	-0.53	33700	-0.35	na	na

TestAmerica North Canton

Metals Data Reporting Form

Interference Check Standard A

Instrument: ICPMS **Units:** ug/L

Chart Number: I81020A.csv **Acceptable Range:** 0% - 0%

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Reporting Limit	True Conc	ICSA 10/20/10 2:09 PM Found	Found	Found	Found	Found
Antimony	121	2		0.110				
Arsenic	75	5		0.340				
Barium	137	1		0.094				
Beryllium	9	1		0.011				
Cadmium	111	1		-0.670				
Chromium	52	2		0.570				
Cobalt	59	1		0.073				
Iron	56		50000	50900				
Lead	208	1		0.110				
Manganese	55	1		0.180				
Molybdenum	95	2	1000	1040				
Nickel	60	1		0.440				
Selenium	78	5		-0.110				
Silver	107	1		0.076				
Thallium	205	1		0.065				
Vanadium	51	5		-0.530				
Zinc	66	20		0.240				

TestAmerica North Canton

Metals Data Reporting Form

Interference Check Standard A

Instrument: ICPMS **Units:** ug/L

Chart Number: I81021A.csv **Acceptable Range:** 0% - 0%

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Reporting Limit	True Conc	ICSA 10/21/10 11:13 AM Found	Found	Found	Found	Found
Copper	65	2		1				
Manganese	55	1		0.130				

5.04.5

U Result is less than the IDL

B Result is between IDL and RL

Form 4 Equivalent

TestAmerica North Canton

Metals Data Reporting Form

Interference Check Standard A

Instrument: ICPMS **Units:** ug/L

Chart Number: I81019A.csv **Acceptable Range:** 0% - 0%

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Reporting Limit	True Conc	ICSA 10/19/10 10:24 AM Found	Found	Found	Found	Found
Antimony	121	2		0.120				
Arsenic	75	5		0.320				
Barium	137	1		0.092				
Beryllium	9	1		0.010				
Cadmium	111	1		-0.720				
Chromium	52	2		0.630				
Cobalt	59	1		0.080				
Copper	65	2		0.110				
Iron	56		50000	51000				
Lead	208	1		0.100				
Manganese	55	1		0.099				
Molybdenum	95	2	1000	1040				
Nickel	60	1		0.470				
Selenium	78	5		-0.061				
Silver	107	1		0.065				
Thallium	205	1		0.190				
Vanadium	51	5		-0.040				
Zinc	66	20		0.860				

TestAmerica North Canton

Metals Data Reporting Form

Interference Check Standard AB

Instrument: ICPMS **Units:** ug/L

Chart Number: I81019A.csv **Acceptable Range:** 50% - 150%

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	True Conc	ICSAB 10/19/10 10:28 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Antimony	121	100	100.1	**100.1**								
Arsenic	75	100	98.2	**98.2**								
Barium	137	100	100.5	**100.5**								
Beryllium	9	100	98.1	**98.1**								
Cadmium	111	100	100.3	**100.3**								
Chromium	52	100	98.1	**98.1**								
Cobalt	59	100	98.3	**98.3**								
Copper	65	100	98.5	**98.5**								
Iron	56	50000	51306.7	**102.6**								
Lead	208	100	99.0	**99.0**								
Manganese	55	100	106.2	**106.2**								
Molybdenum	95	1000	1137.7	**113.8**								
Nickel	60	100	100.6	**100.6**								
Selenium	78	100	97.1	**97.1**								
Silver	107	100	100.2	**100.2**								
Thallium	205	100	101.4	**101.4**								
Vanadium	51	100	98.0	**98.0**								
Zinc	66	100	101.2	**101.2**								

TestAmerica North Canton

Metals Data Reporting Form

Interference Check Standard AB

Instrument: ICPMS **Units:** ug/L

Chart Number: I81020A.csv **Acceptable Range:** 50% - 150%

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	True Conc	ICSAB 10/20/10 2:14 PM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Antimony	121	100	98.3	**98.3**								
Arsenic	75	100	96.8	**96.8**								
Barium	137	100	97.8	**97.8**								
Beryllium	9	100	98.5	**98.5**								
Cadmium	111	100	99.0	**99.0**								
Chromium	52	100	98.1	**98.1**								
Cobalt	59	100	96.6	**96.6**								
Iron	56	50000	50893.3	**101.8**								
Lead	208	100	98.6	**98.6**								
Manganese	55	100	96.4	**96.4**								
Molybdenum	95	1000	1141.3	**114.1**								
Nickel	60	100	98.9	**98.9**								
Selenium	78	100	95.9	**95.9**								
Silver	107	100	98.8	**98.8**								
Thallium	205	100	102.0	**102.0**								
Vanadium	51	100	97.7	**97.7**								
Zinc	66	100	98.4	**98.4**								

TestAmerica North Canton

Metals Data Reporting Form

Interference Check Standard AB

Instrument: ICPMS **Units:** ug/L

Chart Number: I81021A.csv **Acceptable Range:** 50% - 150%

Standard Source: **Standard ID:**

Element	WL/ Mass	True Conc	ICSAB 10/21/10 11:18 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Copper	65	100	97.3	**97.3**								
Manganese	55	100	96.5	**96.5**								

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A0J180000-016 **Prep Batch #...:** 0291016					
Antimony	94	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1AV
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Copper	97	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1AW
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Silver	100	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1AX
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Thallium	89	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1A0
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Arsenic	92	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1D6
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Beryllium	91	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1D7
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Cadmium	97	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1D8
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Cobalt	92	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1D9
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Lead	89	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1EA
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Selenium	91	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1EC
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Vanadium	90	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1ED
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Barium	92	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1EJ
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Iron	94	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1EK
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Manganese	99	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1EL
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Molybdenum	92	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1EM
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Nickel	96	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1EN
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Zinc	101	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1EP
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Chromium	92	(80 - 120)	SW846 6020	10/18-10/19/10	L8L7H1EQ
		Dilution Factor: 1	Analysis Time..: 17:17	Analyst ID.....: 000079	
		Instrument ID..: I8			
Mercury	120	(81 - 123)	SW846 7470A	10/18/10	L8L7H1CE
		Dilution Factor: 1	Analysis Time..: 17:37	Analyst ID.....: 001576	
		Instrument ID..: H4			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A0J180000-016 **Prep Batch #...:** 0291016							
Antimony	100	94.2	ug/L	94	SW846 6020	10/18-10/19/10	L8L7H1AV
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Copper	100	96.7	ug/L	97	SW846 6020	10/18-10/19/10	L8L7H1AW
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Silver	100	100	ug/L	100	SW846 6020	10/18-10/19/10	L8L7H1AX
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Thallium	100	89.2	ug/L	89	SW846 6020	10/18-10/19/10	L8L7H1A0
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Arsenic	100	92.0	ug/L	92	SW846 6020	10/18-10/19/10	L8L7H1D6
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Beryllium	100	90.6	ug/L	91	SW846 6020	10/18-10/19/10	L8L7H1D7
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Cadmium	100	97.1	ug/L	97	SW846 6020	10/18-10/19/10	L8L7H1D8
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Cobalt	100	91.9	ug/L	92	SW846 6020	10/18-10/19/10	L8L7H1D9
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Lead	100	89.0	ug/L	89	SW846 6020	10/18-10/19/10	L8L7H1EA
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Selenium	100	90.8	ug/L	91	SW846 6020	10/18-10/19/10	L8L7H1EC
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Vanadium	100	90.2	ug/L	90	SW846 6020	10/18-10/19/10	L8L7H1ED
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Barium	100	92.1	ug/L	92	SW846 6020	10/18-10/19/10	L8L7H1EJ
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Iron	10000	9440	ug/L	94	SW846 6020	10/18-10/19/10	L8L7H1EK
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Manganese	100	99.4	ug/L	99	SW846 6020	10/18-10/19/10	L8L7H1EL
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Molybdenum	100	91.6	ug/L	92	SW846 6020	10/18-10/19/10	L8L7H1EM
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Nickel	100	95.7	ug/L	96	SW846 6020	10/18-10/19/10	L8L7H1EN
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Zinc	100	101	ug/L	101	SW846 6020	10/18-10/19/10	L8L7H1EP
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Chromium	100	91.6	ug/L	92	SW846 6020	10/18-10/19/10	L8L7H1EQ
			Dilution Factor: 1		Analysis Time..: 17:17	Analyst ID.....: 000079	
			Instrument ID..: I8				
Mercury	5.0	6.0	ug/L	120	SW846 7470A	10/18/10	L8L7H1CE
			Dilution Factor: 1		Analysis Time..: 17:37	Analyst ID.....: 001576	
			Instrument ID..: H4				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A0J190000-022 **Prep Batch #...:** 0292022					
Cobalt	88	(74 - 110)	SW846 6020	10/19-10/20/10	L8NTR1AT
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Thallium	90	(71 - 110)	SW846 6020	10/19-10/20/10	L8NTR1AU
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Antimony	83	(68 - 113)	SW846 6020	10/19-10/20/10	L8NTR1AV
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Arsenic	80	(73 - 110)	SW846 6020	10/19-10/20/10	L8NTR1C4
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Barium	87	(70 - 110)	SW846 6020	10/19-10/20/10	L8NTR1C5
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Cadmium	85	(74 - 110)	SW846 6020	10/19-10/20/10	L8NTR1C6
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Copper	91	(73 - 110)	SW846 6020	10/19-10/21/10	L8NTR1C7
		Dilution Factor: 1	Analysis Time..: 13:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Lead	88	(75 - 110)	SW846 6020	10/19-10/20/10	L8NTR1C8
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Selenium	73	(65 - 110)	SW846 6020	10/19-10/20/10	L8NTR1C9
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Silver	95	(60 - 114)	SW846 6020	10/19-10/20/10	L8NTR1DA
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Zinc	87	(72 - 113)	SW846 6020	10/19-10/20/10	L8NTR1DC
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Chromium	90	(70 - 110)	SW846 6020	10/19-10/20/10	L8NTR1DD
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Beryllium	83	(79 - 110)	SW846 6020	10/19-10/20/10	L8NTR1DE
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Iron	83	(80 - 120)	SW846 6020	10/19-10/20/10	L8NTR1DF
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Manganese	88	(80 - 120)	SW846 6020	10/19-10/20/10	L8NTR1DG
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Molybdenum	91	(30 - 140)	SW846 6020	10/19-10/20/10	L8NTR1DH
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Nickel	91	(75 - 110)	SW846 6020	10/19-10/20/10	L8NTR1DJ
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Vanadium	89	(72 - 110)	SW846 6020	10/19-10/20/10	L8NTR1DK
		Dilution Factor: 1	Analysis Time..: 19:58	Analyst ID.....: 000079	
		Instrument ID..: I8			
Mercury	93	(73 - 121)	SW846 7471A	10/19-10/25/10	L8NTR1DN
		Dilution Factor: 1	Analysis Time..: 14:55	Analyst ID.....: 001576	
		Instrument ID..: H1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID

LCS Lot-Sample#: A0J190000-022 **Prep Batch #...:** 0292022

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Cobalt	10.0	8.8	mg/kg	88	SW846 6020	10/19-10/20/10	L8NTR1AT
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Thallium	10.0	9.0	mg/kg	90	SW846 6020	10/19-10/20/10	L8NTR1AU
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Antimony	10.0	8.3	mg/kg	83	SW846 6020	10/19-10/20/10	L8NTR1AV
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Arsenic	10.0	8.0	mg/kg	80	SW846 6020	10/19-10/20/10	L8NTR1C4
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Barium	10.0	8.7	mg/kg	87	SW846 6020	10/19-10/20/10	L8NTR1C5
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Cadmium	10.0	8.5	mg/kg	85	SW846 6020	10/19-10/20/10	L8NTR1C6
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Copper	10.0	9.1	mg/kg	91	SW846 6020	10/19-10/21/10	L8NTR1C7
			Dilution Factor: 1		Analysis Time..: 13:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Lead	10.0	8.8	mg/kg	88	SW846 6020	10/19-10/20/10	L8NTR1C8
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Selenium	10.0	7.3	mg/kg	73	SW846 6020	10/19-10/20/10	L8NTR1C9
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Silver	10.0	9.5	mg/kg	95	SW846 6020	10/19-10/20/10	L8NTR1DA
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				

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LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Zinc	10.0	8.7	mg/kg	87	SW846 6020	10/19-10/20/10	L8NTR1DC
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Chromium	10.0	9.0	mg/kg	90	SW846 6020	10/19-10/20/10	L8NTR1DD
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Beryllium	10.0	8.3	mg/kg	83	SW846 6020	10/19-10/20/10	L8NTR1DE
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Iron	1000	832	mg/kg	83	SW846 6020	10/19-10/20/10	L8NTR1DF
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Manganese	10.0	8.8	mg/kg	88	SW846 6020	10/19-10/20/10	L8NTR1DG
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Molybdenum	10.0	9.1	mg/kg	91	SW846 6020	10/19-10/20/10	L8NTR1DH
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Nickel	10.0	9.1	mg/kg	91	SW846 6020	10/19-10/20/10	L8NTR1DJ
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Vanadium	10.0	8.9	mg/kg	89	SW846 6020	10/19-10/20/10	L8NTR1DK
			Dilution Factor: 1		Analysis Time..: 19:58	Analyst ID.....: 000079	
			Instrument ID..: I8				
Mercury	0.83	0.77	mg/kg	93	SW846 7471A	10/19-10/25/10	L8NTR1DN
			Dilution Factor: 1		Analysis Time..: 14:55	Analyst ID.....: 001576	
			Instrument ID..: H1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Sample not in SDG

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER
Date Sampled...: 10/14/10 10:12 **Date Received..:** 10/15/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A0J150408-002 **Prep Batch #...:** 0291016							
Antimony	96	(44 - 153)			SW846 6020	10/18-10/19/10	L8HWM1E7
	98	(44 - 153)	2.4	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1E8
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Arsenic	100	(82 - 123)			SW846 6020	10/18-10/19/10	L8HWM1EL
	100	(82 - 123)	0.68	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1EM
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Barium	97	(45 - 144)			SW846 6020	10/18-10/19/10	L8HWM1F1
	102	(45 - 144)	4.6	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1F2
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Beryllium	91	(77 - 124)			SW846 6020	10/18-10/19/10	L8HWM1EP
	91	(77 - 124)	0.45	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1EQ
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Cadmium	97	(78 - 117)			SW846 6020	10/18-10/19/10	L8HWM1ET
	99	(78 - 117)	2.1	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1EU
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Chromium	99	(72 - 110)			SW846 6020	10/18-10/19/10	L8HWM1GP
	98	(72 - 110)	0.21	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1GQ
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Cobalt	96	(67 - 114)			SW846 6020	10/18-10/19/10	L8HWM1EW
	98	(67 - 114)	1.8	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1EX
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Copper	97	(60 - 123)			SW846 6020	10/18-10/19/10	L8HWM1E1
	96	(60 - 123)	0.90	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1E2
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	

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MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER
Date Sampled...: 10/14/10 10:12 **Date Received..:** 10/15/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	94	(22 - 169)			SW846 6020	10/18-10/19/10	L8HWM1F4
	95	(22 - 169)	1.7	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1F5
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Lead	99	(73 - 115)			SW846 6020	10/18-10/19/10	L8HWM1E4
	99	(73 - 115)	0.32	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1E5
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Manganese	NC,MSB	(10 - 172)			SW846 6020	10/18-10/19/10	L8HWM1F7
	NC,MSB	(10 - 172)		(0-20)	SW846 6020	10/18-10/19/10	L8HWM1F8
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Molybdenum	102	(80 - 110)			SW846 6020	10/18-10/19/10	L8HWM1GA
	104	(80 - 110)	2.0	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1GC
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Nickel	96	(72 - 111)			SW846 6020	10/18-10/19/10	L8HWM1GE
	97	(72 - 111)	0.39	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1GF
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Selenium	100	(72 - 148)			SW846 6020	10/18-10/19/10	L8HWM1FA
	102	(72 - 148)	1.9	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1FC
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Silver	97	(10 - 139)			SW846 6020	10/18-10/19/10	L8HWM1EH
	97	(10 - 139)	0.53	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1EJ
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Thallium	100	(69 - 117)			SW846 6020	10/18-10/19/10	L8HWM1GH
	101	(69 - 117)	1.6	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1GJ
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Vanadium	101	(70 - 112)			SW846 6020	10/18-10/19/10	L8HWM1FE
	99	(70 - 112)	1.8	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1FF
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	

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MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER
Date Sampled...: 10/14/10 10:12 **Date Received..:** 10/15/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Zinc	96	(49 - 156)			SW846 6020	10/18-10/19/10	L8HWM1GL
	95	(49 - 156)	0.89	(0-20)	SW846 6020	10/18-10/19/10	L8HWM1GM
		Dilution Factor: 1					
		Analysis Time..: 17:29			Instrument ID..: I8	Analyst ID.....: 000079	
Mercury	102	(69 - 134)			SW846 7470A	10/18/10	L8HWM1FH
	97	(69 - 134)	4.3	(0-20)	SW846 7470A	10/18/10	L8HWM1FJ
		Dilution Factor: 1					
		Analysis Time..: 17:40			Instrument ID..: H4	Analyst ID.....: 001576	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD may be outside control limits because the sample amount was greater than 4X the spike amount.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER
Date Sampled...: 10/14/10 10:12 **Date Received..:** 10/15/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A0J150408-002 **Prep Batch #...:** 0291016									
Antimony									
	0.30	100	96.3	ug/L	96		SW846 6020	10/18-10/19/10	L8HWM1E7
	0.30	100	98.6	ug/L	98	2.4	SW846 6020	10/18-10/19/10	L8HWM1E8
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Arsenic									
	2.6	100	102	ug/L	100		SW846 6020	10/18-10/19/10	L8HWM1EL
	2.6	100	103	ug/L	100	0.68	SW846 6020	10/18-10/19/10	L8HWM1EM
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Barium									
	23.2	100	120	ug/L	97		SW846 6020	10/18-10/19/10	L8HWM1F1
	23.2	100	126	ug/L	102	4.6	SW846 6020	10/18-10/19/10	L8HWM1F2
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Beryllium									
	ND	100	91.0	ug/L	91		SW846 6020	10/18-10/19/10	L8HWM1EP
	ND	100	91.4	ug/L	91	0.45	SW846 6020	10/18-10/19/10	L8HWM1EQ
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Cadmium									
	0.22	100	97.1	ug/L	97		SW846 6020	10/18-10/19/10	L8HWM1ET
	0.22	100	99.2	ug/L	99	2.1	SW846 6020	10/18-10/19/10	L8HWM1EU
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Chromium									
	ND	100	98.6	ug/L	99		SW846 6020	10/18-10/19/10	L8HWM1GP
	ND	100	98.4	ug/L	98	0.21	SW846 6020	10/18-10/19/10	L8HWM1GQ
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Cobalt									
	2.8	100	98.9	ug/L	96		SW846 6020	10/18-10/19/10	L8HWM1EW
	2.8	100	101	ug/L	98	1.8	SW846 6020	10/18-10/19/10	L8HWM1EX
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	

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MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER
Date Sampled...: 10/14/10 10:12 **Date Received..:** 10/15/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Copper									
	0.54	100	97.6	ug/L	97		SW846 6020	10/18-10/19/10	L8HWM1E1
	0.54	100	96.7	ug/L	96	0.90	SW846 6020	10/18-10/19/10	L8HWM1E2
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Iron									
	ND	10000	9360	ug/L	94		SW846 6020	10/18-10/19/10	L8HWM1F4
	ND	10000	9520	ug/L	95	1.7	SW846 6020	10/18-10/19/10	L8HWM1F5
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Lead									
	ND	100	98.7	ug/L	99		SW846 6020	10/18-10/19/10	L8HWM1E4
	ND	100	99.0	ug/L	99	0.32	SW846 6020	10/18-10/19/10	L8HWM1E5
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Manganese									
	627	100	701	ug/L			SW846 6020	10/18-10/19/10	L8HWM1F7
			Qualifiers: NC,MSB						
	627	100	710	ug/L			SW846 6020	10/18-10/19/10	L8HWM1F8
			Qualifiers: NC,MSB						
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Molybdenum									
	6.4	100	108	ug/L	102		SW846 6020	10/18-10/19/10	L8HWM1GA
	6.4	100	110	ug/L	104	2.0	SW846 6020	10/18-10/19/10	L8HWM1GC
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Nickel									
	3.8	100	100	ug/L	96		SW846 6020	10/18-10/19/10	L8HWM1GE
	3.8	100	101	ug/L	97	0.39	SW846 6020	10/18-10/19/10	L8HWM1GF
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Selenium									
	ND	100	99.7	ug/L	100		SW846 6020	10/18-10/19/10	L8HWM1FA
	ND	100	102	ug/L	102	1.9	SW846 6020	10/18-10/19/10	L8HWM1FC
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	

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MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** WATER
Date Sampled...: 10/14/10 10:12 **Date Received..:** 10/15/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver									
	ND	100	96.6	ug/L	97		SW846 6020	10/18-10/19/10	L8HWM1EH
	ND	100	97.1	ug/L	97	0.53	SW846 6020	10/18-10/19/10	L8HWM1EJ
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Thallium									
	0.48	100	100	ug/L	100		SW846 6020	10/18-10/19/10	L8HWM1GH
	0.48	100	102	ug/L	101	1.6	SW846 6020	10/18-10/19/10	L8HWM1GJ
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Vanadium									
	1.6	100	102	ug/L	101		SW846 6020	10/18-10/19/10	L8HWM1FE
	1.6	100	100	ug/L	99	1.8	SW846 6020	10/18-10/19/10	L8HWM1FF
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Zinc									
	3.1	100	99.5	ug/L	96		SW846 6020	10/18-10/19/10	L8HWM1GL
	3.1	100	98.6	ug/L	95	0.89	SW846 6020	10/18-10/19/10	L8HWM1GM
			Dilution Factor: 1						
			Analysis Time..: 17:29		Instrument ID..: I8			Analyst ID.....: 000079	
Mercury									
	ND	1.0	1.0	ug/L	102		SW846 7470A	10/18/10	L8HWM1FH
	ND	1.0	0.97	ug/L	97	4.3	SW846 7470A	10/18/10	L8HWM1FJ
			Dilution Factor: 1						
			Analysis Time..: 17:40		Instrument ID..: H4			Analyst ID.....: 001576	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD may be outside control limits because the sample amount was greater than 4X the spike amount.

MATRIX SPIKE SAMPLE EVALUATION REPORT

Sample not in SDG

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID
Date Sampled...: 10/12/10 10:58 **Date Received..:** 10/14/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A0J140582-001 **Prep Batch #...:** 0292022						**% Moisture.....:** 100	
Mercury	80	(11 - 192)			SW846 7471A	10/19-10/25/10	L8HCD1A9
	78	(11 - 192)	1.6	(0-20)	SW846 7471A	10/19-10/25/10	L8HCD1CA

Dilution Factor: 1
Analysis Time..: 14:57 Instrument ID..: H1 Analyst ID.....: 001576

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID
Date Sampled...: 10/12/10 10:58 **Date Received..:** 10/14/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A0J140582-001 **Prep Batch #...:** 0292022									
								% Moisture.....: 100	
Mercury									
	ND	0.17	0.23	mg/kg	80		SW846 7471A	10/19-10/25/10	L8HCD1A9
	ND	0.17	0.23	mg/kg	78	1.6	SW846 7471A	10/19-10/25/10	L8HCD1CA

Dilution Factor: 1
Analysis Time..: 14:57 Instrument ID..: H1 Analyst ID.....: 001576

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE EVALUATION REPORT

Sample not in SDG

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID
Date Sampled...: 10/13/10 13:00 **Date Received..:** 10/15/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A0J150463-005 **Prep Batch #...:** 0292022							
						% Moisture.....: 45	
Antimony	20 N	(75 - 125)			SW846 6020	10/19-10/20/10	L8JMN1A0
	20 N	(75 - 125)	1.2	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1A1
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Arsenic	74	(23 - 131)			SW846 6020	10/19-10/20/10	L8JMN1DR
	71	(23 - 131)	3.3	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1DT
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Barium	NC,MSB	(10 - 199)			SW846 6020	10/19-10/20/10	L8JMN1DV
	NC,MSB	(10 - 199)		(0-20)	SW846 6020	10/19-10/20/10	L8JMN1DW
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Beryllium	79	(58 - 112)			SW846 6020	10/19-10/20/10	L8JMN1D0
	77	(58 - 112)	2.7	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1D1
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Cadmium	82	(58 - 110)			SW846 6020	10/19-10/20/10	L8JMN1D3
	81	(58 - 110)	1.6	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1D4
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Chromium	100	(10 - 199)			SW846 6020	10/19-10/20/10	L8JMN1E6
	85	(10 - 199)	4.3	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1E7
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Cobalt	80	(55 - 110)			SW846 6020	10/19-10/20/10	L8JMN1AU
	76	(55 - 110)	2.5	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1AV
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Copper	103	(10 - 199)			SW846 6020	10/19-10/21/10	L8JMN1D6
	82	(10 - 199)	4.9	(0-20)	SW846 6020	10/19-10/21/10	L8JMN1D7
		Dilution Factor: 1					
		Analysis Time..: 15:15			Instrument ID..: I8	Analyst ID.....: 000079	

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID
Date Sampled...: 10/13/10 13:00 **Date Received..:** 10/15/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	NC,MSB	(70 - 130)			SW846 6020	10/19-10/20/10	L8JMN1D9
	NC,MSB	(70 - 130)		(0-20)	SW846 6020	10/19-10/20/10	L8JMN1EA
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Lead	88	(10 - 199)			SW846 6020	10/19-10/20/10	L8JMN1ED
	85	(10 - 199)	2.2	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1EE
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Molybdenum	84	(10 - 199)			SW846 6020	10/19-10/20/10	L8JMN1EK
	86	(10 - 199)	1.6	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1EL
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Nickel	NC,MSB	(10 - 176)			SW846 6020	10/19-10/20/10	L8JMN1EN
	NC,MSB	(10 - 176)		(0-20)	SW846 6020	10/19-10/20/10	L8JMN1EP
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Selenium	68	(39 - 116)			SW846 6020	10/19-10/20/10	L8JMN1ER
	68	(39 - 116)	0.41	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1ET
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Silver	87	(75 - 125)			SW846 6020	10/19-10/20/10	L8JMN1EV
	86	(75 - 125)	0.54	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1EW
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Thallium	91	(62 - 110)			SW846 6020	10/19-10/20/10	L8JMN1AW
	89	(62 - 110)	2.4	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1AX
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Vanadium	97	(39 - 129)			SW846 6020	10/19-10/20/10	L8JMN1E0
	89	(39 - 129)	3.0	(0-20)	SW846 6020	10/19-10/20/10	L8JMN1E1
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	
Zinc	NC,MSB	(10 - 199)			SW846 6020	10/19-10/20/10	L8JMN1E3
	NC,MSB	(10 - 199)		(0-20)	SW846 6020	10/19-10/20/10	L8JMN1E4
		Dilution Factor: 1					
		Analysis Time..: 21:29			Instrument ID..: I8	Analyst ID.....: 000079	

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0J150598 Matrix.....: SOLID
Date Sampled...: 10/13/10 13:00 Date Received..: 10/15/10

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD may be outside control limits because the sample amount was greater than 4X the spike amount.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID
Date Sampled...: 10/13/10 13:00 **Date Received..:** 10/15/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A0J150463-005 **Prep Batch #...:** 0292022									
								% Moisture.....: 45	
Antimony									
	ND	18.2	3.7 N	mg/kg	20		SW846 6020	10/19-10/20/10	L8JMN1A0
	ND	18.2	3.7 N	mg/kg	20	1.2	SW846 6020	10/19-10/20/10	L8JMN1A1
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Arsenic									
	1.3	18.2	14.7	mg/kg	74		SW846 6020	10/19-10/20/10	L8JMN1DR
	1.3	18.2	14.2	mg/kg	71	3.3	SW846 6020	10/19-10/20/10	L8JMN1DT
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Barium									
	168	18.2	191	mg/kg			SW846 6020	10/19-10/20/10	L8JMN1DV
			Qualifiers: NC,MSB						
	168	18.2	185	mg/kg			SW846 6020	10/19-10/20/10	L8JMN1DW
			Qualifiers: NC,MSB						
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Beryllium									
	0.34	18.2	14.8	mg/kg	79		SW846 6020	10/19-10/20/10	L8JMN1D0
	0.34	18.2	14.4	mg/kg	77	2.7	SW846 6020	10/19-10/20/10	L8JMN1D1
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Cadmium									
	0.027	18.2	15.1	mg/kg	82		SW846 6020	10/19-10/20/10	L8JMN1D3
	0.027	18.2	14.8	mg/kg	81	1.6	SW846 6020	10/19-10/20/10	L8JMN1D4
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Chromium									
	45.1	18.2	63.3	mg/kg	100		SW846 6020	10/19-10/20/10	L8JMN1E6
	45.1	18.2	60.6	mg/kg	85	4.3	SW846 6020	10/19-10/20/10	L8JMN1E7
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	

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MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598
Date Sampled...: 10/13/10 13:00 **Date Received..:** 10/15/10 **Matrix.....:** SOLID

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Cobalt									
	15.4	18.2	30.0	mg/kg	80		SW846 6020	10/19-10/20/10	L8JMN1AU
	15.4	18.2	29.3	mg/kg	76	2.5	SW846 6020	10/19-10/20/10	L8JMN1AV
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Copper									
	65.3	18.2	84.2	mg/kg	103		SW846 6020	10/19-10/21/10	L8JMN1D6
	65.3	18.2	80.2	mg/kg	82	4.9	SW846 6020	10/19-10/21/10	L8JMN1D7
			Dilution Factor: 1						
			Analysis Time..: 15:15		Instrument ID..: I8			Analyst ID.....: 000079	
Iron									
	30300	1820	34800	mg/kg			SW846 6020	10/19-10/20/10	L8JMN1D9
			Qualifiers: NC,MSB						
	30300	1820	34000	mg/kg			SW846 6020	10/19-10/20/10	L8JMN1EA
			Qualifiers: NC,MSB						
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Lead									
	12.0	18.2	28.0	mg/kg	88		SW846 6020	10/19-10/20/10	L8JMN1ED
	12.0	18.2	27.4	mg/kg	85	2.2	SW846 6020	10/19-10/20/10	L8JMN1EE
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Molybdenum									
	0.43	18.2	15.8	mg/kg	84		SW846 6020	10/19-10/20/10	L8JMN1EK
	0.43	18.2	16.0	mg/kg	86	1.6	SW846 6020	10/19-10/20/10	L8JMN1EL
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Nickel									
	119	18.2	140	mg/kg			SW846 6020	10/19-10/20/10	L8JMN1EN
			Qualifiers: NC,MSB						
	119	18.2	132	mg/kg			SW846 6020	10/19-10/20/10	L8JMN1EP
			Qualifiers: NC,MSB						
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Selenium									
	0.75	18.2	13.2	mg/kg	68		SW846 6020	10/19-10/20/10	L8JMN1ER
	0.75	18.2	13.1	mg/kg	68	0.41	SW846 6020	10/19-10/20/10	L8JMN1ET
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0J150598 **Matrix.....:** SOLID
Date Sampled...: 10/13/10 13:00 **Date Received..:** 10/15/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver									
	0.037	18.2	15.9	mg/kg	87		SW846 6020	10/19-10/20/10	L8JMN1EV
	0.037	18.2	15.8	mg/kg	86	0.54	SW846 6020	10/19-10/20/10	L8JMN1EW
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Thallium									
	0.20	18.2	16.8	mg/kg	91		SW846 6020	10/19-10/20/10	L8JMN1AW
	0.20	18.2	16.4	mg/kg	89	2.4	SW846 6020	10/19-10/20/10	L8JMN1AX
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Vanadium									
	26.5	18.2	44.1	mg/kg	97		SW846 6020	10/19-10/20/10	L8JMN1E0
	26.5	18.2	42.8	mg/kg	89	3.0	SW846 6020	10/19-10/20/10	L8JMN1E1
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	
Zinc									
	143	18.2	141	mg/kg			SW846 6020	10/19-10/20/10	L8JMN1E3
			Qualifiers: NC,MSB						
	143	18.2	153	mg/kg			SW846 6020	10/19-10/20/10	L8JMN1E4
			Qualifiers: NC,MSB						
			Dilution Factor: 1						
			Analysis Time..: 21:29		Instrument ID..: I8			Analyst ID.....: 000079	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD may be outside control limits because the sample amount was greater than 4X the spike amount.

Internal Stds

L8K1C 10/19/2010 18:07:11 QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	9Be	10B
		ppb	ppb	ppb
X		93.923%	0.024	62.950
%RSD		1.560	6.829	0.723
Run	**Time**	**23Na**	**25Mg**	**27Al**
		ppb	ppb	ppb
X		27390.000	3081.000	393.200
%RSD		2.191	1.582	0.800
Run	**Time**	**35Cl**	**39K**	**43Ca**
		ppb	ppb	ppb
X		T 0.000	T 3637.000	20350.000
%RSD		T 0.000	T 1.367	0.957
Run	**Time**	**45Sc**	**45Sc**	**47Ti**
		ppb	ppb	ppb
X		T 92.031%	90.131%	9.829
%RSD		T 1.197	0.279	14.160
Run	**Time**	**51V**	**52Cr**	**53Cl(O)**
		ppb	ppb	ppb
X		3.716	6.687	0.005
%RSD		7.671	4.912	12000.000
Run	**Time**	**55Mn**	**56Fe**	**59Co**
		ppb	ppb	ppb
X		23.620	602.600	0.403
%RSD		0.413	1.182	2.434
Run	**Time**	**60Ni**	**65Cu**	**66Zn**
		ppb	ppb	ppb
X		2.419	23.210	47.800
%RSD		10.560	2.375	1.096
Run	**Time**	**72Ge**	**75As**	**77Ar(Cl)**
		ppb	ppb	ppb
X		94.872%	2.614	0.130
%RSD		1.556	6.822	23.160
Run	**Time**	**78Se**	**88Sr**	**95Mo**
		ppb	ppb	ppb
X		0.007	78.860	2.845
%RSD		3957.000	0.967	5.282
Run	**Time**	**105Pd**	**107Ag**	**103Rh(O)**
		ppb	ppb	ppb
X		0.000	0.028	2.911
%RSD		0.000	9.264	212.200
Run	**Time**	**111Cd**	**115In**	**118Sn**
		ppb	ppb	ppb
X		0.095	96.926%	0.568
%RSD		39.180	3.353	10.120
Run	**Time**	**121Sb**	**137Ba**	**159Tb**
		ppb	ppb	ppb
X		2.032	28.300	0.000
%RSD		1.752	2.298	0.000
Run	**Time**	**165Ho**	**182W**	**205Tl**
		ppb	ppb	ppb
X		0.000	0.169	0.192
%RSD		0.000	0.986	2.376
Run	**Time**	**208Pb**	**209Bi**	
		ppb	ppb	
X		4.016	102.482%	
%RSD		1.116	2.030	

L8K1Q 10/19/2010 18:11:57 QC Status: PASS (Initial: PASS)

User Pre -dilution: 1.000

Run	Time	6Li	9Be	10B
		ppb	ppb	ppb
X		71.941%	0.039	M 387.000
%RSD		1.963	31.080	M 0.679
Run	Time	23Na	25Mg	27Al
		ppb	ppb	ppb
X		TM 945300.000	M 115900.000	409.700
%RSD		TM 4.988	M 3.412	4.725
Run	Time	35Cl	39K	43Ca
		ppb	ppb	ppb
X		T 0.000	T 37800.000	47870.000
%RSD		T 0.000	T 0.156	1.102
Run	Time	45Sc	45Sc	47Ti
		ppb	ppb	ppb
X		T 83.477%	91.709%	11.340
%RSD		T 1.648	5.272	17.190
Run	Time	51V	52Cr	53Cl O
		ppb	ppb	ppb
X		3.093	4.044	-0.095
%RSD		11.400	2.239	393.300
Run	Time	55Mn	56Fe	59Co
		ppb	ppb	ppb
X		41.050	675.800	0.551
%RSD		1.204	2.329	5.118
Run	Time	60Ni	65Cu	66Zn
		ppb	ppb	ppb
X		2.789	8.832	42.550
%RSD		6.603	0.972	0.789
Run	Time	72Ge	75As	77Ar Cl
		ppb	ppb	ppb
X		85.581%	1.247	-0.228
%RSD		3.814	18.360	17.210
Run	Time	78Se	88Sr	95Mo
		ppb	ppb	ppb
X		0.170	M 751.300	2.463
%RSD		155.800	M 1.085	2.442
Run	Time	105Pd	107Ag	108Pd O
		ppb	ppb	ppb
X		0.000	0.022	1.859
%RSD		0.000	35.520	167.300
Run	Time	111Cd	115In	118Sn
		ppb	ppb	ppb
X		0.085	87.517%	0.325
%RSD		21.620	3.701	1.092
Run	Time	121Sb	137Ba	159Tb
		ppb	ppb	ppb
X		1.040	40.690	0.000
%RSD		3.445	1.514	0.000
Run	Time	165Ho	182W	205Tl
		ppb	ppb	ppb
X		0.000	0.164	0.176
%RSD		0.000	1.291	2.811
Run	Time	208Pb	209Bi	
		ppb	ppb	
X		3.015	73.743%	
%RSD		1.098	2.947	

L8K1R 10/20/2010 21:57:56 QC Status: PASS (Initial: PASS)

User Pre -dilution: 1.000

Run	Time	6Li	9Be	10B
		ppb	ppb	ppb
X		66.509%	2.068	23.660
%RSD		1.150	3.415	2.723
Run	Time	23Na	25Mg	27Al
		ppb	ppb	ppb
X		2296.000	M 198600.000	M 32600.000
%RSD		3.176	M 1.924	M 1.780
Run	Time	35Cl	39K	43Ca
		ppb	ppb	ppb
X		0.000	T 5163.000	TM 562200.000
%RSD		0.000	T 2.068	TM 1.873
Run	Time	45Sc	45Sc	47Ti
		ppb	ppb	ppb
X		T 76.004%	80.532%	M 1602.000
%RSD		T 1.059	3.457	M 0.311
Run	Time	51V	52Cr	53Cr
		ppb	ppb	ppb
X		106.800	M 976.200	47.870
%RSD		0.496	M 0.433	1.081
Run	Time	55Mn	56Fe	59Co
		ppb	ppb	ppb
X		TM 4126.000	TM 268600.000	38.000
%RSD		TM 1.336	TM 0.468	0.938
Run	Time	60Ni	65Cu	66Zn
		ppb	ppb	ppb
X		M 257.600	M 2054.000	M 425.800
%RSD		M 0.035	M 1.331	M 1.523
Run	Time	72Ge	75As	77Ar
		ppb	ppb	ppb
X		78.662%	23.190	0.279
%RSD		3.926	0.484	21.790
Run	Time	78Se	88Sr	95Mo
		ppb	ppb	ppb
X		2.068	M 698.000	32.120
%RSD		8.371	M 0.758	1.892
Run	Time	105Pd	107Ag	109Ag
		ppb	ppb	ppb
X		0.000	0.455	-42.790
%RSD		0.000	6.445	41.510
Run	Time	111Cd	115In	118Sn
		ppb	ppb	ppb
X		0.917	83.386%	33.320
%RSD		8.323	2.908	0.410
Run	Time	121Sb	137Ba	159Tb
		ppb	ppb	ppb
X		15.080	M 458.200	0.000
%RSD		1.317	M 0.732	0.000
Run	Time	165Ho	205Tl	208Pb
		ppb	ppb	ppb
X		0.000	0.183	46.570
%RSD		0.000	6.067	0.285
Run	Time	209Bi		
		ppb		
X		69.852%		
%RSD		1.976		

L8K1R 10/21/2010 15:29:24 QC Status: PASS (Initial: PASS)

User Pre -dilution: 1.000

Run	Time	6Li	9Be	10B
		ppb	ppb	ppb
X		74.780%	2.091	22.760
%RSD		1.225	0.983	1.434
Run	Time	23Na	25Mg	27Al
		ppb	ppb	ppb
X		2314.000	M 195700.000	M 32780.000
%RSD		4.522	M 2.622	M 2.117
Run	Time	35Cl	39K	43Ca
		ppb	ppb	ppb
X		0.000	T 4898.000	TM 554100.000
%RSD		0.000	T 1.501	TM 1.503
Run	Time	45Sc	45Sc	47Ti
		ppb	ppb	ppb
X		T 90.600%	88.485%	M 1580.000
%RSD		T 1.472	3.170	M 1.330
Run	Time	51V	52Cr	53Cr
		ppb	ppb	ppb
X		104.800	M 967.000	49.300
%RSD		4.213	M 0.275	11.400
Run	Time	55Mn	56Fe	59Co
		ppb	ppb	ppb
X		TM 4095.000	TM 265800.000	37.820
%RSD		TM 1.365	TM 1.184	0.530
Run	Time	60Ni	65Cu	66Zn
		ppb	ppb	ppb
X		M 253.900	M 2032.000	M 429.500
%RSD		M 0.201	M 1.014	M 0.281
Run	Time	72Ge	75As	77Al (C)
		ppb	ppb	ppb
X		87.511%	22.610	0.261
%RSD		3.307	2.935	18.560
Run	Time	78Se	88Sr	95Mo
		ppb	ppb	ppb
X		2.067	M 685.800	30.930
%RSD		6.735	M 0.858	0.345
Run	Time	105Pd	107Ag	108Mo (C)
		ppb	ppb	ppb
X		0.000	0.429	-33.950
%RSD		0.000	1.418	65.130
Run	Time	111Cd	115In	118Sn
		ppb	ppb	ppb
X		0.872	92.948%	32.440
%RSD		5.145	2.762	0.932
Run	Time	121Sb	137Ba	159Tb
		ppb	ppb	ppb
X		14.390	M 461.600	0.000
%RSD		4.398	M 1.360	0.000
Run	Time	165Ho	182W	205Tl
		ppb	ppb	ppb
X		0.000	7.489	0.511
%RSD		0.000	0.956	3.099
Run	Time	208Pb	209Bi	
		ppb	ppb	
X		45.870	75.547%	
%RSD		0.888	1.479	

TestAmerica North Canton

Metals Data Reporting Form

Instrument Detection Limits

Instrument: CVAA-H1 **Units:** ppb

Element	Wavelength	Reporting Limit	IDL	Date of IDL
Mercury	253.700	0.2	0.10	01/08/10

TestAmerica North Canton

Metals Data Reporting Form

Instrument Detection Limits

Instrument: CVAA-H4 **Units:** ppb

Element	Wavelength	Reporting Limit	IDL	Date of IDL
Mercury	253.700	0.2	0.10	11/20/09

TestAmerica North Canton

Metals Data Reporting Form

Instrument Detection Limits

Instrument: ICPMS **Units:** ppb

Element	Mass	Reporting Limit	IDL	Date of IDL
Antimony	121	2.0	0.038	07/16/10
Arsenic	75	5.0	0.20	07/16/10
Barium	137	1.0	0.058	07/16/10
Beryllium	9	1.0	0.0076	07/16/10
Cadmium	111	1.0	0.0074	07/16/10
Chromium	52	2.0	0.12	07/16/10
Cobalt	59	1.0	0.0066	07/16/10
Copper	65	2.0	0.29	07/16/10
Iron	56	50.0	3.2	07/16/10
Lead	208	1.0	0.017	07/16/10
Manganese	55	1.0	0.39	07/16/10
Molybdenum	95	2.0	0.34	07/16/10
Nickel	60	1.0	0.33	07/16/10
Selenium	78	5.0	0.54	07/16/10
Silver	107	1.0	0.0048	07/16/10
Thallium	205	1.0	0.10	07/16/10
Vanadium	51	5.0	0.24	07/16/10
Zinc	66	20.0	8.0	07/16/10

Batch Number: **0291016**

TestAmerica Laboratories, Inc.
Metals Prep Log/ Batch Summary

Prepared By: Lisa McGall (e-Signature)

Prep Date: 10/18/10 08:00 Prep End Date: 10/18/10 16:00
Due Date: 10/22/10

Lot	Work Order			ICP Weight	ICPMS Weight	Hg Weight
A0J180000 Water	L8L7H	B	Due Date: SDG:	50 mL	50 mL	100 mL
A0J180000 Water	L8L7H	C	Due Date: SDG:	50 mL	50 mL	100 mL
A0J150408 Water	L8HWM Dissolved		Due Date: 10/22/10 SDG:	50 mL		
A0J150408 Water	L8HWM Dissolved	S *spike	Due Date: 10/22/10 SDG:	50 mL		
A0J150408 Water	L8HWM Dissolved	D *spike	Due Date: 10/22/10 SDG:	50 mL		
A0J150408 Water	L8HWM Total		Due Date: 10/22/10 SDG:	50 mL	50 mL	100 mL
A0J150408 Water	L8HWM Total	S	Due Date: 10/22/10 SDG:	50 mL	50 mL	100 mL
A0J150408 Water	L8HWM Total	D	Due Date: 10/22/10 SDG:	50 mL	50 mL	100 mL
A0J150599 Water	L8K18 Total		Due Date: 10/27/10 SDG:	50 mL	50 mL	100 mL
A0J150596 Water	L8K0F Total		Due Date: 10/29/10 SDG:	50 mL	50 mL	100 mL
A0J150598 Water	L8K1C Total		Due Date: 10/29/10 SDG:		50 mL	100 mL
A0J150598 Water	L8K1Q Total		Due Date: 10/29/10 SDG:		50 mL	100 mL
A0J150611 Water	L8K33 Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K35 Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K36 Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K37 Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K38 Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K4A Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K4A Total		Due Date: 10/29/10 SDG: 0J15611	50 mL	50 mL	100 mL
A0J150611 Water	L8K4D Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K4E Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K4G Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		

Batch Number: **0291016**

TestAmerica Laboratories, Inc.
Metals Prep Log/ Batch Summary

Prepared By: Lisa McGall (e-Signature)

Prep Date: 10/18/10 08:00 Prep End Date: 10/18/10 16:00
Due Date: 10/22/10

Lot	Work Order			ICP Weight	ICPMS Weight	Hg Weight
A0J150611 Water	L8K4H Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K4J Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K4K Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K4L Dissolved		Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K4L Dissolved	S	Due Date: 10/29/10 SDG: 0J15611	50 mL		
A0J150611 Water	L8K4L Dissolved	D	Due Date: 10/29/10 SDG: 0J15611	50 mL		

LEVEL 2

BLANK AND CHECK STANDARD ON BATCH	X
MS/MSD AND PDS ON BATCH	X
CORRECT SPIKES ADDED	X
SPIKING SOLUTIONS DOCUMENTED ON BATCH LOG	X

Comments:

B-BLANK; C-CHECK SAMPLE; L-CHECK SAMPLE DUPLICATE; P-SERIAL DILUTION; S-MATRIX SPIKE SAMPLE; D-MATRIX SPIKE DUPLICATE SAMPLE

Unless otherwise noted, final volumes are as follows: Soils - 100 mL. Waters - ICP and ICPMS - 50 mL, Hg - 100 mL.

Low Level Hg: final volumes are 40 mL.

ICP ELEMENTS WITHIN THE BATCH:

AG AL AS BA BE CA CD CO CR CU FE KX MG MN NA NI PB SB SE VX ZN

ICPMS ELEMENTS WITHIN THE BATCH:

AG AS BA BE CD CO CR CU FE MN MO NI PB SB SE SN TL VX ZN

Matrix Spike Information:

L8K4L	ICP-1

Matrix Spike Information:

L8HWM	ICP-1	ICP-2A	Hg	Ag	ICPMS-1	ICPMS-2

Check Sample Information:

L8L7H	ICP-1	ICP-2A	Hg	Ag	ICPMS-1	ICPMS-2

Prep Method(s): SW846 3005A, SW846 7470A

Batch Number: 0292022

TestAmerica Laboratories, Inc.
Metals Prep Log/ Batch Summary

Prepared By: Lisa McGall (e-Signature)

Prep Date: 10/19/10 08:00 Prep End Date: 10/19/10 16:00
Due Date: 10/28/10

Lot	Work Order			ICP Weight	ICPMS Weight	Hg Weight
A0J190000 Solid	L8NTR	B	Due Date: SDG:	1.00 g	1.00 g	0.60 g
A0J190000 Solid	L8NTR	C	Due Date: SDG:	1.00 g	1.00 g	0.60 g
A0J140582 Solid	L8HCD Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J140582 Solid	L8HCD Total	S	Due Date: 10/28/10 SDG:			0.60 g
A0J140582 Solid	L8HCD Total	D	Due Date: 10/28/10 SDG:			0.60 g
A0J140582 Solid	L8HCV Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J140582 Solid	L8HC0 Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J140582 Solid	L8HC3 Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J140582 Solid	L8HC8 Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J140582 Solid	L8HDA Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J140582 Solid	L8HDE Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J140582 Solid	L8HDF Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J140582 Solid	L8HDG Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J140582 Solid	L8HDH Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J140582 Solid	L8HDJ Total		Due Date: 10/28/10 SDG:		1.00 g	0.60 g
A0J150461 Solid	L8JDH Total		Due Date: 10/29/10 SDG:	1.00 g		
A0J150463 Solid	L8JMN Total		Due Date: 10/29/10 SDG:	1.00 g	1.00 g	
A0J150463 Solid	L8JMN Total	S	Due Date: 10/29/10 SDG:	1.00 g	1.00 g	
A0J150463 Solid	L8JMN Total	D	Due Date: 10/29/10 SDG:	1.00 g	1.00 g	
A0J150463 Solid	L8JMR Total		Due Date: 10/29/10 SDG:	1.00 g	1.00 g	
A0J150463 Solid	L8JMV Total		Due Date: 10/29/10 SDG:	1.00 g	1.00 g	
A0J150463 Solid	L8JM0 Total		Due Date: 10/29/10 SDG:	1.00 g	1.00 g	

Batch Number: **0292022**

TestAmerica Laboratories, Inc.
Metals Prep Log/ Batch Summary

Prepared By: Lisa McGall (e-Signature)

Prep Date: 10/19/10 08:00 Prep End Date: 10/19/10 16:00
Due Date: 10/28/10

Lot	Work Order		ICP Weight	ICPMS Weight	Hg Weight
A0J150598 Solid	L8K1R Total	Due Date: 10/29/10 SDG:		1.00 g	0.60 g
A0J150612 Solid	L8K4M Total	Due Date: 10/29/10 SDG:		1.00 g	0.60 g
A0J150612 Solid	L8K4Q Total	Due Date: 10/29/10 SDG:		1.00 g	0.60 g

LEVEL 2

BLANK AND CHECK STANDARD ON BATCH	X
MS/MSD AND PDS ON BATCH	X
CORRECT SPIKES ADDED	X
SPIKING SOLUTIONS DOCUMENTED ON BATCH LOG	X

Comments:

B-BLANK; C-CHECK SAMPLE; L-CHECK SAMPLE DUPLICATE; P-SERIAL DILUTION; S-MATRIX SPIKE SAMPLE; D-MATRIX SPIKE DUPLICATE SAMPLE

Unless otherwise noted, final volumes are as follows: Soils - 100 mL. Waters - ICP and ICPMS - 50 mL, Hg - 100 mL.

Low Level Hg: final volumes are 40 mL.

ICP ELEMENTS WITHIN THE BATCH:

AG AS BA BE CD CR CU NI PB SE VX ZN

ICPMS ELEMENTS WITHIN THE BATCH:

AG AS BA BE CD CO CR CU FE MN MO NI PB SB SE TL VX ZN

Matrix Spike Information:

L8JMN ~~ICP-1~~ ~~Ag~~ ICPMS-1 ICPMS-2

Matrix Spike Information:

L8HCD Hg

10/19/10 KW

Check Sample Information:

L8NTR ~~ICP-1~~ Hg ~~Ag~~ ICPMS-1 ICPMS-2

Prep Method(s): SW846 3050B, SW846 7471A

Icpms used for ICP due to special requirement

: Instrument Upload Run Log - Page 1 :
: Started Tue Oct 26 05:04:03 2010 by TOTHR :
: Data File: UPL$CAN_DATA_ROOT:<LHG>HG11025B.PRN;1 :

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
1	STD1REP1	1	25-OCT-2010	12:54:34			H1
2	STD2REP1	1	25-OCT-2010	12:55:40			H1
3	STD3REP1	1	25-OCT-2010	12:57:37			H1
4	STD4REP1	1	25-OCT-2010	12:58:44			H1
5	STD5REP1	1	25-OCT-2010	12:59:51			H1
6	STD6REP1	1	25-OCT-2010	13:01:01			H1
7	CK5ICV	1	25-OCT-2010	13:03:14			H1
8	CK4ICB	1	25-OCT-2010	13:04:20			H1
9	CRA/L8TL0	1	25-OCT-2010	13:05:36	0299039	A0J210404	H1
10	CK2CCV	1	25-OCT-2010	13:06:45			H1
11	CK1CCB	1	25-OCT-2010	13:08:22			H1
12	L8QN3B	1	25-OCT-2010	13:09:40	0293031	A0J200000	H1
13	L8QN3C	1	25-OCT-2010	13:10:44	0293031	A0J200000	H1
14	L7VQF	1	25-OCT-2010	13:12:00	0293031	C0J010558	H1
15	L7VQFS	1	25-OCT-2010	13:13:20	0293031	C0J010558	H1
16	L7VQFD	1	25-OCT-2010	13:14:27	0293031	C0J010558	H1
17	L7VPC	1	25-OCT-2010	13:15:32	0293031	C0J010553	H1
18	L7VPCS	1	25-OCT-2010	13:16:39	0293031	C0J010553	H1
19	L7VPCD	1	25-OCT-2010	13:17:46	0293031	C0J010553	H1
20	L7VQP	1	25-OCT-2010	13:19:12	0293031	C0J010558	H1
21	L7VPM	1	25-OCT-2010	13:20:19	0293031	C0J010553	H1
22	CK2CCV	1	25-OCT-2010	13:21:56			H1
23	CK1CCB	1	25-OCT-2010	13:23:01			H1
24	L74DD	1	25-OCT-2010	13:24:07	0293031	C0J010558	H1
25	L7VPE	1	25-OCT-2010	13:25:22	0293031	C0J010553	H1
26	L7VQW	1	25-OCT-2010	13:26:26	0293031	C0J010558	H1
27	L7VQV	1	25-OCT-2010	13:28:02	0293031	C0J010558	H1
28	L7VP3	1	25-OCT-2010	13:29:11	0293031	C0J010558	H1
29	L7VQN	1	25-OCT-2010	13:30:17	0293031	C0J010558	H1
30	L74DC	1	25-OCT-2010	13:31:22	0293031	C0J010553	H1
31	L7VN9	1	25-OCT-2010	13:32:27	0293031	C0J010553	H1
32	L7VPQ	1	25-OCT-2010	13:33:32	0293031	C0J010553	H1
33	L7VPP	1	25-OCT-2010	13:34:40	0293031	C0J010553	H1
34	CK2CCV	1	25-OCT-2010	13:35:51			H1
35	CK1CCB	1	25-OCT-2010	13:36:58			H1
36	L7VPG	1	25-OCT-2010	13:38:13	0293031	C0J010553	H1
37	L7VQX	1	25-OCT-2010	13:39:25	0293031	C0J010558	H1
38	L7VQJ	1	25-OCT-2010	13:40:39	0293031	C0J010558	H1
39	L7VPJ	1	25-OCT-2010	13:41:49	0293031	C0J010553	H1
40	L8QN1B	1	25-OCT-2010	13:43:13	0293030	A0J200000	H1
41	L8QN1C	1	25-OCT-2010	13:44:28	0293030	A0J200000	H1
42	L7VNF	1	25-OCT-2010	13:45:38	0293030	C0J010552	H1
43	L7VNFS	1	25-OCT-2010	13:46:45	0293030	C0J010552	H1
44	L7VNFD	1	25-OCT-2010	13:48:23	0293030	C0J010552	H1

(continued)

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
45	L7VQ7	1	25-OCT-2010	13:49:28	0293030	C0J010559	H1
46	CK2CCV	1	25-OCT-2010	13:50:38			H1
47	CK1CCB	1	25-OCT-2010	13:51:46			H1
48	L7VQ7S	1	25-OCT-2010	13:53:01	0293030	C0J010559	H1
49	L7VQ7D	1	25-OCT-2010	13:54:08	0293030	C0J010559	H1
50	L74DA	1	25-OCT-2010	13:55:17	0293030	C0J010552	H1
51	L7VNR	1	25-OCT-2010	13:56:24	0293030	C0J010552	H1
52	L7VN0	1	25-OCT-2010	13:57:35	0293030	C0J010552	H1
53	L7VQ9	1	25-OCT-2010	13:58:45	0293030	C0J010559	H1
54	L7VNM	1	25-OCT-2010	14:00:05	0293030	C0J010552	H1
55	L7VM9	1	25-OCT-2010	14:01:12	0293030	C0J010552	H1
56	L7VNH	1	25-OCT-2010	14:02:31	0293030	C0J010552	H1
57	L74DF	1	25-OCT-2010	14:03:39	0293030	C0J010559	H1
58	CK2CCV	1	25-OCT-2010	14:05:06			H1
59	CK1CCB	1	25-OCT-2010	14:06:14			H1
60	L7VRL	1	25-OCT-2010	14:07:29	0293030	C0J010559	H1
61	L7VRT	1	25-OCT-2010	14:08:46	0293030	C0J010559	H1
62	L7VRD	1	25-OCT-2010	14:10:03	0293030	C0J010559	H1
63	L7VRG	1	25-OCT-2010	14:11:14	0293030	C0J010559	H1
64	L7VN2	1	25-OCT-2010	14:12:19	0293030	C0J010552	H1
65	L7VRP	1	25-OCT-2010	14:13:25	0293030	C0J010559	H1
66	L7VNV	1	25-OCT-2010	14:14:32	0293030	C0J010552	H1
67	L7VQ5	1	25-OCT-2010	14:15:49	0293030	C0J010559	H1
68	L8L77B	1	25-OCT-2010	14:17:05	0291027	A0J180000	H1
69	L8L77C	1	25-OCT-2010	14:18:11	0291027	A0J180000	H1
70	CK2CCV	1	25-OCT-2010	14:19:16			H1
71	CK1CCB	1	25-OCT-2010	14:20:21			H1
72	L8G34	1	25-OCT-2010	14:21:25	0291027	A0J140555	H1
73	L8G3MX	1	25-OCT-2010	14:22:44	0291027	A0J140555	H1
74	L8G3MS	1	25-OCT-2010	14:24:06	0291027	A0J140555	H1
75	L8G3Q	1	25-OCT-2010	14:25:16	0291027	A0J140555	H1
76	L8G3M	1	25-OCT-2010	14:26:43	0291027	A0J140555	H1
77	L8G3X	1	25-OCT-2010	14:27:52	0291027	A0J140555	H1
78	L8G3P	1	25-OCT-2010	14:28:58	0291027	A0J140555	H1
79	L8G3R	1	25-OCT-2010	14:30:14	0291027	A0J140555	H1
80	L8G31	1	25-OCT-2010	14:31:20	0291027	A0J140555	H1
81	L8G35	1	25-OCT-2010	14:32:26	0291027	A0J140555	H1
82	CK2CCV	1	25-OCT-2010	14:33:34			H1
83	CK1CCB	1	25-OCT-2010	14:34:39			H1
84	L8G4D	1	25-OCT-2010	14:36:14	0291027	A0J140555	H1
85	L8G4A	1	25-OCT-2010	14:37:32	0291027	A0J140555	H1
86	L8G3T	1	25-OCT-2010	14:38:51	0291027	A0J140555	H1
87	L8G38	1	25-OCT-2010	14:40:08	0291027	A0J140555	H1
88	L8G37	1	25-OCT-2010	14:41:57	0291027	A0J140555	H1

(continued)

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
89	L8G36	1	25-OCT-2010	14:43:14	0291027	A0J140555	H1
90	L8G3W	1	25-OCT-2010	14:44:31	0291027	A0J140555	H1
91	L8G30	1	25-OCT-2010	14:45:38	0291027	A0J140555	H1
92	L8G33	1	25-OCT-2010	14:46:44	0291027	A0J140555	H1
93	L8G3V	1	25-OCT-2010	14:48:04	0291027	A0J140555	H1
94	CK2CCV	1	25-OCT-2010	14:49:16			H1
95	CK1CCB	1	25-OCT-2010	14:50:30			H1
96	L8G4V	1	25-OCT-2010	14:51:35	0291027	A0J140555	H1
97	L8G4E	1	25-OCT-2010	14:53:02	0291027	A0J140555	H1
98	L8NTRB	1	25-OCT-2010	14:54:14	0292022	A0J190000	H1
99	L8NTRC	1	25-OCT-2010	14:55:25	0292022	A0J190000	H1
100	L8HCD	1	25-OCT-2010	14:56:36	0292022	A0J140582	H1
101	L8HCDS	1	25-OCT-2010	14:57:44	0292022	A0J140582	H1
102	L8HCDD	1	25-OCT-2010	14:59:01	0292022	A0J140582	H1
103	L8HC8	1	25-OCT-2010	15:00:07	0292022	A0J140582	H1
104	L8HC3	1	25-OCT-2010	15:01:15	0292022	A0J140582	H1
105	L8K4Q	1	25-OCT-2010	15:02:43	0292022	A0J150612	H1
106	CK2CCV	1	25-OCT-2010	15:03:54			H1
107	CK1CCB	1	25-OCT-2010	15:05:09			H1
108	L8K4M	1	25-OCT-2010	15:06:15	0292022	A0J150612	H1
109	L8HDH	1	25-OCT-2010	15:07:25	0292022	A0J140582	H1
110	L8HDG	1	25-OCT-2010	15:08:31	0292022	A0J140582	H1
111	L8HCV	1	25-OCT-2010	15:09:40	0292022	A0J140582	H1
112	L8HDE	1	25-OCT-2010	15:11:37	0292022	A0J140582	H1
113	L8HDF	1	25-OCT-2010	15:12:45	0292022	A0J140582	H1
114	L8K1R MRC-SED-1	1	25-OCT-2010	15:13:54	0292022	A0J150598	H1
115	L8HDJ	1	25-OCT-2010	15:15:14	0292022	A0J140582	H1
116	CK2CCV	1	25-OCT-2010	15:16:21			H1
117	CK1CCB	1	25-OCT-2010	15:17:26			H1
118	CK2CCV	1	25-OCT-2010	16:46:31			H1
119	CK1CCB	1	25-OCT-2010	16:47:36			H1
120	L8WW1B	1	25-OCT-2010	16:48:53	0295025	A0J220000	H1
121	L8WW1C	1	25-OCT-2010	16:50:02	0295025	A0J220000	H1
122	L8WMX	1	25-OCT-2010	16:51:12	0295025	A0J210613	H1
123	L8WMXS	1	25-OCT-2010	16:52:17	0295025	A0J210613	H1
124	L8WMXD	1	25-OCT-2010	16:53:22	0295025	A0J210613	H1
125	L8WN1	1	25-OCT-2010	16:55:03	0295025	A0J210613	H1
126	L8V6P	1	25-OCT-2010	16:56:13	0295025	A0J210560	H1
127	L8THAB	1	25-OCT-2010	16:57:18	0294023	A0J210000	H1
128	L8THAC	1	25-OCT-2010	16:58:25	0294023	A0J210000	H1
129	L8NEA	1	25-OCT-2010	16:59:31	0294023	A0J180483	H1
130	CK2CCV	1	25-OCT-2010	17:00:48			H1
131	CK1CCB	1	25-OCT-2010	17:02:02			H1
132	L8NEAS	1	25-OCT-2010	17:03:19	0294023	A0J180483	H1

(continued)

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
133	L8NEAD	1	25-OCT-2010	17:04:26	0294023	A0J180483	H1
134	L8NEQ	1	25-OCT-2010	17:05:33	0294023	A0J180483	H1
135	L8NEP	1	25-OCT-2010	17:06:42	0294023	A0J180483	H1
136	L8M08	1	25-OCT-2010	17:07:57	0294023	0J18456	H1
137	L8NER	1	25-OCT-2010	17:09:17	0294023	A0J180483	H1
138	L8NEE	1	25-OCT-2010	17:10:23	0294023	A0J180483	H1
139	L8M07	1	25-OCT-2010	17:11:28	0294023	0J18456	H1
140	L8NEK	1	25-OCT-2010	17:12:45	0294023	A0J180483	H1
141	L8NEM	1	25-OCT-2010	17:13:56	0294023	A0J180483	H1
142	CK2CCV	1	25-OCT-2010	17:15:05			H1
143	CK1CCB	1	25-OCT-2010	17:16:19			H1
144	L8NEG	1	25-OCT-2010	17:17:34	0294023	A0J180483	H1
145	L8NEW	1	25-OCT-2010	17:18:45	0294023	A0J180483	H1
146	L8NEV	1	25-OCT-2010	17:19:50	0294023	A0J180483	H1
147	L8NEJ	1	25-OCT-2010	17:21:05	0294023	A0J180483	H1
148	L8M02	1	25-OCT-2010	17:22:21	0294023	0J18456	H1
149	L8NEX	1	25-OCT-2010	17:23:26	0294023	A0J180483	H1
150	L8NET	1	25-OCT-2010	17:24:32	0294023	A0J180483	H1
151	L8NEF	1	25-OCT-2010	17:25:43	0294023	A0J180483	H1
152	L8NEH	1	25-OCT-2010	17:26:50	0294023	A0J180483	H1
153	L8M1N	1	25-OCT-2010	17:27:56	0294023	0J18456	H1
154	CK2CCV	1	25-OCT-2010	17:29:31			H1
155	CK1CCB	1	25-OCT-2010	17:30:46			H1
156	L8FEEB	1	25-OCT-2010	17:32:03	0287023	A0J140000	H1
157	L8FEEC	1	25-OCT-2010	17:33:10	0287023	A0J140000	H1
158	L8CP9	1	25-OCT-2010	17:34:16	0287023	C0J12541	H1
159	L8CP9S	1	25-OCT-2010	17:35:22	0287023	C0J12541	H1
160	L8CP9D	1	25-OCT-2010	17:36:30	0287023	C0J12541	H1
161	L8CQ1	1	25-OCT-2010	17:37:37	0287023	C0J12541	H1
162	L8CQ1S	1	25-OCT-2010	17:38:43	0287023	C0J12541	H1
163	L8CQ1D	1	25-OCT-2010	17:39:49	0287023	C0J12541	H1
164	L8CQR	1	25-OCT-2010	17:40:55	0287023	C0J12541	H1
165	L8CP7	1	25-OCT-2010	17:42:16	0287023	C0J12541	H1
166	CK2CCV	1	25-OCT-2010	17:43:26			H1
167	CK1CCB	1	25-OCT-2010	17:44:31			H1
168	L8CQE	1	25-OCT-2010	17:45:36	0287023	C0J12541	H1
169	L8CQC	1	25-OCT-2010	17:46:46	0287023	C0J12541	H1
170	L8CQD	1	25-OCT-2010	17:47:58	0287023	C0J12541	H1
171	L8CP5	1	25-OCT-2010	17:49:14	0287023	C0J12541	H1
172	L8CQH	1	25-OCT-2010	17:50:20	0287023	C0J12541	H1
173	L8CQP	1	25-OCT-2010	17:51:25	0287023	C0J12541	H1
174	L8CQV	1	25-OCT-2010	17:52:31	0287023	C0J12541	H1
175	L8CQ4	1	25-OCT-2010	17:53:40	0287023	C0J12541	H1
176	L8CPK	1	25-OCT-2010	17:54:48	0287023	C0J12541	H1

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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
177	L8CQT	1	25-OCT-2010	17:55:53	0287023	C0J12541	H1
178	CK2CCV	1	25-OCT-2010	17:57:12			H1
179	CK1CCB	1	25-OCT-2010	17:58:29			H1
180	L8CQL	1	25-OCT-2010	18:00:09	0287023	C0J12541	H1
181	L8CQG	1	25-OCT-2010	18:01:37	0287023	C0J12541	H1
182	L8CQJ	1	25-OCT-2010	18:02:45	0287023	C0J12541	H1
183	L8CQ6	1	25-OCT-2010	18:03:52	0287023	C0J12541	H1
184	L8CQ5	1	25-OCT-2010	18:05:00	0287023	C0J12541	H1
185	L8CQM	1	25-OCT-2010	18:06:16	0287023	C0J12541	H1
186	L8WW3B	1	25-OCT-2010	18:07:23	0295026	A0J220000	H1
187	L8WW3C	1	25-OCT-2010	18:08:31	0295026	A0J220000	H1
188	L8WKK	1	25-OCT-2010	18:09:39	0295026	A0J210601	H1
189	L8WKKS	1	25-OCT-2010	18:10:58	0295026	A0J210601	H1
190	CK2CCV	1	25-OCT-2010	18:12:25			H1
191	CK1CCB	1	25-OCT-2010	18:13:29			H1
192	L8WKKD	1	25-OCT-2010	18:14:34	0295026	A0J210601	H1
193	L8WJ9	1	25-OCT-2010	18:15:50	0295026	A0J210601	H1
194	L8WJ9S	1	25-OCT-2010	18:16:58	0295026	A0J210601	H1
195	L8WJ9D	1	25-OCT-2010	18:18:06	0295026	A0J210601	H1
196	L8WMG	1	25-OCT-2010	18:19:13	0295026	A0J210614	H1
197	L8WMP	1	25-OCT-2010	18:20:44	0295026	A0J210614	H1
198	L8WKE	1	25-OCT-2010	18:21:55	0295026	A0J210601	H1
199	L8WKT	1	25-OCT-2010	18:23:06	0295026	A0J210601	H1
200	L8WKP	1	25-OCT-2010	18:24:23	0295026	A0J210601	H1
201	L8WMH	1	25-OCT-2010	18:25:39	0295026	A0J210614	H1
202	CK2CCV	1	25-OCT-2010	18:26:45			H1
203	CK1CCB	1	25-OCT-2010	18:27:50			H1
204	L8WMD	1	25-OCT-2010	18:29:06	0295026	A0J210614	H1
205	L8WJ7	1	25-OCT-2010	18:30:12	0295026	A0J210601	H1
206	L8WKD	1	25-OCT-2010	18:31:18	0295026	A0J210601	H1
207	L8WMK	1	25-OCT-2010	18:32:47	0295026	A0J210614	H1
208	L8WKQ	1	25-OCT-2010	18:34:37	0295026	A0J210601	H1
209	L8WMC	1	25-OCT-2010	18:35:44	0295026	A0J210614	H1
210	L8WKC	1	25-OCT-2010	18:36:53	0295026	A0J210601	H1
211	L8WKR	1	25-OCT-2010	18:38:00	0295026	A0J210601	H1
212	L8WKN	1	25-OCT-2010	18:39:19	0295026	A0J210601	H1
213	L8WKA	1	25-OCT-2010	18:40:26	0295026	A0J210601	H1
214	CK2CCV	1	25-OCT-2010	18:41:34			H1
215	CK1CCB	1	25-OCT-2010	18:42:39			H1
216	L8WKG	1	25-OCT-2010	18:43:45	0295026	A0J210601	H1
217	L8WM1	1	25-OCT-2010	18:44:54	0295026	A0J210614	H1
218	L8HDA	1	25-OCT-2010	18:46:16	0292022	A0J140582	H1
219	L8HC0	1	25-OCT-2010	18:47:22	0292022	A0J140582	H1
220	L7VNR	2	25-OCT-2010	18:48:29	0293030	C0J010552	H1

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:       Instrument Upload                                  Run Log - Page  6 :
:       Started Tue Oct 26 04:54:22 2010 by TOTHR                             :
:       Data File: UPL$CAN_DATA_ROOT:<LHG>HG11025B.PRN;1                      :
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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
221	L7VN2	5	25-OCT-2010	18:49:58	0293030	C0J010552	H1
222	CK2CCV	1	25-OCT-2010	18:51:06			H1
223	CK1CCB	1	25-OCT-2010	18:52:11			H1

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:       Instrument Upload                                    Run Log - Page  1 :
:       Started Tue Oct 19 07:04:27 2010 by TOTHR                              :
:       Data File: UPL$CAN_DATA_ROOT:<LHG>HG41018A.PRN;1                       :
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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
1			19-OCT-2010				H4
2	STD01REP1	1	18-OCT-2010	10:57:36			H4
3	STD02REP1	1	18-OCT-2010	10:58:59			H4
4	STD03REP1	1	18-OCT-2010	11:00:26			H4
5	STD04REP1	1	18-OCT-2010	11:01:51			H4
6	STD05REP1	1	18-OCT-2010	11:03:16			H4
7	STD06REP1	1	18-OCT-2010	11:04:56			H4
8	CK2ICV	1	18-OCT-2010	11:06:41			H4
9	CK3ICB	1	18-OCT-2010	11:08:25			H4
10	CK4CRA\MRL	1	18-OCT-2010	11:10:00			H4
11	CK4CRA\MRL	1	18-OCT-2010	11:13:58			H4
12	CK6CCV	1	18-OCT-2010	11:15:42			H4
13	CK5CCB	1	18-OCT-2010	11:17:18			H4
14	L8C7KBT	1	18-OCT-2010	11:18:43			H4
15	L8HP4BT	1	18-OCT-2010	11:20:37			H4
16	L8HP4CT	1	18-OCT-2010	11:22:44			H4
17	L79E5T	1	18-OCT-2010	11:24:38			H4
18	L79E5TS	1	18-OCT-2010	11:26:05			H4
19	L79E5TD	1	18-OCT-2010	11:27:38			H4
20	L79FLT	1	18-OCT-2010	11:29:42			H4
21	L79FQT	1	18-OCT-2010	11:31:10			H4
22	L79FPT	1	18-OCT-2010	11:34:15			H4
23	L79FMT	1	18-OCT-2010	11:35:51			H4
24	CK6CCV	1	18-OCT-2010	11:37:14			H4
25	CK5CCB	1	18-OCT-2010	11:38:49			H4
26	L79FRT	1	18-OCT-2010	11:40:13			H4
27	L79E8T	1	18-OCT-2010	11:41:42			H4
28	L79FTT	1	18-OCT-2010	11:43:08			H4
29	L79FAT	1	18-OCT-2010	11:44:46			H4
30	L79FGT	1	18-OCT-2010	11:46:41			H4
31	L79FFT	1	18-OCT-2010	11:48:29			H4
32	L79FDT	1	18-OCT-2010	11:49:52			H4
33	L79FKT	1	18-OCT-2010	11:51:20			H4
34	L8C7EBT	1	18-OCT-2010	11:52:58			H4
35	L8HP2BT	1	18-OCT-2010	11:54:23			H4
36	CK6CCV	1	18-OCT-2010	11:55:47			H4
37	CK5CCB	1	18-OCT-2010	11:57:22			H4
38	L8HP2CT	1	18-OCT-2010	11:58:45			H4
39	L79FCT	1	18-OCT-2010	12:00:22			H4
40	L79FCTS	1	18-OCT-2010	12:01:48			H4
41	L79FCTD	1	18-OCT-2010	12:03:33			H4
42	L79FJT	1	18-OCT-2010	12:05:29			H4
43	L79FHT	1	18-OCT-2010	12:07:26			H4
44	CK6CCV	1	18-OCT-2010	12:09:00			H4

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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
45	CK5CCB	1	18-OCT-2010	12:10:43			H4
46	CK6CCV	1	18-OCT-2010	12:16:28			H4
47	CK5CCB	1	18-OCT-2010	12:18:02			H4
48	L79FCTS	1	18-OCT-2010	12:20:05			H4
49	L79FCTD	1	18-OCT-2010	12:21:38			H4
50	CK6CCV	1	18-OCT-2010	12:23:13			H4
51	CK5CCB	1	18-OCT-2010	12:24:48			H4
52	CK6CCV	1	18-OCT-2010	12:28:52			H4
53	CK5CCB	1	18-OCT-2010	12:30:19			H4
54	L78X4B	1	18-OCT-2010	12:32:17	0284021	A0J110000	H4
55	L78X4C	1	18-OCT-2010	12:33:45	0284021	A0J110000	H4
56	L77DK	1	18-OCT-2010	12:35:15	0284021	0J08577	H4
57	L77DKS	1	18-OCT-2010	12:36:39	0284021	0J08577	H4
58	L77DKD	1	18-OCT-2010	12:38:08	0284021	0J08577	H4
59	L77EJ	1	18-OCT-2010	12:39:35	0284021	0J08577	H4
60	L77CA	1	18-OCT-2010	12:41:00	0284021	0J08577	H4
61	L77EF	1	18-OCT-2010	12:42:29	0284021	0J08577	H4
62	L78KV	1	18-OCT-2010	12:44:12	0284021	A0J090467	H4
63	L77CM	1	18-OCT-2010	12:45:37	0284021	0J08577	H4
64	CK6CCV	1	18-OCT-2010	12:47:11			H4
65	CK5CCB	1	18-OCT-2010	12:50:04			H4
66	L77CK	1	18-OCT-2010	12:51:42	0284021	0J08577	H4
67	L77D1	1	18-OCT-2010	12:53:08	0284021	0J08577	H4
68	L77C3	1	18-OCT-2010	12:54:32	0284021	0J08577	H4
69	L77DX	1	18-OCT-2010	12:56:36	0284021	0J08577	H4
70	L77CW	1	18-OCT-2010	12:58:27	0284021	0J08577	H4
71	L796CB	1	18-OCT-2010	12:59:51	0285012	A0J120000	H4
72	L796CC	1	18-OCT-2010	13:01:26	0285012	A0J120000	H4
73	L786G	1	18-OCT-2010	13:03:07	0285012	A0J110407	H4
74	L786GS	1	18-OCT-2010	13:04:34	0285012	A0J110407	H4
75	L786GD	1	18-OCT-2010	13:06:01	0285012	A0J110407	H4
76	CK6CCV	1	18-OCT-2010	13:07:30			H4
77	CK5CCB	1	18-OCT-2010	13:09:13			H4
78	L786GF	1	18-OCT-2010	13:10:37	0285012	A0J110407	H4
79	L78PR	1	18-OCT-2010	13:12:06	0285012	C0J09473	H4
80	L784X	1	18-OCT-2010	13:13:41	0285012	A0J110405	H4
81	L8HQDB	1	18-OCT-2010	13:15:59	0288018	A0J150000	H4
82	L8HQDC	1	18-OCT-2010	13:17:43	0288018	A0J150000	H4
83	L8FH1	1	18-OCT-2010	13:19:19	0288018	A0J140404	H4
84	L8FH1S	1	18-OCT-2010	13:21:06	0288018	A0J140404	H4
85	L8FH1D	1	18-OCT-2010	13:22:45	0288018	A0J140404	H4
86	L8FV0	1	18-OCT-2010	13:24:13	0288018	A0J140433	H4
87	L8G74	1	18-OCT-2010	13:25:53	0288018	A0J140568	H4
88	CK6CCV	1	18-OCT-2010	13:27:50			H4

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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
89	CK5CCB	1	18-OCT-2010	13:29:15			H4
90	L8FXG	1	18-OCT-2010	13:31:01	0288018	A0J140438	H4
91	L8G8A	1	18-OCT-2010	13:33:32	0288018	A0J140568	H4
92	L8FH7	1	18-OCT-2010	13:35:09	0288018	A0J140404	H4
93	L8FH5	1	18-OCT-2010	13:36:53	0288018	A0J140404	H4
94	L8FH3	1	18-OCT-2010	13:38:22	0288018	A0J140404	H4
95	L8FQ2	1	18-OCT-2010	13:39:58	0288018	A0J140426	H4
96	L8EHN	1	18-OCT-2010	13:41:24	0287011	A0J130509	H4
97	L8FDPB	1	18-OCT-2010	13:43:01	0287013	A0J140000	H4
98	L8FDPC	1	18-OCT-2010	13:44:28	0287013	A0J140000	H4
99	L8C35	1	18-OCT-2010	13:46:03	0287013	A0J130404	H4
100	CK6CCV	1	18-OCT-2010	13:47:28			H4
101	CK5CCB	1	18-OCT-2010	13:49:23			H4
102	L8C35S	1	18-OCT-2010	13:51:18	0287013	A0J130404	H4
103	L8C35D	1	18-OCT-2010	13:53:03	0287013	A0J130404	H4
104	L8C4G	1	18-OCT-2010	13:55:28	0287013	A0J130404	H4
105	L8C4A	1	18-OCT-2010	13:57:16	0287013	A0J130404	H4
106	L8ECM	1	18-OCT-2010	13:58:41	0287013	A0J130502	H4
107	L8C4L	1	18-OCT-2010	14:00:11	0287013	A0J130404	H4
108	CK6CCV	1	18-OCT-2010	14:01:47			H4
109	CK5CCB	1	18-OCT-2010	14:03:15			H4
110	CK6CCV	1	18-OCT-2010	14:13:51			H4
111	CK5CCB	1	18-OCT-2010	14:15:26			H4
112	L786GF	1	18-OCT-2010	14:16:59	0285012	A0J110407	H4
113	L78PR	1	18-OCT-2010	14:18:23	0285012	C0J09473	H4
114	L784X	1	18-OCT-2010	14:20:09	0285012	A0J110405	H4
115	L8HQDB	1	18-OCT-2010	14:22:15	0288018	A0J150000	H4
116	L8HQDC	1	18-OCT-2010	14:24:31	0288018	A0J150000	H4
117	L8FH1	1	18-OCT-2010	14:25:59	0288018	A0J140404	H4
118	L8FH1S	1	18-OCT-2010	14:27:24	0288018	A0J140404	H4
119	L8FH1D	1	18-OCT-2010	14:29:09	0288018	A0J140404	H4
120	L8FV0	1	18-OCT-2010	14:30:36	0288018	A0J140433	H4
121	L8G74	1	18-OCT-2010	14:32:11	0288018	A0J140568	H4
122	CK6CCV	1	18-OCT-2010	14:35:47			H4
123	CK5CCB	1	18-OCT-2010	14:37:23			H4
124	L8FXG	1	18-OCT-2010	14:39:02	0288018	A0J140438	H4
125	L8G8A	1	18-OCT-2010	14:41:08	0288018	A0J140568	H4
126	L8FH7	1	18-OCT-2010	14:42:33	0288018	A0J140404	H4
127	L8FH5	1	18-OCT-2010	14:44:00	0288018	A0J140404	H4
128	L8FH3	1	18-OCT-2010	14:45:45	0288018	A0J140404	H4
129	L8FQ2	1	18-OCT-2010	14:47:11	0288018	A0J140426	H4
130	L8EHN	1	18-OCT-2010	14:48:36	0287011	A0J130509	H4
131	L8FDPB	1	18-OCT-2010	14:50:01	0287013	A0J140000	H4
132	L8FDPC	1	18-OCT-2010	14:51:36	0287013	A0J140000	H4

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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
133	L8C35	1	18-OCT-2010	14:53:11	0287013	A0J130404	H4
134	CK6CCV	1	18-OCT-2010	14:55:08			H4
135	CK5CCB	1	18-OCT-2010	14:56:42			H4
136	L8C35S	1	18-OCT-2010	14:58:11	0287013	A0J130404	H4
137	L8C35D	1	18-OCT-2010	14:59:38	0287013	A0J130404	H4
138	L8C4G	1	18-OCT-2010	15:01:09	0287013	A0J130404	H4
139	L8C4A	1	18-OCT-2010	15:02:54	0287013	A0J130404	H4
140	L8ECM	1	18-OCT-2010	15:04:20	0287013	A0J130502	H4
141	L8C4L	1	18-OCT-2010	15:05:46	0287013	A0J130404	H4
142	CK6CCV	1	18-OCT-2010	15:07:11			H4
143	CK5CCB	1	18-OCT-2010	15:08:44			H4
144	CK6CCV	1	18-OCT-2010	15:15:57			H4
145	CK5CCB	1	18-OCT-2010	15:17:32			H4
146	L8HQFB	1	18-OCT-2010	15:18:58	0288019	A0J150000	H4
147	L8HQFC	1	18-OCT-2010	15:20:23	0288019	A0J150000	H4
148	L8G1MF	1	18-OCT-2010	15:22:00	0288019	A0J140549	H4
149	L8G1MFS	1	18-OCT-2010	15:23:45	0288019	A0J140549	H4
150	L8G1MFD	1	18-OCT-2010	15:25:28	0288019	A0J140549	H4
151	L8G0C	1	18-OCT-2010	15:26:53	0288019	A0J140543	H4
152	L8GNR	1	18-OCT-2010	15:28:22	0288019	A0J140516	H4
153	L8G8H	1	18-OCT-2010	15:29:47	0288019	A0J140570	H4
154	L8GDR	1	18-OCT-2010	15:31:31	0288019	A0J140488	H4
155	L8GNT	1	18-OCT-2010	15:33:01	0288019	A0J140516	H4
156	CK6CCV	1	18-OCT-2010	15:34:25			H4
157	CK5CCB	1	18-OCT-2010	15:35:59			H4
158	CK6CCV	1	18-OCT-2010	15:39:52			H4
159	CK5CCB	1	18-OCT-2010	15:41:38			H4
160	L8GDQ	1	18-OCT-2010	15:44:03	0288019	A0J140488	H4
161	L8G8L	1	18-OCT-2010	15:46:42	0288019	A0J140570	H4
162	L8HGA	1	18-OCT-2010	15:49:30	0288019	A0J140592	H4
163	L8HF7	1	18-OCT-2010	15:51:08	0288019	A0J140592	H4
164	L8G8J	1	18-OCT-2010	15:52:51	0288019	A0J140570	H4
165	L8HFT	1	18-OCT-2010	15:54:55	0288019	A0J140592	H4
166	L8G8K	1	18-OCT-2010	15:56:22	0288019	A0J140570	H4
167	L8GDE	1	18-OCT-2010	15:57:47	0288019	C0J14486	H4
168	L8HF3	1	18-OCT-2010	15:59:51	0288019	A0J140592	H4
169	L8G08F	1	18-OCT-2010	16:01:16	0288019	A0J140549	H4
170	CK6CCV	1	18-OCT-2010	16:03:15			H4
171	CK5CCB	1	18-OCT-2010	16:04:43			H4
172	L8GG5BT	1	18-OCT-2010	16:06:06	0291010	A0J140000	H4
173	L8L66BT	1	18-OCT-2010	16:07:41	0291010	A0J180000	H4
174	CK6CCV	1	18-OCT-2010	16:12:41			H4
175	CK5CCB	1	18-OCT-2010	16:14:24			H4
176	L8GDQ	1	18-OCT-2010	16:15:50	0288019	A0J140488	H4

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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
177	L8G8L	1	18-OCT-2010	16:17:13	0288019	A0J140570	H4
178	L8HGA	1	18-OCT-2010	16:18:59	0288019	A0J140592	H4
179	L8HF7	1	18-OCT-2010	16:20:56	0288019	A0J140592	H4
180	L8G8J	1	18-OCT-2010	16:22:20	0288019	A0J140570	H4
181	L8HFT	1	18-OCT-2010	16:23:58	0288019	A0J140592	H4
182	L8G8K	1	18-OCT-2010	16:25:23	0288019	A0J140570	H4
183	L8GDE	1	18-OCT-2010	16:26:57	0288019	C0J14486	H4
184	L8HF3	1	18-OCT-2010	16:28:52	0288019	A0J140592	H4
185	L8G08F	1	18-OCT-2010	16:30:37	0288019	A0J140549	H4
186	CK6CCV	1	18-OCT-2010	16:32:04			H4
187	CK5CCB	1	18-OCT-2010	16:33:57			H4
188	L8GG5BT	1	18-OCT-2010	16:35:26	0291010	A0J140000	H4
189	L8L66BT	1	18-OCT-2010	16:37:11	0291010	A0J180000	H4
190	L8L66CT	1	18-OCT-2010	16:39:36	0291010	A0J180000	H4
191	L79W7T	1	18-OCT-2010	16:41:19	0291010	A0J110480	H4
192	L79W7TS	1	18-OCT-2010	16:42:43	0291010	A0J110480	H4
193	L79W7TD	1	18-OCT-2010	16:44:16	0291010	A0J110480	H4
194	L8A6AT	1	18-OCT-2010	16:45:43	0291010	A0J120483	H4
195	L8A59T	1	18-OCT-2010	16:47:22	0291010	A0J120483	H4
196	L8A6CT	1	18-OCT-2010	16:48:48	0291010	A0J120483	H4
197	L8HXTBT	1	18-OCT-2010	16:50:18	0291020	A0J150000	H4
198	CK6CCV	1	18-OCT-2010	16:52:27			H4
199	CK5CCB	1	18-OCT-2010	16:53:53			H4
200	L8L7RBT	1	18-OCT-2010	16:55:17	0291020	A0J180000	H4
201	L8L7RCT	1	18-OCT-2010	16:57:43	0291020	A0J180000	H4
202	L77DMT	1	18-OCT-2010	16:59:13	0291020	A0J080581	H4
203	L77DMTS	1	18-OCT-2010	17:00:38	0291020	A0J080581	H4
204	L77DMTD	1	18-OCT-2010	17:02:24	0291020	A0J080581	H4
205	L767RT	1	18-OCT-2010	17:04:23	0291020	A0J080565	H4
206	L8GJWBT	1	18-OCT-2010	17:05:53	0291024	A0J140000	H4
207	L8L71BT	1	18-OCT-2010	17:07:16	0291024	A0J180000	H4
208	L8L71CT	1	18-OCT-2010	17:09:21	0291024	A0J180000	H4
209	L79W4T	1	18-OCT-2010	17:10:51	0291024	A0J110480	H4
210	CK6CCV✓	1	18-OCT-2010	17:12:17			H4
211	CK5CCB	1	18-OCT-2010	17:13:46			H4
212	L79W4TS	1	18-OCT-2010	17:15:12	0291024	A0J110480	H4
213	L79W4TD	1	18-OCT-2010	17:16:37	0291024	A0J110480	H4
214	L79W6T	1	18-OCT-2010	17:18:04	0291024	A0J110480	H4
215	L79W2T	1	18-OCT-2010	17:19:28	0291024	A0J110480	H4
216	L79WWT	1	18-OCT-2010	17:21:15	0291024	A0J110480	H4
217	L8GHRBT	1	18-OCT-2010	17:22:59	0291021	A0J140000	H4
218	L8L7VBT	1	18-OCT-2010	17:25:03	0291021	A0J180000	H4
219	L8L7VCT	1	18-OCT-2010	17:26:29	0291021	A0J180000	H4
220	L8A4MT	1	18-OCT-2010	17:28:03	0291021	A0J120474	H4

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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
221	L8A4MTS	1	18-OCT-2010	17:29:29	0291021	A0J120474	H4
222	CK6CCV	1	18-OCT-2010	17:30:57			H4
223	CK5CCB	1	18-OCT-2010	17:32:41			H4
224	L8A4MTD	1	18-OCT-2010	17:34:15	0291021	A0J120474	H4
225	L8L7HB	1	18-OCT-2010	17:36:00	0291016	A0J180000	H4
226	L8L7HC	1	18-OCT-2010	17:37:29	0291016	A0J180000	H4
227	L8HWM	1	18-OCT-2010	17:38:59	0291016	A0J150408	H4
228	L8HWMS	1	18-OCT-2010	17:40:59	0291016	A0J150408	H4
229	L8HWMD	1	18-OCT-2010	17:42:27	0291016	A0J150408	H4
230	L8K1C MRC-Sub-1	1	18-OCT-2010	17:43:54	0291016	A0J150598	H4
231	L8K4A	1	18-OCT-2010	17:45:39	0291016	0J15611	H4
232	L8K18	1	18-OCT-2010	17:47:14	0291016	A0J150599	H4
233	L8K1Q MSA-Sub-1	1	18-OCT-2010	17:48:44	0291016	A0J150598	H4
234	CK6CCV	1	18-OCT-2010	17:50:18			H4
235	CK5CCB	1	18-OCT-2010	17:52:11			H4
236	L8K0F	1	18-OCT-2010	17:53:36	0291016	A0J150596	H4
237	L8L7DB	1	18-OCT-2010	17:55:00	0291013	A0J180000	H4
238	L8L7DC	1	18-OCT-2010	17:56:48	0291013	A0J180000	H4
239	L8LNE	1	18-OCT-2010	17:58:24	0291013	A0J160438	H4
240	L8LNES	1	18-OCT-2010	18:00:23	0291013	A0J160438	H4
241	L8LNED	1	18-OCT-2010	18:01:52	0291013	A0J160438	H4
242	L8K24	1	18-OCT-2010	18:03:19	0291013	0J13595	H4
243	L8KAN	1	18-OCT-2010	18:05:19	0291013	A0J150554	H4
244	L8K27	1	18-OCT-2010	18:06:46	0291013	0J13595	H4
245	L8KAF	1	18-OCT-2010	18:08:12	0291013	A0J150554	H4
246	CK6CCV	1	18-OCT-2010	18:09:47			H4
247	CK5CCB	1	18-OCT-2010	18:11:20			H4
248	L8KCN	1	18-OCT-2010	18:13:06	0291013	A0J150557	H4
249	L8KA8	1	18-OCT-2010	18:14:51	0291013	A0J150557	H4
250	L8E3Q	1	18-OCT-2010	18:16:22	0291013	A0J130583	H4
251	L8L7KB	1	18-OCT-2010	18:17:59	0291017	A0J180000	H4
252	L8L7KC	1	18-OCT-2010	18:19:54	0291017	A0J180000	H4
253	L8F82	1	18-OCT-2010	18:21:31	0291017	A0J140471	H4
254	L8F82S	1	18-OCT-2010	18:22:59	0291017	A0J140471	H4
255	L8F82D	1	18-OCT-2010	18:24:27	0291017	A0J140471	H4
256	L8LLD	1	18-OCT-2010	18:25:53	0291017	A0J160430	H4
257	L8F9G	1	18-OCT-2010	18:27:19	0291017	A0J140471	H4
258	CK6CCV	1	18-OCT-2010	18:29:33			H4
259	CK5CCB	1	18-OCT-2010	18:31:00			H4
260	L8F9F	1	18-OCT-2010	18:32:47	0291017	A0J140471	H4
261	L8F9C	1	18-OCT-2010	18:34:47	0291017	A0J140471	H4
262	L8F9E	1	18-OCT-2010	18:36:44	0291017	A0J140471	H4
263	L8F9D	1	18-OCT-2010	18:38:16	0291017	A0J140471	H4
264	L8G74	20	18-OCT-2010	18:39:43	0288018	A0J140568	H4

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:       Instrument Upload                                        Run Log - Page  7 :
:       Started Tue Oct 19 07:04:27 2010 by TOTHR                                  :
:       Data File: UPL$CAN_DATA_ROOT:<LHG>HG41018A.PRN;1                           :
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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
265	CK6CCV	1	18-OCT-2010	18:41:32			H4
266	CK5CCB	1	18-OCT-2010	18:43:27			H4

End of Report

Instrument Upload Run Log - Page 1

Started Wed Oct 20 06:46:37 2010 by MUSSELMN

Data File: UPL$CAN_DATA_ROOT:<REP>I81019A.CSV;1

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
1	STD1	1	19-OCT-2010	09:43:40			I8
2	STD2	1	19-OCT-2010	09:48:20			I8
3	STD3	1	19-OCT-2010	09:55:14			I8
4	STD4	1	19-OCT-2010	10:02:10			I8
5	ICV	1	19-OCT-2010	10:07:13			I8
6	ICB	1	19-OCT-2010	10:14:10			I8
7	CRI	1	19-OCT-2010	10:19:07			I8
8	ICSA	1	19-OCT-2010	10:24:02			I8
9	ICSAB	1	19-OCT-2010	10:28:49			I8
10	CCV	1	19-OCT-2010	10:35:46			I8
11	CCB	1	19-OCT-2010	10:42:40			I8
12	IDL1	1	19-OCT-2010	10:49:02			I8
13	IDL2	1	19-OCT-2010	10:53:59			I8
14	IDL3	1	19-OCT-2010	10:58:45			I8
15	IDL4	1	19-OCT-2010	11:03:38			I8
16	IDL5	1	19-OCT-2010	11:08:20			I8
17	IDL6	1	19-OCT-2010	11:13:09			I8
18	IDL7	1	19-OCT-2010	11:17:51			I8
19	IDL8	1	19-OCT-2010	11:22:37			I8
20	IDL9	1	19-OCT-2010	11:27:25			I8
21	IDL10	1	19-OCT-2010	11:32:09			I8
22	CCV	1	19-OCT-2010	11:36:53			I8
23	CCB	1	19-OCT-2010	11:43:49			I8
24	L8L7PB	1	19-OCT-2010	11:48:43	0291019	A0J180000	I8
25	L8L7PC	1	19-OCT-2010	11:53:31	0291019	A0J180000	I8
26	L8FGM	1	19-OCT-2010	12:00:28	0291019	A0J140402	I8
27	L8FGP	1	19-OCT-2010	12:05:28	0291019	A0J140402	I8
28	L8FGV	1	19-OCT-2010	12:10:13	0291019	A0J140402	I8
29	L8FG0	1	19-OCT-2010	12:15:06	0291019	A0J140402	I8
30	L8FG4	1	19-OCT-2010	12:19:49	0291019	A0J140402	I8
31	L8FG6	1	19-OCT-2010	12:24:35	0291019	A0J140402	I8
32	L8FG8	1	19-OCT-2010	12:29:16	0291019	A0J140402	I8
33	L8FHE	1	19-OCT-2010	12:34:04	0291019	A0J140402	I8
34	CCV	1	19-OCT-2010	12:38:45			I8
35	CCB	1	19-OCT-2010	12:45:41			I8
36	L8FHG	1	19-OCT-2010	12:50:32	0291019	A0J140402	I8
37	L8FHL	1	19-OCT-2010	12:55:29	0291019	A0J140402	I8
38	L8FHM	1	19-OCT-2010	13:00:28	0291019	A0J140402	I8
39	L8FHQ	1	19-OCT-2010	13:05:13	0291019	A0J140402	I8
40	L8FHQL	1	19-OCT-2010	13:09:56			I8
41	L8FHQX	1	19-OCT-2010	13:14:41	0291019	A0J140402	I8
42	L8FHQS	1	19-OCT-2010	13:19:26	0291019	A0J140402	I8
43	L8L7MB	1	19-OCT-2010	13:26:22	0291018	A0J180000	I8
44	L8L7MC	1	19-OCT-2010	13:31:26	0291018	A0J180000	I8

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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
45	L8HT2	1	19-OCT-2010	13:38:25	0291018	A0J150401	I8
46	CCV	1	19-OCT-2010	13:43:24			I8
47	CCB	1	19-OCT-2010	13:50:20			I8
48	L8HT4	1	19-OCT-2010	13:55:32	0291018	A0J150401	I8
49	L8HT7	1	19-OCT-2010	14:00:29	0291018	A0J150401	I8
50	L8HT9	1	19-OCT-2010	14:05:21	0291018	A0J150401	I8
51	L8HVE	1	19-OCT-2010	14:10:06	0291018	A0J150401	I8
52	L8HVG	1	19-OCT-2010	14:14:55	0291018	A0J150401	I8
53	L8HVJ	1	19-OCT-2010	14:19:41	0291018	A0J150401	I8
54	L8HVM	1	19-OCT-2010	14:24:25	0291018	A0J150401	I8
55	L8HVML	1	19-OCT-2010	14:29:17			I8
56	L8HVMX	1	19-OCT-2010	14:33:59	0291018	A0J150401	I8
57	L8HVMS	1	19-OCT-2010	14:38:41	0291018	A0J150401	I8
58	CCV	1	19-OCT-2010	14:45:38			I8
59	CCB	1	19-OCT-2010	14:52:35			I8
60	L8HVQ	1	19-OCT-2010	14:59:32	0291018	A0J150401	I8
61	L8HVR	1	19-OCT-2010	15:04:19	0291018	A0J150401	I8
62	L8K2F	1	19-OCT-2010	15:09:17	0291018	A0J150600	I8
63	L8K2L	1	19-OCT-2010	15:14:07	0291018	A0J150600	I8
64	L8K2M	1	19-OCT-2010	15:18:52	0291018	A0J150600	I8
65	CCV	1	19-OCT-2010	15:23:45			I8
66	CCB	1	19-OCT-2010	15:30:43			I8
67	L8L7KB	1	19-OCT-2010	15:35:42	0291017	A0J180000	I8
68	L8L7KC	1	19-OCT-2010	15:40:48	0291017	A0J180000	I8
69	L8LLD	1	19-OCT-2010	15:47:47	0291017	A0J160430	I8
70	L8LL2	1	19-OCT-2010	15:53:46	0291017	A0J160436	I8
71	L8F8W	1	19-OCT-2010	15:58:45	0291017	A0J140471	I8
72	L8F82	1	19-OCT-2010	16:03:43	0291017	A0J140471	I8
73	L8F82L	1	19-OCT-2010	16:08:26			I8
74	L8F82S	1	19-OCT-2010	16:13:24	0291017	A0J140471	I8
75	L8F82D	1	19-OCT-2010	16:20:22	0291017	A0J140471	I8
76	L8F9A	1	19-OCT-2010	16:27:20	0291017	A0J140471	I8
77	CCV	1	19-OCT-2010	16:34:17			I8
78	CCB	1	19-OCT-2010	16:41:16			I8
79	L8F9C	1	19-OCT-2010	16:48:14	0291017	A0J140471	I8
80	L8F9D	1	19-OCT-2010	16:53:14	0291017	A0J140471	I8
81	L8F9E	1	19-OCT-2010	16:58:13	0291017	A0J140471	I8
82	L8F9F	1	19-OCT-2010	17:03:00	0291017	A0J140471	I8
83	L8F9G	1	19-OCT-2010	17:07:44	0291017	A0J140471	I8
84	L8L7HB	1	19-OCT-2010	17:12:30	0291016	A0J180000	I8
85	L8L7HC	1	19-OCT-2010	17:17:13	0291016	A0J180000	I8
86	L8HWM	1	19-OCT-2010	17:24:11	0291016	A0J150408	I8
87	L8HWMS	1	19-OCT-2010	17:29:14	0291016	A0J150408	I8
88	L8HWMD	1	19-OCT-2010	17:36:12	0291016	A0J150408	I8

(continued)

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
89	CCV	1	19-OCT-2010	17:43:09			I8
90	CCB	1	19-OCT-2010	17:50:07			I8
91	L8K18	1	19-OCT-2010	17:57:06	0291016	A0J150599	I8
92	L8K0F	1	19-OCT-2010	18:02:12	0291016	A0J150596	I8
93	L8K1C MRC-SW-1		19-OCT-2010	18:07:11	0291016	A0J150598	I8
94	L8K1Q MSA-SW-1		19-OCT-2010	18:11:57	0291016	A0J150598	I8
95	L8K4A	1	19-OCT-2010	18:16:44	0291016	0J15611	I8
96	L8K4AL	1	19-OCT-2010	18:21:52			I8
97	L8HQAB	1	19-OCT-2010	18:26:37	0288016	A0J150000	I8
98	L8HQAC	1	19-OCT-2010	18:31:24	0288016	A0J150000	I8
99	L8HAHF	1	19-OCT-2010	18:38:22	0288016	A0J140579	I8
100	L8HCLF	1	19-OCT-2010	18:43:25	0288016	A0J140579	I8
101	CCV	1	19-OCT-2010	18:48:10			I8
102	CCB	1	19-OCT-2010	18:55:08			I8
103	L8HCLFS	1	19-OCT-2010	19:00:16	0288016	A0J140579	I8
104	L8HCLFD	1	19-OCT-2010	19:07:14	0288016	A0J140579	I8
105	L8HCWF	1	19-OCT-2010	19:14:13	0288016	A0J140579	I8
106	L8HC9F	1	19-OCT-2010	19:21:12	0288016	A0J140579	I8
107	L8G54	1	19-OCT-2010	19:26:03	0288016	A0J140562	I8
108	L8G54L	1	19-OCT-2010	19:30:48			I8
109	L8G58	1	19-OCT-2010	19:35:36	0288016	A0J140562	I8
110	L8G59	1	19-OCT-2010	19:40:25	0288016	A0J140562	I8
111	L8G6A	1	19-OCT-2010	19:45:15	0288016	A0J140562	I8
112	L8G6D	1	19-OCT-2010	19:50:00	0288016	A0J140562	I8
113	CCV	1	19-OCT-2010	19:54:45			I8
114	CCB	1	19-OCT-2010	20:01:43			I8
115	L8G6E	1	19-OCT-2010	20:06:45	0288016	A0J140562	I8
116	L8G6F	1	19-OCT-2010	20:11:31	0288016	A0J140562	I8
117	L8G6G	1	19-OCT-2010	20:16:33	0288016	A0J140562	I8
118	L8G6H	1	19-OCT-2010	20:21:26	0288016	A0J140562	I8
119	L8G6J	1	19-OCT-2010	20:26:12	0288016	A0J140562	I8
120	L8G6JS	1	19-OCT-2010	20:30:57	0288016	A0J140562	I8
121	L8G6JD	1	19-OCT-2010	20:37:56	0288016	A0J140562	I8
122	L8HVMA	1	19-OCT-2010	20:44:57	0291018	A0J150401	I8
123	CCV	1	19-OCT-2010	20:50:56			I8
124	CCB	1	19-OCT-2010	20:57:54			I8
125	ICSA	1	19-OCT-2010	21:02:57			I8
126	ICSAB	1	19-OCT-2010	21:07:51			I8
127	CCV	1	19-OCT-2010	21:14:50			I8
128	CCB	1	19-OCT-2010	21:21:49			I8
129	L76D1	5	19-OCT-2010	21:28:48	0286021	0J08469	I8
130	L76D1L	25	19-OCT-2010	21:33:45			I8
131	L76D2	5	19-OCT-2010	21:38:30	0286021	0J08469	I8
132	L76D6	5	19-OCT-2010	21:43:31	0286021	0J08469	I8

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:       Instrument Upload                                    Run Log - Page  1 :
:       Started Thu Oct 21 07:54:07 2010 by MUSSELMN                           :
:       Data File: UPL$CAN_DATA_ROOT:<REP>I81020A.CSV;1                        :
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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
1	STD1	1	20-OCT-2010	13:13:40			I8
2	STD2	1	20-OCT-2010	13:18:24			I8
3	STD3	1	20-OCT-2010	13:25:21			I8
4	STD4	1	20-OCT-2010	13:32:16			I8
5	STD5	1	20-OCT-2010	13:39:13			I8
6	ICV	1	20-OCT-2010	13:46:09			I8
7	ICB	1	20-OCT-2010	13:53:07			I8
8	CRI	1	20-OCT-2010	13:58:14			I8
9	CRI	1	20-OCT-2010	14:04:14			I8
10	ICSA	1	20-OCT-2010	14:09:17			I8
11	ICSAB	1	20-OCT-2010	14:14:02			I8
12	CCV	1	20-OCT-2010	14:20:59			I8
13	CCB	1	20-OCT-2010	14:27:53			I8
14	L8C0EB	1	20-OCT-2010	14:32:51	0286019	A0J130000	I8
15	L8C0EC	5	20-OCT-2010	14:37:36	0286019	A0J130000	I8
16	L7G33	1	20-OCT-2010	14:44:35	0286019	H0I240594	I8
17	L7G37	1	20-OCT-2010	14:51:30	0286019	H0I240594	I8
18	L7G37L	1	20-OCT-2010	14:56:28			I8
19	L7G37S	1	20-OCT-2010	15:01:30	0286019	H0I240594	I8
20	L7G37D	1	20-OCT-2010	15:08:26	0286019	H0I240594	I8
21	L7G39	1	20-OCT-2010	15:15:23	0286019	H0I240594	I8
22	L7G4C	1	20-OCT-2010	15:20:08	0286019	H0I240594	I8
23	L7H5W	1	20-OCT-2010	15:24:54	0286019	H0I260407	I8
24	CCV	1	20-OCT-2010	15:29:40			I8
25	CCB	1	20-OCT-2010	15:36:35			I8
26	L7H5X	1	20-OCT-2010	15:41:31	0286019	H0I260407	I8
27	L744C	1	20-OCT-2010	15:46:37	0286019	H0I260407	I8
28	L8HT4	1	20-OCT-2010	15:51:38	0291018	A0J150401	I8
29	L8HT7	1	20-OCT-2010	15:56:44	0291018	A0J150401	I8
30	L8HT9	1	20-OCT-2010	16:01:30	0291018	A0J150401	I8
31	L8HVE	1	20-OCT-2010	16:06:11	0291018	A0J150401	I8
32	L8HVG	1	20-OCT-2010	16:10:52	0291018	A0J150401	I8
33	L8HVJ	1	20-OCT-2010	16:15:41	0291018	A0J150401	I8
34	L8HVM	1	20-OCT-2010	16:20:28	0291018	A0J150401	I8
35	L8HVML	1	20-OCT-2010	16:25:13			I8
36	CCV	1	20-OCT-2010	16:30:00			I8
37	CCB	1	20-OCT-2010	16:36:56			I8
38	L8HVMX	1	20-OCT-2010	16:41:38	0291018	A0J150401	I8
39	L8HVMS	1	20-OCT-2010	16:46:41	0291018	A0J150401	I8
40	L8HVQ	1	20-OCT-2010	16:53:39	0291018	A0J150401	I8
41	L8HVR	1	20-OCT-2010	16:58:26	0291018	A0J150401	I8
42	L8K2F	1	20-OCT-2010	17:03:08	0291018	A0J150600	I8
43	L8K2L	1	20-OCT-2010	17:07:49	0291018	A0J150600	I8
44	L8K2M	1	20-OCT-2010	17:12:31	0291018	A0J150600	I8

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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
45	L76D6	10	20-OCT-2010	17:17:19	0286021	0J08469	I8
46	CCV	1	20-OCT-2010	17:22:04			I8
47	CCB	1	20-OCT-2010	17:29:00			I8
48	L8NTAB	1	20-OCT-2010	17:33:57	0292014	A0J190000	I8
49	L8NTAC	1	20-OCT-2010	17:38:47	0292014	A0J190000	I8
50	L8JQP	1	20-OCT-2010	17:45:47	0292014	A0J150494	I8
51	L8JQPL	1	20-OCT-2010	17:50:45			I8
52	L8JQT	1	20-OCT-2010	17:55:33	0292014	A0J150494	I8
53	L8JQX	1	20-OCT-2010	18:00:17	0292014	A0J150494	I8
54	L8JQXS	1	20-OCT-2010	18:05:03	0292014	A0J150494	I8
55	L8JQXD	1	20-OCT-2010	18:12:01	0292014	A0J150494	I8
56	L8JQ0	1	20-OCT-2010	18:19:02	0292014	A0J150494	I8
57	L8JQ2	1	20-OCT-2010	18:24:07	0292014	A0J150494	I8
58	CCV	1	20-OCT-2010	18:29:09			I8
59	CCB	1	20-OCT-2010	18:36:06			I8
60	L8JQ4	1	20-OCT-2010	18:41:06	0292014	A0J150494	I8
61	L8JQ6	1	20-OCT-2010	18:45:57	0292014	A0J150494	I8
62	L8MNJ	1	20-OCT-2010	18:50:53	0292014	0J18429	I8
63	L8MNJX	1	20-OCT-2010	18:55:50	0292014	0J18429	I8
64	L8MNJS	1	20-OCT-2010	19:00:37	0292014	0J18429	I8
65	L8MNJF	1	20-OCT-2010	19:07:38	0292014	0J18429	I8
66	L8MNK	1	20-OCT-2010	19:12:40	0292014	0J18429	I8
67	L8MNKF	1	20-OCT-2010	19:17:26	0292014	0J18429	I8
68	L8MNL	1	20-OCT-2010	19:22:22	0292014	0J18429	I8
69	L8MNLF	1	20-OCT-2010	19:27:09	0292014	0J18429	I8
70	CCV	1	20-OCT-2010	19:31:58			I8
71	CCB	1	20-OCT-2010	19:38:54			I8
72	L8M0R	1	20-OCT-2010	19:44:02	0292014	0J18456	I8
73	L8NE0	1	20-OCT-2010	19:48:48	0292014	A0J180483	I8
74	L8NTRB	1	20-OCT-2010	19:53:33	0292022	A0J190000	I8
75	L8NTRC	1	20-OCT-2010	19:58:31	0292022	A0J190000	I8
76	CCV	1	20-OCT-2010	20:05:30			I8
77	CCB	1	20-OCT-2010	20:12:27			I8
78	L8HCD	1	20-OCT-2010	20:17:39	0292022	A0J140582	I8
79	L8HCV	1	20-OCT-2010	20:22:57	0292022	A0J140582	I8
80	L8HC0	1	20-OCT-2010	20:27:56	0292022	A0J140582	I8
81	L8HC3	1	20-OCT-2010	20:32:41	0292022	A0J140582	I8
82	L8HC8	1	20-OCT-2010	20:37:34	0292022	A0J140582	I8
83	L8HDA	1	20-OCT-2010	20:42:33	0292022	A0J140582	I8
84	L8HDE	1	20-OCT-2010	20:47:37	0292022	A0J140582	I8
85	L8HDF	1	20-OCT-2010	20:52:46	0292022	A0J140582	I8
86	L8HDG	1	20-OCT-2010	20:57:43	0292022	A0J140582	I8
87	L8HDH	1	20-OCT-2010	21:02:48	0292022	A0J140582	I8
88	CCV	1	20-OCT-2010	21:07:31			I8

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: Instrument Upload Run Log - Page 3 :
: Started Thu Oct 21 07:54:07 2010 by MUSSELMN :
: Data File: UPL$CAN_DATA_ROOT:<REP>I81020A.CSV;1 :

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
89	CCB	1	20-OCT-2010	21:14:30			I8
90	L8HDJ	1	20-OCT-2010	21:19:42	0292022	A0J140582	I8
91	L8JMN	1	20-OCT-2010	21:24:41	0292022	A0J150463	I8
92	L8JMNS	1	20-OCT-2010	21:29:26	0292022	A0J150463	I8
93	L8JMND	1	20-OCT-2010	21:36:24	0292022	A0J150463	I8
94	L8JMR	1	20-OCT-2010	21:43:24	0292022	A0J150463	I8
95	L8JMV	1	20-OCT-2010	21:48:17	0292022	A0J150463	I8
96	L8JM0	1	20-OCT-2010	21:53:02	0292022	A0J150463	I8
97	L8K1R	1	20-OCT-2010	21:57:56	0292022	A0J150598	I8
98	L8K4M	1	20-OCT-2010	22:02:40	0292022	A0J150612	I8
99	L8K4Q	1	20-OCT-2010	22:07:39	0292022	A0J150612	I8
100	CCV	1	20-OCT-2010	22:12:24			I8
101	CCB	1	20-OCT-2010	22:19:21			I8
102	L8K4QL	1	20-OCT-2010	22:24:14			I8
103	L8NTPB	1	20-OCT-2010	22:28:58	0292020	A0J190000	I8
104	L8NTPC	1	20-OCT-2010	22:33:52	0292020	A0J190000	I8
105	L8K0T	1	20-OCT-2010	22:40:51	0292020	A0J150596	I8
106	L8K0TL	1	20-OCT-2010	22:45:39			I8
107	L8K0TS	1	20-OCT-2010	22:50:48	0292020	A0J150596	I8
108	L8K0TD	1	20-OCT-2010	22:57:47	0292020	A0J150596	I8
109	L8K0W	1	20-OCT-2010	23:04:46	0292020	A0J150596	I8
110	L8K1J	1	20-OCT-2010	23:09:42	0292020	A0J150596	I8
111	CCV	1	20-OCT-2010	23:14:44			I8
112	CCB	1	20-OCT-2010	23:21:42			I8
113	ICSA	1	20-OCT-2010	23:26:50			I8
114	ICSAB	1	20-OCT-2010	23:31:36			I8
115	CCV	1	20-OCT-2010	23:38:34			I8
116	CCB	1	20-OCT-2010	23:45:32			I8
117	L8C0EB	1	20-OCT-2010	23:52:00	0286019	A0J130000	I8
118	L8C0EC	5	20-OCT-2010	23:56:54	0286019	A0J130000	I8
119	L7G33	1	21-OCT-2010	00:03:53	0286019	H0I240594	I8
120	L7G37	1	21-OCT-2010	00:10:52	0286019	H0I240594	I8
121	L7G37L	1	21-OCT-2010	00:15:54			I8
122	L7G37S	1	21-OCT-2010	00:20:49	0286019	H0I240594	I8
123	L7G37D	1	21-OCT-2010	00:27:48	0286019	H0I240594	I8
124	L7G39	1	21-OCT-2010	00:34:49	0286019	H0I240594	I8
125	L7G4C	1	21-OCT-2010	00:39:43	0286019	H0I240594	I8
126	L7H5W	1	21-OCT-2010	00:44:30	0286019	H0I260407	I8
127	CCV	1	21-OCT-2010	00:49:27			I8
128	CCB	1	21-OCT-2010	00:56:25			I8
129	L7H5X	1	21-OCT-2010	01:01:37	0286019	H0I260407	I8
130	L744C	1	21-OCT-2010	01:06:24	0286019	H0I260407	I8
131	CCV	1	21-OCT-2010	01:11:09			I8
132	CCB	1	21-OCT-2010	01:18:09			I8

MRC-SED-1 except Cu

End of Report

: Instrument Upload Run Log - Page 1 :
: Started Fri Oct 22 07:04:03 2010 by MUSSELMN :
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1	STD1	1	21-OCT-2010	10:23:16			I8
2	STD2	1	21-OCT-2010	10:27:58			I8
3	STD3	1	21-OCT-2010	10:34:54			I8
4	STD4	1	21-OCT-2010	10:41:49			I8
5	STD5	1	21-OCT-2010	10:48:44			I8
6	ICV	1	21-OCT-2010	10:55:40			I8
7	ICB	1	21-OCT-2010	11:02:37			I8
8	CRI Rerun WR-10-2210		21-OCT-2010	11:08:30			I8
9	ICSA	1	21-OCT-2010	11:13:19			I8
10	ICSAB	1	21-OCT-2010	11:18:04			I8
11	CCV	1	21-OCT-2010	11:25:01			I8
12	CCB	1	21-OCT-2010	11:31:57			I8
13	CRI	1	21-OCT-2010	11:38:13			I8
14	CCV	1	21-OCT-2010	11:43:08			I8
15	CCB	1	21-OCT-2010	11:50:03			I8
16	L8C0EB	1	21-OCT-2010	11:56:19	0286019	A0J130000	I8
17	L8C0EC	5	21-OCT-2010	12:01:00	0286019	A0J130000	I8
18	L7G39	1	21-OCT-2010	12:07:55	0286019	H0I240594	I8
19	L744C	5	21-OCT-2010	12:14:51	0286019	H0I260407	I8
20	CCV	1	21-OCT-2010	12:19:52			I8
21	CCB	1	21-OCT-2010	12:26:47			I8
22	L8NTAB	1	21-OCT-2010	12:33:40	0292014	A0J190000	I8
23	L8NTAC	1	21-OCT-2010	12:38:21	0292014	A0J190000	I8
24	L8JQX	1	21-OCT-2010	12:45:18	0292014	A0J150494	I8
25	L8JQXS	1	21-OCT-2010	12:51:36	0292014	A0J150494	I8
26	L8JQXD	1	21-OCT-2010	12:58:33	0292014	A0J150494	I8
27	L8JQ0	1	21-OCT-2010	13:05:31	0292014	A0J150494	I8
28	L8MNJ	1	21-OCT-2010	13:12:29	0292014	0J18429	I8
29	L8MNJX	1	21-OCT-2010	13:17:27	0292014	0J18429	I8
30	L8MNJS	1	21-OCT-2010	13:22:13	0292014	0J18429	I8
31	L8MNK	1	21-OCT-2010	13:29:09	0292014	0J18429	I8
32	CCV	1	21-OCT-2010	13:35:24			I8
33	CCB	1	21-OCT-2010	13:42:20			I8
34	L8M0R	1	21-OCT-2010	13:48:38	0292014	0J18456	I8
35	L8NTRB	1	21-OCT-2010	13:53:29	0292022	A0J190000	I8
36	L8NTRC	1	21-OCT-2010	13:58:19	0292022	A0J190000	I8
37	L8HCD	1	21-OCT-2010	14:04:55	0292022	A0J140582	I8
38	L8HCV	1	21-OCT-2010	14:09:49	0292022	A0J140582	I8
39	L8HC0	1	21-OCT-2010	14:14:37	0292022	A0J140582	I8
40	L8HC3	1	21-OCT-2010	14:19:28	0292022	A0J140582	I8
41	L8HC8	1	21-OCT-2010	14:24:27	0292022	A0J140582	I8
42	L8HDA	1	21-OCT-2010	14:29:22	0292022	A0J140582	I8
43	L8HDE	1	21-OCT-2010	14:34:22	0292022	A0J140582	I8
44	CCV	1	21-OCT-2010	14:39:13			I8

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#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
45	CCB	1	21-OCT-2010	14:46:10			I8
46	L8HDF	1	21-OCT-2010	14:51:08	0292022	A0J140582	I8
47	L8HDG	1	21-OCT-2010	14:56:10	0292022	A0J140582	I8
48	L8HDH	1	21-OCT-2010	15:01:10	0292022	A0J140582	I8
49	L8HDJ	1	21-OCT-2010	15:06:03	0292022	A0J140582	I8
50	L8JMN	1	21-OCT-2010	15:11:06	0292022	A0J150463	I8
51	L8JMNS	1	21-OCT-2010	15:15:51	0292022	A0J150463	I8
52	L8JMND	1	21-OCT-2010	15:22:33	0292022	A0J150463	I8
53	L8K1R	1	21-OCT-2010	15:29:24	0292022	A0J150598	I8
54	L8K4M	1	21-OCT-2010	15:34:14	0292022	A0J150612	I8
55	L8K4Q	1	21-OCT-2010	15:39:33	0292022	A0J150612	I8
56	CCV	1	21-OCT-2010	15:44:25			I8
57	CCB	1	21-OCT-2010	15:51:23			I8
58	L8K4QL	1	21-OCT-2010	15:56:09			I8
59	L8QM8B	1	21-OCT-2010	16:01:01	0293018	A0J200000	I8
60	L8QM8C	1	21-OCT-2010	16:05:52	0293018	A0J200000	I8
61	L78KVR	1	21-OCT-2010	16:12:49	0293018	A0J090467	I8
62	L8QNDB	1	21-OCT-2010	16:17:35	0293021	A0J200000	I8
63	L8QNDC	1	21-OCT-2010	16:22:19	0293021	A0J200000	I8
64	L8N41	1	21-OCT-2010	16:29:16	0293021	A0J190412	I8
65	L8N41S	1	21-OCT-2010	16:34:22	0293021	A0J190412	I8
66	L8N41D	1	21-OCT-2010	16:41:20	0293021	A0J190412	I8
67	L8N5C	1	21-OCT-2010	16:48:17	0293021	A0J190412	I8
68	CCV	1	21-OCT-2010	16:53:17			I8
69	CCB	1	21-OCT-2010	17:00:16			I8
70	L8N5D	1	21-OCT-2010	17:05:20	0293021	A0J190412	I8
71	L8N5DL	1	21-OCT-2010	17:10:08			I8
72	L8PNM	1	21-OCT-2010	17:14:56	0293021	A0J190468	I8
73	L8PN7	1	21-OCT-2010	17:19:41	0293021	A0J190468	I8
74	L8PN8	1	21-OCT-2010	17:24:29	0293021	A0J190468	I8
75	L8PN9	1	21-OCT-2010	17:29:13	0293021	A0J190468	I8
76	L8PPD	1	21-OCT-2010	17:33:55	0293021	A0J190468	I8
77	L8PPH	1	21-OCT-2010	17:38:38	0293021	A0J190468	I8
78	L8N8X	1	21-OCT-2010	17:43:21	0293021	0J19430	I8
79	L8N8XF	1	21-OCT-2010	17:48:05	0293021	0J19430	I8
80	CCV	1	21-OCT-2010	17:53:09			I8
81	CCB	1	21-OCT-2010	18:00:06			I8
82	L8N82	1	21-OCT-2010	18:05:01	0293021	0J19430	I8
83	L8N82F	1	21-OCT-2010	18:09:45	0293021	0J19430	I8
84	L8N86	1	21-OCT-2010	18:14:30	0293021	0J19430	I8
85	L8N86F	1	21-OCT-2010	18:19:15	0293021	0J19430	I8
86	L8N88	1	21-OCT-2010	18:24:12	0293021	0J19430	I8
87	L8N88F	1	21-OCT-2010	18:28:58	0293021	0J19430	I8
88	L8N9A	1	21-OCT-2010	18:33:42	0293021	0J19430	I8

(continued)

Sample MRC-SW-1
Cr reported result
6.7 ug/L

L8K1C 10/19/2010 18:07:11 QC Status: PASS (Initial: PASS)

User Pre-dilution: 1.000

Run	Time	6Li	9Be	10B
		ppb	ppb	ppb
X		93.923%	0.024	62.950
%RSD		1.560	6.829	0.723
Run	Time	23Na	25Mg	27Al
		ppb	ppb	ppb
X		27390.000	3081.000	393.200
%RSD		2.191	1.582	0.800
Run	Time	35Cl	39K	43Ca
		ppb	ppb	ppb
X		T 0.000	T 3637.000	20350.000
%RSD		T 0.000	T 1.367	0.957
Run	Time	45Sc	45Sc	47Ti
		ppb	ppb	ppb
X		T 92.031%	90.131%	9.829
%RSD		T 1.197	0.279	14.160
Run	Time	51V	52Cr	53Cr
		ppb	ppb	ppb
X		3.716	6.687	0.005
%RSD		7.671	4.912	12000.000
Run	Time	55Mn	56Fe	59Co
		ppb	ppb	ppb
X		23.620	602.600	0.403
%RSD		0.413	1.182	2.434
Run	Time	60Ni	65Cu	66Zn
		ppb	ppb	ppb
X		2.419	23.210	47.800
%RSD		10.560	2.375	1.096
Run	Time	72Ge	75As	77Ar_Cl
		ppb	ppb	ppb
X		94.872%	2.614	0.130
%RSD		1.556	6.822	23.160
Run	Time	78Se	88Sr	95Mo
		ppb	ppb	ppb
X		0.007	78.860	2.845
%RSD		3957.000	0.967	5.282
Run	Time	105Pd	107Ag	108Mo_O
		ppb	ppb	ppb
X		0.000	0.028	2.911
%RSD		0.000	9.264	212.200
Run	Time	111Cd	115In	118Sn
		ppb	ppb	ppb
X		0.095	96.926%	0.568
%RSD		39.180	3.353	10.120
Run	Time	121Sb	137Ba	159Tb
		ppb	ppb	ppb
X		2.032	28.300	0.000
%RSD		1.752	2.298	0.000
Run	Time	165Ho	182W	205Tl
		ppb	ppb	ppb
X		0.000	0.169	0.192
%RSD		0.000	0.986	2.376
Run	Time	208Pb	209Bi	
		ppb	ppb	
X		4.016	102.482%	
%RSD		1.116	2.030	

Hg MRC-SED-1
rep. result 0.034 mg/kg

$$\left(0.1643\right)\left(\frac{100ml}{.6g}\right)\left(\frac{1}{.80}\right)\left(\frac{1}{1000}\right) = 0.034$$

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: L8HC8 Seq: 102 15:00:07 25 Oct 2010 HG
SOLID
Hg .2823 ppb .0000 % .2823

*** Sample ID: L8HC3 Seq: 103 15:01:15 25 Oct 2010 HG
SOLID
Hg .2753 ppb .0000 % .2753

*** Sample ID: L8K4Q Seq: 104 15:02:43 25 Oct 2010 HG
SOLID
Hg .0106 ppb .0000 % .0106

*** Check Standard: 2 Ck2CCV Seq: 105 15:03:54 25 Oct 2010 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		96.96	4.848	5.000	ppb	.0000 %

*** Check Standard: 1 Ck1CCB Seq: 106 15:05:09 25 Oct 2010 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		.0392	.2000	ppb	.0000 %

*** Sample ID: L8K4M Seq: 107 15:06:15 25 Oct 2010 HG
SOLID
Hg .0924 ppb .0000 % .0924

*** Sample ID: L8HDH Seq: 108 15:07:25 25 Oct 2010 HG
SOLID
Hg .5347 ppb .0000 % .5347

*** Sample ID: L8HDG Seq: 109 15:08:31 25 Oct 2010 HG
SOLID
Hg .3106 ppb .0000 % .3106

*** Sample ID: L8HCV Seq: 110 15:09:40 25 Oct 2010 HG
SOLID
Hg .4452 ppb .0000 % .4452

*** Sample ID: L8HDE Seq: 111 15:11:37 25 Oct 2010 HG
SOLID
Hg .2358 ppb .0000 % .2358

*** Sample ID: L8HDF Seq: 112 15:12:45 25 Oct 2010 HG
SOLID
Hg .2615 ppb .0000 % .2615

*** Sample ID: L8K1R Seq: 113 15:13:54 25 Oct 2010 HG
SOLID
Hg .1643 ppb .0000 % .1643

APPENDIX B—HUMAN-HEATH RISK ASSESSMENT SUPPORTING DOCUMENTATION

APPENDIX B-1—DESCRIPTION OF SAMPLING EVENTS FOR HUMAN-HEALTH RISK ASSESSMENT DATA

Appendix B-1

Description of Sampling Events for HHRA Data

Analytical data evaluated in this HHRA were collected during four different sampling events. The first, in March 2005, included 12 surface sediment (0–6 inches) samples from SD-1 through SD-12. Samples from SD-1 and SD-2 were selected as background samples. The remaining samples were collected along the MRC waterfront, approximately 10-feet from the shoreline. Sediment samples were collected from 30 locations, (SD-13 through SD-42) during a second sampling event in October 2005. Sampling locations were chosen to assess the horizontal extent of contamination identified in the first sampling event. At all 30 sediment-sampling locations, samples of the surface sediments (approximately the top six inches of unconsolidated material) were collected. Additionally, at nine of the 30 locations (SD-13, 14, 16, 19, 27, 28, 29, 40, and 42), samples were collected at depths of approximately one- and two-feet below the sediment/surface-water interface. The sample from location SD-39 was selected as a background sample. The third sampling event, in November 2008, included sediment samples collected from 40 locations (SD-43 through SD-82). At all non-background sampling locations, surface (0-6 inches), 1-foot (10–14 inches), 2-foot (22–26 inches), and 4-foot (46–50 inches) samples were collected. However, the depth intervals were adjusted based on field conditions. Sampling locations were chosen to more completely define the horizontal extent of previously identified contamination, as well as to assess the vertical extent of contamination. Samples from SD-78 through SD-82 were selected as background samples and were generally collected at the first three (i.e., surface, 1-foot, and 2-foot) depth intervals. The fourth sampling event was conducted in August 2010 and included sediment samples from 24 locations (SD-83 through SD-106). Additionally, sediment samples from three locations, Bowley's Quarters, Middle River Downstream, and Marshy Point, were intended to be background samples (see Section 4). Sample MRC-SD-1 was collected as an upgradient stormwater sample (i.e., not part of the site or background data sets). All site samples and background samples from the fourth sampling event were generally collected at four depth intervals: one surface (0-6 inches) and three subsurface (6-18 inches, 18-30 inches, and 30-52 inches). As noted in Section 4, the previous background locations SD-2, SD-39, and SD-79 through SD-82 were incorporated into the site data set instead

of the background data set after further review. Additionally, the Middle River Downstream sample was designated an “offsite” sample rather than a background sample. Data from all four sampling events were incorporated into the MRC HHRA.

APPENDIX B-2—TOXICITY VALUES FOR PRELIMINARY REMEDIATION GOAL CALCULATIONS

Table B-1

Non-Cancer Toxicity Data -- Oral/Dermal
Lockheed Martin, Middle River Complex
Middle River, Maryland

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal[1]	Absorbed RfD for Dermal[2]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds										
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	Chronic	7.0E-02	mg/kg/day	1	7.0E-02	mg/kg/day	Liver	100/1	ATSDR	7/2006
2-Butanone	Chronic	6.0E-01	mg/kg/day	1	6.0E-01	mg/kg/day	Body Weight	1000/1	IRIS	3/8/2011
Acetone	Chronic	9.0E-01	mg/kg/day	1	9.0E-01	mg/kg/day	Liver, Kidney, CNS	1000/1	IRIS	3/8/2011
Carbon Disulfide	Chronic	1.0E-01	mg/kg/day	1	1.0E-01	mg/kg/day	Fetal	100/1	IRIS	3/8/2011
Chlorobenzene	Chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Liver	100/1	IRIS	3/8/2011
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	Chronic	2.0E-03	mg/kg/day	1	2.0E-03	mg/kg/day	Blood	NA	IRIS	3/8/2011
Isopropylbenzene	Chronic	1.0E-01	mg/kg/day	1	1.0E-01	mg/kg/day	Kidney	1000/1	IRIS	3/8/2011
Methyl Tert-Butyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	Chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Body Weight	3000/1	IRIS	3/8/2011
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	Chronic	8.0E-02	mg/kg/day	1	8.0E-02	mg/kg/day	Liver, Kidney	3000/1	IRIS	3/8/2011
Semivolatile Organic Compounds										
Bis(2-ethylhexyl)phthalate	Chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Liver	1000/1	IRIS	3/8/2011
Butyl Benzyl Phthalate	Chronic	2.0E-01	mg/kg/day	1	2.0E-01	mg/kg/day	Liver	1000/1	IRIS	3/8/2011
Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	Chronic	1.0E-03	mg/kg/day	1	1.0E-03	mg/kg/day	NA	NA	PPRTV	6/11/2007
Polycyclic Aromatic Hydrocarbons										
1-Methylnaphthalene	Chronic	7.0E-02	mg/kg/day	1	7.0E-02	mg/kg/day	Lungs	1000/1	ATSDR	9/2005
2-Methylnaphthalene	Chronic	4.0E-03	mg/kg/day	1	4.0E-03	mg/kg/day	Lungs	1000/1	IRIS	3/8/2011
Acenaphthene	Chronic	6.0E-02	mg/kg/day	1	6.0E-02	mg/kg/day	Blood	3000/1	IRIS	3/8/2011
Acenaphthylene[7]	Chronic	6.0E-02	mg/kg/day	1	6.0E-02	mg/kg/day	Blood	3000/1	IRIS	3/8/2011
Anthracene	Chronic	3.0E-01	mg/kg/day	1	3.0E-01	mg/kg/day	NA	3000/1	IRIS	3/8/2011
Benzo(a)pyrene Equivalents	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	Chronic	4.0E-02	mg/kg/day	1	4.0E-02	mg/kg/day	Liver	3000/1	IRIS	3/8/2011
Fluorene	Chronic	4.0E-02	mg/kg/day	1	4.0E-02	mg/kg/day	Blood	3000/1	IRIS	3/8/2011
Naphthalene	Chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Body Weight	3000/1	IRIS	3/8/2011
Phenanthrene[6]	Chronic	3.0E-02	mg/kg/day	1	3.0E-02	mg/kg/day	Kidney	3000/1	IRIS	3/8/2011
Pyrene	Chronic	3.0E-02	mg/kg/day	1	3.0E-02	mg/kg/day	Kidney	3000/1	IRIS	3/8/2011
Polychlorinated Biphenyls										
Aroclor-1248	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	Chronic	2.0E-05	mg/kg/day	1	2.0E-05	mg/kg/day	Immune	300/1	IRIS	3/8/2011
Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table B-1

Non-Cancer Toxicity Data -- Oral/Dermal
Lockheed Martin, Middle River Complex
Middle River, Maryland

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal[1]	Absorbed RfD for Dermal[2]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Metals										
Antimony	Chronic	4.0E-04	mg/kg/day	0.15	6.0E-05	mg/kg/day	Blood	1000/1	IRIS	3/8/2011
Arsenic	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Skin, CVS	3/1	IRIS	3/8/2011
Barium	Chronic	2.0E-01	mg/kg/day	0.07	1.4E-02	mg/kg/day	Kidney	300/1	IRIS	3/8/2011
Beryllium	Chronic	2.0E-03	mg/kg/day	0.007	1.4E-05	mg/kg/day	GS	300/1	IRIS	3/8/2011
Cadmium[3]	Chronic	1.0E-03	mg/kg/day	0.025	2.5E-05	mg/kg/day	Kidney	10/1	IRIS	3/8/2011
Chromium[4]	Chronic	1.5E+00	mg/kg/day	0.013	2.0E-02	mg/kg/day	None Reported	300/3	IRIS	3/8/2011
Cobalt	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Blood	NA	PPRTV	8/25/2008
Copper	Chronic	4.0E-02	mg/kg/day	1	4.0E-02	mg/kg/day	GS	NA	HEAST	7/1997
Dibutyltin	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	NA	NA	PPRTV	3/1/2006
Hexavalent Chromium	Chronic	3.0E-03	mg/kg/day	0.025	7.5E-05	mg/kg/day	None Reported	300/3	IRIS	3/8/2011
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury[5]	Chronic	3.0E-04	mg/kg/day	0.07	2.1E-05	mg/kg/day	Autoimmune	1000/1	IRIS	3/8/2011
Molybdenum	Chronic	5.0E-03	mg/kg/day	1	5.0E-03	mg/kg/day	Gout	30/1	IRIS	3/8/2011
Nickel	Chronic	2.0E-02	mg/kg/day	0.04	8.0E-04	mg/kg/day	Body Weight	300/1	IRIS	3/8/2011
Selenium	Chronic	5.0E-03	mg/kg/day	1	5.0E-03	mg/kg/day	Hair Loss, CNS, Skin	3/1	IRIS	3/8/2011
Silver	Chronic	5.0E-03	mg/kg/day	0.04	2.0E-04	mg/kg/day	Skin	3/1	IRIS	3/8/2011
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	Chronic	5.0E-03	mg/kg/day	1	5.0E-03	mg/kg/day	Hair Loss	300	RSL	11/2010
Zinc	Chronic	3.0E-01	mg/kg/day	1	3.0E-01	mg/kg/day	Blood	3/1	IRIS	3/8/2011

Notes:
1 - U.S. EPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
2 - Adjusted dermal RfD = Oral RfD x Oral Absorption Efficiency for Dermal.
3 - Values are for cadmium - water.
4 - Values are for trivalent chromium.
5 - Values are for mercuric chloride.
6 - Toxicity criterion for pyrene is used as a surrogate for phenanthrene.
7 - Toxicity criterion for acenaphthene is used as a surrogate for acenaphthylene.

Definitions:
ATSDR = Agency for Toxic Substances and Disease Registry
CNS = Central Nervous System.
CVS = Cardiovascular system.
GS = Gastrointestinal.
HEAST = Health Effects Assessment Summary Tables
IRIS = Integrated Risk Information System.
NA = Not Available.
RSL = USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010.
PPRTV = Provisional Peer Reviewed Toxicity Value.

Table B-2

Cancer Toxicity Data -- Oral/Dermal
Lockheed Martin, Middle River Complex
Middle River, Maryland

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal[1]	Absorbed Cancer Slope Factor for Dermal[2]		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds								
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	5.4E-03	$(mg/kg/day)^{-1}$	1	5.4E-03	$(mg/kg/day)^{-1}$	NA	Cal EPA	11/2010
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Tert-Butyl Ether	1.8E-03	$(mg/kg/day)^{-1}$	1	1.8E-03	$(mg/kg/day)^{-1}$	NA	Cal EPA	11/2010
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.4E-02	$(mg/kg/day)^{-1}$	1	1.4E-02	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	IRIS	3/8/2011
Butyl Benzyl Phthalate	1.9E-03	$(mg/kg/day)^{-1}$	1	1.9E-03	$(mg/kg/day)^{-1}$	NA	PPRTV	10/1/2002
Carbazole	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA
Polycyclic Aromatic Hydrocarbons								
1-Methylnaphthalene	2.9E-02	$(mg/kg/day)^{-1}$	1	2.9E-02	$(mg/kg/day)^{-1}$	NA	PPRTV	1/10/2008
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene Equivalents	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	IRIS	3/8/2011
Benzo(a)anthracene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Benzo(a)pyrene[3]	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	IRIS	3/8/2011
Benzo(b)fluoranthene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene[3]	7.3E-02	$(mg/kg/day)^{-1}$	1	7.3E-02	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Chrysene[3]	7.3E-03	$(mg/kg/day)^{-1}$	1	7.3E-03	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Dibenzo(a,h)anthracene[3]	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Indeno(1,2,3-cd)pyrene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	C / Possible human carcinogen	IRIS	3/8/2011
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA

Table B-2

Cancer Toxicity Data -- Oral/Dermal
Lockheed Martin, Middle River Complex
Middle River, Maryland

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal(1)	Absorbed Cancer Slope Factor for Dermal(2)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Polychlorinated Biphenyls								
Aroclor-1248	2.0E+00	$(mg/kg/day)^{-1}$	1	2.0E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(2)	9/1996
Aroclor-1254	2.0E+00	$(mg/kg/day)^{-1}$	1	2.0E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(2)	9/1996
Aroclor-1260	2.0E+00	$(mg/kg/day)^{-1}$	1	2.0E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(2)	9/1996
Metals								
Antimony	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	1.5E+00	$(mg/kg/day)^{-1}$	1	1.5E+00	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	3/8/2011
Barium	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	B1 / Probable human carcinogen	IRIS	3/8/2011
Chromium	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA
Dibutyltin	NA	NA	NA	NA	NA	NA	NA	NA
Hexavalent Chromium(3)	5.0E-01	$(mg/kg/day)^{-1}$	0.025	2.0E+01	$(mg/kg/day)^{-1}$	A / Known human carcinogen	NJ	11/2010
Lead	NA	NA	NA	NA	NA	B2 / Probable human carcinogen	IRIS	3/8/2011
Mercury	NA	NA	NA	NA	NA	C / Possible human carcinogen	IRIS	3/8/2011
Molybdenum	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA

Table B-2

Cancer Toxicity Data -- Oral/Dermal
Lockheed Martin, Middle River Complex
Middle River, Maryland

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal[1]	Absorbed Cancer Slope Factor for Dermal[2]		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)

Notes:
1 - USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
2 - Adjusted cancer slope factor for dermal = Oral cancer slope factor / Oral Absorption Efficiency for Dermal.
3 - Several PAHs and hexavalent chromium are considered to act via the mutagenic mode of action. These chemicals are evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).
Cal EPA = California Environmental Protection Agency.
IRIS = Integrated Risk Information System.
NA = Not Available.
NJ = New Jersey.
PPRTV = Provisional Peer Reviewed Toxicity Value.
USEPA(1) = OSWER Directive No.9285.7-75.
USEPA(2) = USEPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.

APPENDIX B-3—SEDIMENT DIRECT CONTACT PRELIMINARY REMEDIATION GOALS

TABLE B-3
RISK-BASED CONCENTRATIONS FOR EXPOSURES TO SEDIMENTS
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Child Recreational User		Adolescent Recreational User		Adult Recreational User		Lifelong Recreational User	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Carcinogenic (mg/kg)
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	780	25,000	2,100	130,000	1,400	230,000	500	NA
2-Butanone	NA	220,000	NA	1,100,000	NA	2,000,000	NA	NA
Acetone	NA	320,000	NA	1,700,000	NA	2,900,000	NA	NA
Carbon Disulfide	NA	36,000	NA	190,000	NA	330,000	NA	NA
Chlorobenzene	NA	7,200	NA	38,000	NA	65,000	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	720	NA	3,800	NA	6,500	NA	NA
Isopropylbenzene	NA	36,000	NA	190,000	NA	330,000	NA	NA
Methyl Tert-Butyl Ether	2,300	NA	6,200	NA	4,200	NA	1,500	NA
Naphthalene	NA	5,700	NA	30,000	NA	48,000	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	NA	29,000	NA	150,000	NA	260,000	NA	NA
1,2-Dichlorobenzene	NA	32,000	NA	170,000	NA	290,000	NA	NA
1-Methylnaphthalene	120	21,000	320	110,000	210	180,000	77	NA
2-Methylnaphthalene	NA	1,200	NA	6,400	NA	10,000	NA	NA
Acenaphthene	NA	17,000	NA	90,000	NA	140,000	NA	NA
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	86,000	NA	450,000	NA	720,000	NA	NA
BaP Equivalent	0.09	NA	0.4	NA	0.8	NA	0.07	NA
Benzo(a)anthracene	0.9	NA	4	NA	8	NA	0.7	NA
Benzo(a)pyrene	0.09	NA	0.4	NA	0.8	NA	0.07	NA
Benzo(b)fluoranthene	0.9	NA	4	NA	8	NA	0.7	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	9	NA	40	NA	77	NA	7	NA
Bis(2-ethylhexyl)phthalate	250	6,100	670	32,000	430	52,000	160	NA
Butyl Benzyl Phthalate	1,900	61,000	4,900	320,000	3,200	520,000	1,200	NA
Carbazole	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	86	NA	400	NA	770	NA	70	NA
Dibenzo(a,h)anthracene	0.09	NA	0.4	NA	0.8	NA	0.07	NA
Dibenzofuran	NA	310	NA	1,600	NA	2,600	NA	NA
Fluoranthene	NA	11,000	NA	60,000	NA	96,000	NA	NA
Fluorene	NA	11,000	NA	60,000	NA	96,000	NA	NA
Indeno(1,2,3-cd)pyrene	0.9	NA	4	NA	8	NA	0.7	NA
Naphthalene	NA	5,700	NA	30,000	NA	48,000	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	8,600	NA	45,000	NA	72,000	NA	NA
Aroclor-1248	1.6	NA	4.3	NA	2.7	NA	1.0	NA
Aroclor-1254	1.6	5.6	4.3	29	2.7	47	1.0	NA

TABLE B-3
RISK-BASED CONCENTRATIONS FOR EXPOSURES TO SEDIMENTS
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Child Recreational User		Adolescent Recreational User		Adult Recreational User		Lifelong Recreational User	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Carcinogenic (mg/kg)
Aroclor-1260	1.6	NA	4.3	NA	2.7	NA	1.0	NA
Antimony	NA	132	NA	694	NA	1,150	NA	NA
Arsenic	2.8	108	7.4	574	5.1	978	1.8	NA
Barium	NA	55,900	NA	291,000	NA	465,000	NA	NA
Beryllium	NA	156	NA	784	NA	1,090	NA	NA
Cadmium	NA	352	NA	1,860	NA	3,150	NA	NA
Chromium	NA	186,000	NA	941,000	NA	1,350,000	NA	NA
Cobalt	NA	114	NA	607	NA	1,050	NA	NA
Copper	NA	15,200	NA	81,000	NA	140,000	NA	NA
Lead	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	84	NA	440	NA	700	NA	NA
Molybdenum	NA	1,900	NA	10,100	NA	17,500	NA	NA
Nickel	NA	4,600	NA	23,800	NA	36,500	NA	NA
Selenium	NA	1,900	NA	10,100	NA	17,500	NA	NA
Silver	NA	1,150	NA	5,940	NA	9,140	NA	NA
Thallium	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	1,900	NA	10,000	NA	17,600	NA	NA
Zinc	NA	114,000	NA	607,000	NA	1,050,000	NA	NA
Hexavalent Chromium	1.7	550	8.1	2,800	17	4,200	1.4	NA
Dibutyltin	NA	110	NA	610	NA	1050	NA	NA

CALCULATION OF RISK-BASED PRELIMINARY CLEANUP LEVELS

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: LIFELONG (CHILD AND ADULT) RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

THIS SPREADSHEET CALCULATES RISK-BASED CLEANUP GOALS FOR EXPOSURES TO SEDIMENT
THE INCIDENTAL INGESTION AND DERMAL CONTACT ROUTES OF EXPOSURE ARE CONSIDERED.

RELEVANT EQUATION:

Carcinogens

$$RBC_{sed} = \frac{TCR}{IntakeFac_{oral} \cdot CSF_{oral} + IntakeFac_{derm} \cdot CSF_{derm}}$$

$$IntakeFac_{oral} = \left[\frac{EF \times FI \times CF}{AT}\right]\left[\frac{IR_{child} \times ED_{child}}{BW_{child}} + \frac{IR_{adolescent} \times ED_{adolescent}}{BW_{adolescent}} + \frac{IR_{adult} \times ED_{adult}}{BW_{adilt}}\right]$$

$$IntakeFac_{derm} = \left[\frac{ABS \times EF \times CF}{AT}\right]\left[\frac{SA_{child} \times AF_{child} \times ED_{child}}{BW_{child}} + \frac{SA_{adolescent} \times AF_{adolescent} \times ED_{adolescent}}{BW_{adolescent}} + \frac{SA_{adult} \times AF_{adult} \times ED_{adult}}{BW_{adult}}\right]$$

WHERE:

	Child(0-2)	Child(2-6)	Adolescent	Adult	
PRG_{soil} = :					Concentration in soil (mg/kg)
TCR = :	1.0E-06				Target Cancer Risk
IR = :	200	200	100	100	Soil Ingestion Rate (mg/day) (USEPA, 1993)
CF = :	1.0E-06	1.0E-06	1.0E-06	1.0E-06	Conversion Factor (kg/mg)
FI = :	1	1	1	1	Fraction from contaminated source (unitless)
SA = :	2800	2800	4320	5700	Skin surface available for contact (cm^2/day)
AF = :	0.2	0.2	0.07	0.07	Soil to skin adherence factor (mg/cm^2) (USEPA, 2004)
ABS = :	Chemical Specific				Absorption factor (unitless)
EF = :	70	70	70	70	Exposure Frequency (days/year)
ED = :	2	4	10	14	Exposure Duration (years)
BW = :	15	15	40	70	Body Weight (kg) (USEPA, 1997)
ATc = :	25,550	25,550	25,550	25,550	Averaging time for carcinogenic exposures (days)
$IntakeFac_{oral}$ = :	7.3E-08	1.5E-07	6.8E-08	5.5E-08	Intake factor - Ingestion (kg/kg-day)
$IntakeFac_{derm}$ = :	2.0E-07	4.1E-07	2.1E-07	2.2E-07	Intake factor - Dermal (kg/kg-day)

An exposure duration of 10 years is used for the adolescent recreational user when calculating a PRG for lifelong exposures in order to conform with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005), which defends an adolescent as being between the ages of 6 to 16 years old.

CALCULATION OF RISK-BASED PRELIMINARY CLEANUP LEVELS (PAGE 2)

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: LIFELONG (CHILD AND ADULT) RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

CHEMICAL	ABS[1]	Cancer Slope Factor[2]		Age-dependent Adjustment Factor (ADAF)			
		Oral $(mg/kg/day)^{-1}$	Dermal $(mg/kg/day)^{-1}$	0 - 2	2 - 6	6 - 16	>16
1,3-Dichlorobenzene	3.0E-02	NA	NA	1	1	1	1
1,4-Dichlorobenzene	3.0E-02	5.4E-03	5.4E-03	1	1	1	1
2-Butanone	3.0E-02	NA	NA	1	1	1	1
Acetone	3.0E-02	NA	NA	1	1	1	1
Carbon Disulfide	3.0E-02	NA	NA	1	1	1	1
Chlorobenzene	3.0E-02	NA	NA	1	1	1	1
Chloromethane	3.0E-02	NA	NA	1	1	1	1
cis-1,2-Dichloroethene	3.0E-02	NA	NA	1	1	1	1
Isopropylbenzene	3.0E-02	NA	NA	1	1	1	1
Methyl Tert-Butyl Ether	3.0E-02	1.8E-03	1.8E-03	1	1	1	1
Naphthalene	1.3E-01	NA	NA	1	1	1	1
sec-Butylbenzene	3.0E-02	NA	NA	1	1	1	1
Tert-Butylbenzene	3.0E-02	NA	NA	1	1	1	1
Toluene	3.0E-02	NA	NA	1	1	1	1
1,2-Dichlorobenzene	3.0E-02	NA	NA	1	1	1	1
1-Methylnaphthalene	1.0E-01	2.9E-02	2.9E-02	1	1	1	1
2-Methylnaphthalene	1.0E-01	NA	NA	1	1	1	1
Acenaphthene	1.3E-01	NA	NA	1	1	1	1
Acenaphthylene	1.3E-01	NA	NA	1	1	1	1
Anthracene	1.3E-01	NA	NA	1	1	1	1
BaP Equivalent	1.3E-01	7.3E+00	7.3E+00	10	3	3	1
Benzo(a)anthracene	1.3E-01	7.3E-01	7.3E-01	10	3	3	1
Benzo(a)pyrene	1.3E-01	7.3E+00	7.3E+00	10	3	3	1
Benzo(b)fluoranthene	1.3E-01	7.3E-01	7.3E-01	10	3	3	1
Benzo(g,h,i)perylene	1.3E-01	NA	NA	1	1	1	1
Benzo(k)fluoranthene	1.3E-01	7.3E-02	7.3E-02	10	3	3	1
Bis(2-ethylhexyl)phthalate	1.0E-01	1.4E-02	1.4E-02	1	1	1	1
Butyl Benzyl Phthalate	1.0E-01	1.9E-03	1.9E-03	1	1	1	1
Carbazole	1.0E-01	NA	NA	1	1	1	1
Chrysene	1.3E-01	7.3E-03	7.3E-03	10	3	3	1
Dibenzo(a,h)anthracene	1.3E-01	7.3E+00	7.3E+00	10	3	3	1
Dibenzofuran	1.0E-01	NA	NA	1	1	1	1
Fluoranthene	1.3E-01	NA	NA	1	1	1	1
Fluorene	1.3E-01	NA	NA	1	1	1	1
Indeno(1,2,3-cd)pyrene	1.3E-01	7.3E-01	7.3E-01	10	3	3	1
Naphthalene	1.3E-01	NA	NA	1	1	1	1
Phenanthrene	1.3E-01	NA	NA	1	1	1	1
Pyrene	1.3E-01	NA	NA	1	1	1	1
Aroclor-1248	1.4E-01	2.0E+00	2.0E+00	1	1	1	1
Aroclor-1254	1.4E-01	2.0E+00	2.0E+00	1	1	1	1
Aroclor-1260	1.4E-01	2.0E+00	2.0E+00	1	1	1	1
Antimony	1.0E-02	NA	NA	1	1	1	1
Arsenic	3.0E-02	1.5E+00	1.5E+00	1	1	1	1
Barium	1.0E-02	NA	NA	1	1	1	1
Beryllium	1.0E-02	NA	NA	1	1	1	1
Cadmium	1.0E-03	NA	NA	1	1	1	1
Chromium	1.0E-02	NA	NA	1	1	1	1
Cobalt	1.0E-02	NA	NA	1	1	1	1
Copper	1.0E-02	NA	NA	1	1	1	1
Lead	1.0E-02	NA	NA	1	1	1	1
Mercury	1.0E-02	NA	NA	1	1	1	1
Molybdenum	1.0E-02	NA	NA	1	1	1	1
Nickel	1.0E-02	NA	NA	1	1	1	1
Selenium	1.0E-02	NA	NA	1	1	1	1
Silver	1.0E-02	NA	NA	1	1	1	1
Thallium	1.0E-02	NA	NA	1	1	1	1
Vanadium	1.0E-02	NA	NA	1	1	1	1
Zinc	1.0E-02	NA	NA	1	1	1	1
Hexavalent Chromium	1.0E-02	5.0E-01	1.3E-02	10	3	3	1
Dibutyltin	1.0E-02	NA	NA	1	1	1	1

Notes:
1 - All values from EPA's Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, July 2004.
2 - See Table B-2 for toxicity value sources.

CALCULATION OF RISK-BASED PRELIMINARY CLEANUP LEVELS (PAGE 3)

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: LIFELONG (CHILD AND ADULT) RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

Chemical	Risk-Based Sediment Concentration (mg/kg)			
	Child	**Adolescent**	**Adult**	**Lifelong**
1,3-Dichlorobenzene	NA	NA	NA	NA
1,4-Dichlorobenzene	779	2,479	3,018	496
2-Butanone	NA	NA	NA	NA
Acetone	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA
Chlorobenzene	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA
Isopropylbenzene	NA	NA	NA	NA
Methyl Tert-Butyl Ether	2,338	7,436	9,055	1,487
Naphthalene	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA
Tert-Butylbenzene	NA	NA	NA	NA
Toluene	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA
1-Methylnaphthalene	123	387	450	77.2
2-Methylnaphthalene	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA
BaP Equivalent	0.086	0.479	1.646	0.070
Benzo(a)anthracene	0.859	4.79	16.46	0.698
Benzo(a)pyrene	0.086	0.479	1.646	0.070
Benzo(b)fluoranthene	0.859	4.79	16.46	0.698
Benzo(g,h,i)perylene	NA	NA	NA	NA
Benzo(k)fluoranthene	8.59	47.9	164.6	6.98
Bis(2-ethylhexyl)phthalate	255	801	932	160
Butyl Benzyl Phthalate	1,876	5,900	6,866	1179
Carbazole	NA	NA	NA	NA
Chrysene	85.9	479	1646	69.8
Dibenzo(a,h)anthracene	0.086	0.479	1.646	0.070
Dibenzofuran	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.859	4.79	16.46	0.698
Naphthalene	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA
Aroclor-1248	1.64	5.13	5.85	1.025
Aroclor-1254	1.64	5.13	5.85	1.025
Aroclor-1260	1.64	5.13	5.85	1.025
Antimony	NA	NA	NA	NA
Arsenic	2.81	8.92	10.87	1.78
Barium	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA
Chromium	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA
Copper	NA	NA	NA	NA
Lead	NA	NA	NA	NA
Mercury	NA	NA	NA	NA
Molybdenum	NA	NA	NA	NA
Nickel	NA	NA	NA	NA
Selenium	NA	NA	NA	NA
Silver	NA	NA	NA	NA
Thallium	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA
Zinc	NA	NA	NA	NA
Hexavalent Chromium	1.71	9.73	36.5	1.40
Dibutyltin	NA	NA	NA	NA

CALCULATION OF SEDIMENT SCREENING LEVELS

SITE NAME: LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: CHILD RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

THIS SPREADSHEET CALCULATES SCREENING LEVELS FOR EXPOSURES TO SEDIMENT VIA INCIDENTAL INGESTION AND DERMAL CONTACT.

RELEVANT EQUATIONS:

Carcinogens

$$RBC_{sed} = \frac{TCR}{Intake_{oral} \cdot CSF_{oral} + Intake_{derm} \cdot CSF_{derm}}$$

Noncarcinogens

$$RBC_{sed} = \frac{THI}{\left(\frac{Intake_{oral}}{RfD_{oral}}\right) + \left(\frac{Intake_{derm}}{RfD_{derm}}\right)}$$

$$Intake_{oral} = \frac{IR \times EF \times ED \times FI \times CF}{BW \times AT} \times ADAF$$

$$Intake_{derm} = \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times ADAF$$

INPUT ASSUMPTIONS[1]:				
	Parameter	**Child (0 - 2)**	**Child (2 - 6)**	**Definition**
General	RBC = :			Risk-based concentration screening level in sediment (mg/kg)
	TCR = :	1.0E-06		Target Cancer Risk
	THI = :	1.0E+00		Target hazard Index
	EF = :	70	70	Exposure Frequency (days/year)
	ED = :	2	4	Exposure Duration (years)
	BW = :	15	15	Body Weight (kg) (USEPA, 1997)
	ATc = :	25,550	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	730	1,460	Averaging time for noncarcinogenic exposures (days)
	CF = :	1.0E-06	1.0E-06	Conversion Factor (kg/mg)
	ADAF = :	Chemical Specific	Chemical Specific	Age Dependent Adjustment Factor
Incidental Ingestion	IR = :	200	200	Sediment Ingestion Rate (mg/day) (USEPA 1993)
	FI = :	1	1	Fraction from contaminated source (unitless)
Dermal Contact	SA = :	2800	2800	Skin surface available for contact (cm^2/day)
	AF = :	0.2	0.2	Sediment to skin adherence factor (mg/cm2) (USEPA, 2004)
	ABS = :	Chemical Specific	Chemical Specific	Absorption factor (unitless)

1 - Methodology from *2005 Surface Water and Sediment Sampling Report for the Lockheed Martin Middle River Complex, Middle River, Maryland* (Tetra Tech, 2005).

CALCULATION OF SEDIMENT SCREENING LEVELS (PAGE 2)

SITE NAME: LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: CHILD RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

CHEMICAL	ABS[1]	Cancer Slope Factor[2]		Reference Dose[2]		Age Dependent Adjusment Factor	
		Oral (mg/kg/day)$^{-1}$	Dermal (mg/kg/day)$^{-1}$	Oral (mg/kg/day)	Dermal (mg/kg/day)	Ages 0 - 2	Ages 2 - 6
1,3-Dichlorobenzene	3.0E-02	NA	NA	NA	NA	1	1
1,4-Dichlorobenzene	3.0E-02	5.4E-03	5.4E-03	7.0E-02	7.0E-02	1	1
2-Butanone	3.0E-02	NA	NA	6.0E-01	6.0E-01	1	1
Acetone	3.0E-02	NA	NA	9.0E-01	9.0E-01	1	1
Carbon Disulfide	3.0E-02	NA	NA	1.0E-01	1.0E-01	1	1
Chlorobenzene	3.0E-02	NA	NA	2.0E-02	2.0E-02	1	1
Chloromethane	3.0E-02	NA	NA	NA	NA	1	1
cis-1,2-Dichloroethene	3.0E-02	NA	NA	2.0E-03	2.0E-03	1	1
Isopropylbenzene	3.0E-02	NA	NA	1.0E-01	1.0E-01	1	1
Methyl Tert-Butyl Ether	3.0E-02	1.8E-03	1.8E-03	NA	NA	1	1
Naphthalene	1.3E-01	NA	NA	2.0E-02	2.0E-02	1	1
sec-Butylbenzene	3.0E-02	NA	NA	NA	NA	1	1
Tert-Butylbenzene	3.0E-02	NA	NA	NA	NA	1	1
Toluene	3.0E-02	NA	NA	8.0E-02	8.0E-02	1	1
1,2-Dichlorobenzene	3.0E-02	NA	NA	9.0E-02	9.0E-02	1	1
1-Methylnaphthalene	1.0E-01	2.9E-02	2.9E-02	7.0E-02	7.0E-02	1	1
2-Methylnaphthalene	1.0E-01	NA	NA	4.0E-03	4.0E-03	1	1
Acenaphthene	1.3E-01	NA	NA	6.0E-02	6.0E-02	1	1
Acenaphthylene	1.3E-01	NA	NA	NA	NA	1	1
Anthracene	1.3E-01	NA	NA	3.0E-01	3.0E-01	1	1
BaP Equivalent	1.3E-01	7.3E+00	7.3E+00	NA	NA	10	3
Benzo(a)anthracene	1.3E-01	7.3E-01	7.3E-01	NA	NA	10	3
Benzo(a)pyrene	1.3E-01	7.3E+00	7.3E+00	NA	NA	10	3
Benzo(b)fluoranthene	1.3E-01	7.3E-01	7.3E-01	NA	NA	10	3
Benzo(g,h,i)perylene	1.3E-01	NA	NA	NA	NA	1	1
Benzo(k)fluoranthene	1.3E-01	7.3E-02	7.3E-02	NA	NA	10	3
Bis(2-ethylhexyl)phthalate	1.0E-01	1.4E-02	1.4E-02	2.0E-02	2.0E-02	1	1
Butyl Benzyl Phthalate	1.0E-01	1.9E-03	1.9E-03	2.0E-01	2.0E-01	1	1
Carbazole	1.0E-01	NA	NA	NA	NA	1	1
Chrysene	1.3E-01	7.3E-03	7.3E-03	NA	NA	10	3
Dibenzo(a,h)anthracene	1.3E-01	7.3E+00	7.3E+00	NA	NA	10	3
Dibenzofuran	1.0E-01	NA	NA	1.0E-03	1.0E-03	1	1
Fluoranthene	1.3E-01	NA	NA	4.0E-02	4.0E-02	1	1
Fluorene	1.3E-01	NA	NA	4.0E-02	4.0E-02	1	1
Indeno(1,2,3-cd)pyrene	1.3E-01	7.3E-01	7.3E-01	NA	NA	10	3
Naphthalene	1.3E-01	NA	NA	2.0E-02	2.0E-02	1	1
Phenanthrene	1.3E-01	NA	NA	NA	NA	1	1
Pyrene	1.3E-01	NA	NA	3.0E-02	3.0E-02	1	1
Aroclor-1248	1.4E-01	2.0E+00	2.0E+00	NA	NA	1	1
Aroclor-1254	1.4E-01	2.0E+00	2.0E+00	2.0E-05	2.0E-05	1	1
Aroclor-1260	1.4E-01	2.0E+00	2.0E+00	NA	NA	1	1
Antimony	1.0E-02	NA	NA	4.0E-04	6.0E-05	1	1
Arsenic	3.0E-02	1.5E+00	1.5E+00	3.0E-04	3.0E-04	1	1
Barium	1.0E-02	NA	NA	2.0E-01	1.4E-02	1	1
Beryllium	1.0E-02	NA	NA	2.0E-03	1.4E-05	1	1
Cadmium	1.0E-03	NA	NA	1.0E-03	2.5E-05	1	1
Chromium	1.0E-02	NA	NA	1.5E+00	2.0E-02	1	1
Cobalt	1.0E-02	NA	NA	3.0E-04	3.0E-04	1	1
Copper	1.0E-02	NA	NA	4.0E-02	4.0E-02	1	1
Lead	1.0E-02	NA	NA	NA	NA	1	1
Mercury	1.0E-02	NA	NA	3.0E-04	2.1E-05	1	1
Molybdenum	1.0E-02	NA	NA	5.0E-03	5.0E-03	1	1
Nickel	1.0E-02	NA	NA	2.0E-02	8.0E-04	1	1
Selenium	1.0E-02	NA	NA	5.0E-03	5.0E-03	1	1
Silver	1.0E-02	NA	NA	5.0E-03	2.0E-04	1	1
Thallium	1.0E-02	NA	NA	NA	NA	1	1
Vanadium	1.0E-02	NA	NA	5.0E-03	5.0E-03	1	1
Zinc	1.0E-02	NA	NA	3.0E-01	3.0E-01	1	1
Hexavalent Chromium	1.0E-02	5.0E-01	1.3E-02	3.0E-03	7.5E-05	10	3
Dibutyltin	1.0E-02	NA	NA	3.0E-04	3.0E-04	1	1

Notes:
1 - All values from EPA's Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, July 2004.
2 - See Tables B-1 and B-2 for toxicity value sources

CALCULATION OF SEDIMENT SCREENING LEVELS (PAGE 3)

SITE NAME: LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: CHILD RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

CHEMICAL	Carcinogenic Intake Factors		Noncarcinogenic Intakes Factors	
	Oral (kg/kg/day)	Dermal (kg/kg/day)	Oral (kg/kg/day)	Dermal (kg/kg/day)
1,3-Dichlorobenzene	2.19E-07	1.84E-08	2.56E-06	2.15E-07
1,4-Dichlorobenzene	2.19E-07	1.84E-08	2.56E-06	2.15E-07
2-Butanone	2.19E-07	1.84E-08	2.56E-06	2.15E-07
Acetone	2.19E-07	1.84E-08	2.56E-06	2.15E-07
Carbon Disulfide	2.19E-07	1.84E-08	2.56E-06	2.15E-07
Chlorobenzene	2.19E-07	1.84E-08	2.56E-06	2.15E-07
Chloromethane	2.19E-07	1.84E-08	2.56E-06	2.15E-07
cis-1,2-Dichloroethene	2.19E-07	1.84E-08	2.56E-06	2.15E-07
Isopropylbenzene	2.19E-07	1.84E-08	2.56E-06	2.15E-07
Methyl Tert-Butyl Ether	2.19E-07	1.84E-08	2.56E-06	2.15E-07
Naphthalene	2.19E-07	7.98E-08	2.56E-06	9.31E-07
sec-Butylbenzene	2.19E-07	1.84E-08	2.56E-06	2.15E-07
Tert-Butylbenzene	2.19E-07	1.84E-08	2.56E-06	2.15E-07
Toluene	2.19E-07	1.84E-08	2.56E-06	2.15E-07
1,2-Dichlorobenzene	2.19E-07	1.84E-08	2.56E-06	2.15E-07
1-Methylnaphthalene	2.19E-07	6.14E-08	2.56E-06	7.16E-07
2-Methylnaphthalene	2.19E-07	6.14E-08	2.56E-06	7.16E-07
Acenaphthene	2.19E-07	7.98E-08	2.56E-06	9.31E-07
Acenaphthylene	2.19E-07	7.98E-08	2.56E-06	9.31E-07
Anthracene	2.19E-07	7.98E-08	2.56E-06	9.31E-07
BaP Equivalent	1.17E-06	4.25E-07	2.56E-06	9.31E-07
Benzo(a)anthracene	1.17E-06	4.25E-07	2.56E-06	9.31E-07
Benzo(a)pyrene	1.17E-06	4.25E-07	2.56E-06	9.31E-07
Benzo(b)fluoranthene	1.17E-06	4.25E-07	2.56E-06	9.31E-07
Benzo(g,h,i)perylene	2.19E-07	7.98E-08	2.56E-06	9.31E-07
Benzo(k)fluoranthene	1.17E-06	4.25E-07	2.56E-06	9.31E-07
Bis(2-ethylhexyl)phthalate	2.19E-07	6.14E-08	2.56E-06	7.16E-07
Butyl Benzyl Phthalate	2.19E-07	6.14E-08	2.56E-06	7.16E-07
Carbazole	2.19E-07	6.14E-08	2.56E-06	7.16E-07
Chrysene	1.17E-06	4.25E-07	2.56E-06	9.31E-07
Dibenzo(a,h)anthracene	1.17E-06	4.25E-07	2.56E-06	9.31E-07
Dibenzofuran	2.19E-07	6.14E-08	2.56E-06	7.16E-07
Fluoranthene	2.19E-07	7.98E-08	2.56E-06	9.31E-07
Fluorene	2.19E-07	7.98E-08	2.56E-06	9.31E-07
Indeno(1,2,3-cd)pyrene	1.17E-06	4.25E-07	2.56E-06	9.31E-07
Naphthalene	2.19E-07	7.98E-08	2.56E-06	9.31E-07
Phenanthrene	2.19E-07	7.98E-08	2.56E-06	9.31E-07
Pyrene	2.19E-07	7.98E-08	2.56E-06	9.31E-07
Aroclor-1248	2.19E-07	8.59E-08	2.56E-06	1.00E-06
Aroclor-1254	2.19E-07	8.59E-08	2.56E-06	1.00E-06
Aroclor-1260	2.19E-07	8.59E-08	2.56E-06	1.00E-06
Antimony	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Arsenic	2.19E-07	1.84E-08	2.56E-06	2.15E-07
Barium	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Beryllium	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Cadmium	2.19E-07	6.14E-10	2.56E-06	7.16E-09
Chromium	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Cobalt	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Copper	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Lead	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Mercury	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Molybdenum	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Nickel	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Selenium	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Silver	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Thallium	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Vanadium	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Zinc	2.19E-07	6.14E-09	2.56E-06	7.16E-08
Hexavalent Chromium	1.17E-06	3.27E-08	2.56E-06	7.16E-08
Dibutyltin	2.19E-07	6.14E-09	2.56E-06	7.16E-08

CALCULATION OF SEDIMENT SCREENING LEVELS (PAGE 4)

SITE NAME: LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: CHILD RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

CHEMICAL	Sediment Concentration		Risk-Based[(1)] Concentration (mg/kg)
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	
1,3-Dichlorobenzene	NA	NA	NA
1,4-Dichlorobenzene	779	25,254	779
2-Butanone	NA	216,460	216,460
Acetone	NA	324,690	324,690
Carbon Disulfide	NA	36,077	36,077
Chlorobenzene	NA	7,215	7,215
Chloromethane	NA	NA	NA
cis-1,2-Dichloroethene	NA	722	722
Isopropylbenzene	NA	36,077	36,077
Methyl Tert-Butyl Ether	2,338	NA	2,338
Naphthalene	NA	5,734	5,734
sec-Butylbenzene	NA	NA	NA
Tert-Butylbenzene	NA	NA	NA
Toluene	NA	28,861	28,861
1,2-Dichlorobenzene	NA	32,469	32,469
1-Methylnaphthalene	123	21,387	123
2-Methylnaphthalene	NA	1,222	1,222
Acenaphthene	NA	17,203	17,203
Acenaphthylene	NA	NA	NA
Anthracene	NA	86,013	86,013
BaP Equivalent	0.086	NA	0.086
Benzo(a)anthracene	0.859	NA	0.859
Benzo(a)pyrene	0.086	NA	0.086
Benzo(b)fluoranthene	0.859	NA	0.859
Benzo(g,h,i)perylene	NA	NA	NA
Benzo(k)fluoranthene	8.59	NA	8.59
Bis(2-ethylhexyl)phthalate	255	6,110	255
Butyl Benzyl Phthalate	1,876	61,105	1,876
Carbazole	NA	NA	NA
Chrysene	85.9	NA	85.9
Dibenzo(a,h)anthracene	0.086	NA	0.086
Dibenzofuran	NA	306	306
Fluoranthene	NA	11,468	11,468
Fluorene	NA	11,468	11,468
Indeno(1,2,3-cd)pyrene	0.859	NA	0.859
Naphthalene	NA	5,734	5,734
Phenanthrene	NA	NA	NA
Pyrene	NA	8,601	8,601
Aroclor-1248	1.64	NA	1.64
Aroclor-1254	1.64	5.62	1.64
Aroclor-1260	1.64	NA	1.64
Antimony	NA	132	132
Arsenic	2.81	108	2.81
Barium	NA	55,867	55,867
Beryllium	NA	156	156
Cadmium	NA	352	352
Chromium	NA	185997	185997
Cobalt	NA	114	114
Copper	NA	15,217	15,217
Lead	NA	NA	NA
Mercury	NA	83.8	83.8
Molybdenum	NA	1,902	1,902
Nickel	NA	4,601	4,601
Selenium	NA	1,902	1,902
Silver	NA	1,150	1,150
Thallium	NA	NA	NA
Vanadium	NA	1,902	1,902
Zinc	NA	114,126	114,126
Hexavalent Chromium	1.71	553	1.71
Dibutyltin	NA	114	114

Notes:
1 - Screening level is the lower of the carcinogenic sediment concentration and noncarcinogenic sediment concentration.

CALCULATION OF SEDIMENT SCREENING LEVELS

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: ADULT RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

THIS SPREADSHEET CALCULATES SCREENING LEVELS FOR EXPOSURES TO SEDIMENT VIA INCIDENTAL INGESTION AND DERMAL CONTACT.

RELEVANT EQUATIONS:

Carcinogens

$$RBC_{sed} = \frac{TCR}{Intake_{oral} \cdot CSF_{oral} + Intake_{derm} \cdot CSF_{derm}}$$

Noncarcinogens

$$RBC_{sed} = \frac{THI}{\left(\frac{Intake_{oral}}{RfD_{oral}}\right) + \left(\frac{Intake_{derm}}{RfD_{derm}}\right)}$$

$$Intake_{oral} = \frac{IR \times EF \times ED \times FI \times CF}{BW \times AT} \times ADAF$$

$$Intake_{derm} = \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times ADAF$$

INPUT ASSUMPTIONS[(1)]:			
	Parameter	**Value**	**Definition**
General	RBC = :		Risk-based concentration screening level in sediment (mg/kg)
	TCR = :	1.0E-06	Target Cancer Risk
	THI = :	1	Target Hazard Index
	EF = :	70	Exposure Frequency (days/year)
	ED = :	30	Exposure Duration (years)
	BW = :	70	Body Weight (kg) (USEPA, 1997)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	10,950	Averaging time for noncarcinogenic exposures (days)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	ADAF = :	Chemical Specific	Age Dependent Adjustment Factor
Incidental Ingestion	IR = :	100	Sediment Ingestion Rate (mg/day) (USEPA, 1993)
	FI = :	1	Fraction from contaminated source (unitless)
Dermal Contact	SA = :	5,700	Skin surface available for contact (cm^2/day)
	AF = :	0.07	Sediment to skin adherence factor (mg/cm^2) (USEPA, 2004)
	ABS = :	Chemical Specific	Absorption factor (unitless)

1 - Methodology from *2005 Surface Water and Sediment Sampling Report for the Lockheed Martin Middle River Complex, Middle River, Maryland* (Tetra Tech, 2005).

CALCULATION OF SEDIMENT SCREENING LEVELS (PAGE 2)

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: ADULT RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

CHEMICAL	ABS[1]	Cancer Slope Factor[2]		Reference Dose[2]		Age Dependent Adjustment Factor
		Oral (mg/kg/day)$^{-1}$	Dermal (mg/kg/day)$^{-1}$	Oral (mg/kg/day)	Dermal (mg/kg/day)	
1,3-Dichlorobenzene	3.0E-02	NA	NA	NA	NA	1
1,4-Dichlorobenzene	3.0E-02	5.4E-03	5.4E-03	7.0E-02	7.0E-02	1
2-Butanone	3.0E-02	NA	NA	6.0E-01	6.0E-01	1
Acetone	3.0E-02	NA	NA	9.0E-01	9.0E-01	1
Carbon Disulfide	3.0E-02	NA	NA	1.0E-01	1.0E-01	1
Chlorobenzene	3.0E-02	NA	NA	2.0E-02	2.0E-02	1
Chloromethane	3.0E-02	NA	NA	NA	NA	1
cis-1,2-Dichloroethene	3.0E-02	NA	NA	2.0E-03	2.0E-03	1
Isopropylbenzene	3.0E-02	NA	NA	1.0E-01	1.0E-01	1
Methyl Tert-Butyl Ether	3.0E-02	1.8E-03	1.8E-03	NA	NA	1
Naphthalene	1.3E-01	NA	NA	2.0E-02	2.0E-02	1
sec-Butylbenzene	3.0E-02	NA	NA	NA	NA	1
Tert-Butylbenzene	3.0E-02	NA	NA	NA	NA	1
Toluene	3.0E-02	NA	NA	8.0E-02	8.0E-02	1
1,2-Dichlorobenzene	3.0E-02	NA	NA	9.0E-02	9.0E-02	1
1-Methylnaphthalene	1.0E-01	2.9E-02	2.9E-02	7.0E-02	7.0E-02	1
2-Methylnaphthalene	1.0E-01	NA	NA	4.0E-03	4.0E-03	1
Acenaphthene	1.3E-01	NA	NA	6.0E-02	6.0E-02	1
Acenaphthylene	1.3E-01	NA	NA	NA	NA	1
Anthracene	1.3E-01	NA	NA	3.0E-01	3.0E-01	1
BaP Equivalent	1.3E-01	7.3E+00	7.3E+00	NA	NA	1
Benzo(a)anthracene	1.3E-01	7.3E-01	7.3E-01	NA	NA	1
Benzo(a)pyrene	1.3E-01	7.3E+00	7.3E+00	NA	NA	1
Benzo(b)fluoranthene	1.3E-01	7.3E-01	7.3E-01	NA	NA	1
Benzo(g,h,i)perylene	1.3E-01	NA	NA	NA	NA	1
Benzo(k)fluoranthene	1.3E-01	7.3E-02	7.3E-02	NA	NA	1
Bis(2-ethylhexyl)phthalate	1.0E-01	1.4E-02	1.4E-02	2.0E-02	2.0E-02	1
Butyl Benzyl Phthalate	1.0E-01	1.9E-03	1.9E-03	2.0E-01	2.0E-01	1
Carbazole	1.0E-01	NA	NA	NA	NA	1
Chrysene	1.3E-01	7.3E-03	7.3E-03	NA	NA	1
Dibenzo(a,h)anthracene	1.3E-01	7.3E+00	7.3E+00	NA	NA	1
Dibenzofuran	1.0E-01	NA	NA	1.0E-03	1.0E-03	1
Fluoranthene	1.3E-01	NA	NA	4.0E-02	4.0E-02	1
Fluorene	1.3E-01	NA	NA	4.0E-02	4.0E-02	1
Indeno(1,2,3-cd)pyrene	1.3E-01	7.3E-01	7.3E-01	NA	NA	1
Naphthalene	1.3E-01	NA	NA	2.0E-02	2.0E-02	1
Phenanthrene	1.3E-01	NA	NA	NA	NA	1
Pyrene	1.3E-01	NA	NA	3.0E-02	3.0E-02	1
Aroclor-1248	1.4E-01	2.0E+00	2.0E+00	NA	NA	1
Aroclor-1254	1.4E-01	2.0E+00	2.0E+00	2.0E-05	2.0E-05	1
Aroclor-1260	1.4E-01	2.0E+00	2.0E+00	NA	NA	1
Antimony	1.0E-02	NA	NA	4.0E-04	6.0E-05	1
Arsenic	3.0E-02	1.5E+00	1.5E+00	3.0E-04	3.0E-04	1
Barium	1.0E-02	NA	NA	2.0E-01	1.4E-02	1
Beryllium	1.0E-02	NA	NA	2.0E-03	1.4E-05	1
Cadmium	1.0E-03	NA	NA	1.0E-03	2.5E-05	1
Chromium	1.0E-02	NA	NA	1.5E+00	2.0E-02	1
Cobalt	1.0E-02	NA	NA	3.0E-04	3.0E-04	1
Copper	1.0E-02	NA	NA	4.0E-02	4.0E-02	1
Lead	1.0E-02	NA	NA	NA	NA	1
Mercury	1.0E-02	NA	NA	3.0E-04	2.1E-05	1
Molybdenum	1.0E-02	NA	NA	5.0E-03	5.0E-03	1
Nickel	1.0E-02	NA	NA	2.0E-02	8.0E-04	1
Selenium	1.0E-02	NA	NA	5.0E-03	5.0E-03	1
Silver	1.0E-02	NA	NA	5.0E-03	2.0E-04	1
Thallium	1.0E-02	NA	NA	NA	NA	1
Vanadium	1.0E-02	NA	NA	5.0E-03	5.0E-03	1
Zinc	1.0E-02	NA	NA	3.0E-01	3.0E-01	1
Hexavalent Chromium	1.0E-02	5.0E-01	1.3E-02	3.0E-03	7.5E-05	1
Dibutyltin	1.0E-02	NA	NA	3.0E-04	3.0E-04	1

Notes:
1 - All values from EPA's Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, July 2004.
2 - See Tables B-1 and B-2 for toxicity value sources

CALCULATION OF SEDIMENT SCREENING LEVELS (PAGE 3)

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: ADULT RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

CHEMICAL	Carcinogenic Intake Factors		Noncarcinogenic Intakes Factors	
	Oral (kg/kg/day)	Dermal (kg/kg/day)	Oral (kg/kg/day)	Dermal (kg/kg/day)
1,3-Dichlorobenzene	1.17E-07	1.41E-08	2.74E-07	3.28E-08
1,4-Dichlorobenzene	1.17E-07	1.41E-08	2.74E-07	3.28E-08
2-Butanone	1.17E-07	1.41E-08	2.74E-07	3.28E-08
Acetone	1.17E-07	1.41E-08	2.74E-07	3.28E-08
Carbon Disulfide	1.17E-07	1.41E-08	2.74E-07	3.28E-08
Chlorobenzene	1.17E-07	1.41E-08	2.74E-07	3.28E-08
Chloromethane	1.17E-07	1.41E-08	2.74E-07	3.28E-08
cis-1,2-Dichloroethene	1.17E-07	1.41E-08	2.74E-07	3.28E-08
Isopropylbenzene	1.17E-07	1.41E-08	2.74E-07	3.28E-08
Methyl Tert-Butyl Ether	1.17E-07	1.41E-08	2.74E-07	3.28E-08
Naphthalene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
sec-Butylbenzene	1.17E-07	1.41E-08	2.74E-07	3.28E-08
Tert-Butylbenzene	1.17E-07	1.41E-08	2.74E-07	3.28E-08
Toluene	1.17E-07	1.41E-08	2.74E-07	3.28E-08
1,2-Dichlorobenzene	1.17E-07	1.41E-08	2.74E-07	3.28E-08
1-Methylnaphthalene	1.17E-07	4.68E-08	2.74E-07	1.09E-07
2-Methylnaphthalene	1.17E-07	4.68E-08	2.74E-07	1.09E-07
Acenaphthene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Acenaphthylene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Anthracene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
BaP Equivalent	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Benzo(a)anthracene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Benzo(a)pyrene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Benzo(b)fluoranthene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Benzo(g,h,i)perylene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Benzo(k)fluoranthene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Bis(2-ethylhexyl)phthalate	1.17E-07	4.68E-08	2.74E-07	1.09E-07
Butyl Benzyl Phthalate	1.17E-07	4.68E-08	2.74E-07	1.09E-07
Carbazole	1.17E-07	4.68E-08	2.74E-07	1.09E-07
Chrysene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Dibenzo(a,h)anthracene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Dibenzofuran	1.17E-07	4.68E-08	2.74E-07	1.09E-07
Fluoranthene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Fluorene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Indeno(1,2,3-cd)pyrene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Naphthalene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Phenanthrene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Pyrene	1.17E-07	6.09E-08	2.74E-07	1.42E-07
Aroclor-1248	1.17E-07	6.56E-08	2.74E-07	1.53E-07
Aroclor-1254	1.17E-07	6.56E-08	2.74E-07	1.53E-07
Aroclor-1260	1.17E-07	6.56E-08	2.74E-07	1.53E-07
Antimony	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Arsenic	1.17E-07	1.41E-08	2.74E-07	3.28E-08
Barium	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Beryllium	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Cadmium	1.17E-07	4.68E-10	2.74E-07	1.09E-09
Chromium	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Cobalt	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Copper	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Lead	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Mercury	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Molybdenum	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Nickel	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Selenium	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Silver	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Thallium	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Vanadium	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Zinc	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Hexavalent Chromium	1.17E-07	4.68E-09	2.74E-07	1.09E-08
Dibutyltin	1.17E-07	4.68E-09	2.74E-07	1.09E-08

CALCULATION OF SEDIMENT SCREENING LEVELS (PAGE 4)

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: ADULT RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

CHEMICAL	Sediment Concentration		Risk-Based[(1)] Concentration (mg/kg)
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	
1,3-Dichlorobenzene	NA	NA	NA
1,4-Dichlorobenzene	1,409	228,186	1,409
2-Butanone	NA	1,955,881	1,955,881
Acetone	NA	2,933,822	2,933,822
Carbon Disulfide	NA	325,980	325,980
Chlorobenzene	NA	65,196	65,196
Chloromethane	NA	NA	NA
cis-1,2-Dichloroethene	NA	6,520	6,520
Isopropylbenzene	NA	325,980	325,980
Methyl Tert-Butyl Ether	4,226	NA	4,226
Naphthalene	NA	48,067	48,067
sec-Butylbenzene	NA	NA	NA
Tert-Butylbenzene	NA	NA	NA
Toluene	NA	260,784	260,784
1,2-Dichlorobenzene	NA	293,382	293,382
1-Methylnaphthalene	210	182,630	210
2-Methylnaphthalene	NA	10,436	10,436
Acenaphthene	NA	144,202	144,202
Acenaphthylene	NA	NA	NA
Anthracene	NA	721,011	721,011
BaP Equivalent	0.768	NA	0.768
Benzo(a)anthracene	7.68	NA	7.68
Benzo(a)pyrene	0.768	NA	0.768
Benzo(b)fluoranthene	7.68	NA	7.68
Benzo(g,h,i)perylene	NA	NA	NA
Benzo(k)fluoranthene	76.8	NA	76.8
Bis(2-ethylhexyl)phthalate	435	52,180	435
Butyl Benzyl Phthalate	3,204	521,801	3,204
Carbazole	NA	NA	NA
Chrysene	768	NA	768
Dibenzo(a,h)anthracene	0.768	NA	0.768
Dibenzofuran	NA	2609	2609
Fluoranthene	NA	96,135	96,135
Fluorene	NA	96,135	96,135
Indeno(1,2,3-cd)pyrene	7.68	NA	7.68
Naphthalene	NA	48,067	48,067
Phenanthrene	NA	NA	NA
Pyrene	NA	72,101	72,101
Aroclor-1248	2.73	NA	2.73
Aroclor-1254	2.73	46.8	2.73
Aroclor-1260	2.73	NA	2.73
Antimony	NA	1,153	1,153
Arsenic	5.07	978	5.07
Barium	NA	464,968	464,968
Beryllium	NA	1,090	1,090
Cadmium	NA	3,148	3,148
Chromium	NA	1345463	1345463
Cobalt	NA	1,053	1,053
Copper	NA	140,398	140,398
Lead	NA	NA	NA
Mercury	NA	697	697
Molybdenum	NA	17,550	17,550
Nickel	NA	36,546	36,546
Selenium	NA	17,550	17,550
Silver	NA	9,136	9,136
Thallium	NA	NA	NA
Vanadium	NA	17,550	17,550
Zinc	NA	1,052,986	1,052,986
Hexavalent Chromium	17	4,218	17
Dibutyltin	NA	1053	1053

Notes:
1 - Screening level is the lower of the carcinogenic sediment concentration and noncarcinogenic sediment concentration.

CALCULATION OF SEDIMENT SCREENING LEVELS

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: ADOLESCENT RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

THIS SPREADSHEET CALCULATES SCREENING LEVELS FOR EXPOSURES TO SEDIMENT VIA INCIDENTAL INGESTION AND DERMAL CONTACT.

RELEVANT EQUATIONS:

Carcinogens

$$RBC_{sed} = \frac{TCR}{Intake_{oral} \cdot CSF_{oral} + Intake_{derm} \cdot CSF_{derm}}$$

Noncarcinogens

$$RBC_{sed} = \frac{THI}{\left(\frac{Intake_{oral}}{RfD_{oral}}\right) + \left(\frac{Intake_{derm}}{RfD_{derm}}\right)}$$

$$Intake_{oral} = \frac{IR \times EF \times ED \times FI \times CF}{BW \times AT} \times ADAF$$

$$Intake_{derm} = \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times ADAF$$

INPUT ASSUMPTIONS[(1)]:			
	Parameter	**Value**	**Definition**
General	RBC = :		Risk-based concentration screening level in sediment (mg/kg)
	TCR = :	1.0E-06	Target Cancer Risk
	THI = :	1	Target Hazard Index
	EF = :	70	Exposure Frequency (days/year)
	ED = :	12	Exposure Duration (years)
	BW = :	40	Body Weight (kg) (USEPA, 1997)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	4,380	Averaging time for noncarcinogenic exposures (days)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	ADAF = :	Chemical Specific	Age Dependent Adjustment Factor
Incidental Ingestion	IR = :	100	Sediment Ingestion Rate (mg/day) (USEPA, 1993)
	FI = :	1	Fraction from contaminated source (unitless)
Dermal Contact	SA = :	4,320	Skin surface available for contact (cm^2/day)
	AF = :	0.07	Sediment to skin adherence factor (mg/cm^2) (USEPA, 2004)
	ABS = :	Chemical Specific	Absorption factor (unitless)

1 - Methodology from *2005 Surface Water and Sediment Sampling Report for the Lockheed Martin Middle River Complex, Middle River, Maryland* (Tetra Tech, 2005).

CALCULATION OF SEDIMENT SCREENING LEVELS (PAGE 2)

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: ADOLESCENT RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

CHEMICAL	ABS[1]	Cancer Slope Factor[2]		Reference Dose[2]		Age Dependent Adjustment Factor
		Oral (mg/kg/day)$^{-1}$	Dermal (mg/kg/day)$^{-1}$	Oral (mg/kg/day)	Dermal (mg/kg/day)	
1,3-Dichlorobenzene	3.0E-02	NA	NA	NA	NA	1
1,4-Dichlorobenzene	3.0E-02	5.4E-03	5.4E-03	7.0E-02	7.0E-02	1
2-Butanone	3.0E-02	NA	NA	6.0E-01	6.0E-01	1
Acetone	3.0E-02	NA	NA	9.0E-01	9.0E-01	1
Carbon Disulfide	3.0E-02	NA	NA	1.0E-01	1.0E-01	1
Chlorobenzene	3.0E-02	NA	NA	2.0E-02	2.0E-02	1
Chloromethane	3.0E-02	NA	NA	NA	NA	1
cis-1,2-Dichloroethene	3.0E-02	NA	NA	2.0E-03	2.0E-03	1
Isopropylbenzene	3.0E-02	NA	NA	1.0E-01	1.0E-01	1
Methyl Tert-Butyl Ether	3.0E-02	1.8E-03	1.8E-03	NA	NA	1
Naphthalene	1.3E-01	NA	NA	2.0E-02	2.0E-02	1
sec-Butylbenzene	3.0E-02	NA	NA	NA	NA	1
Tert-Butylbenzene	3.0E-02	NA	NA	NA	NA	1
Toluene	3.0E-02	NA	NA	8.0E-02	8.0E-02	1
1,2-Dichlorobenzene	3.0E-02	NA	NA	9.0E-02	9.0E-02	1
1-Methylnaphthalene	1.0E-01	2.9E-02	2.9E-02	7.0E-02	7.0E-02	1
2-Methylnaphthalene	1.0E-01	NA	NA	4.0E-03	4.0E-03	1
Acenaphthene	1.3E-01	NA	NA	6.0E-02	6.0E-02	1
Acenaphthylene	1.3E-01	NA	NA	NA	NA	1
Anthracene	1.3E-01	NA	NA	3.0E-01	3.0E-01	1
BaP Equivalent	1.3E-01	7.3E+00	7.3E+00	NA	NA	3
Benzo(a)anthracene	1.3E-01	7.3E-01	7.3E-01	NA	NA	3
Benzo(a)pyrene	1.3E-01	7.3E+00	7.3E+00	NA	NA	3
Benzo(b)fluoranthene	1.3E-01	7.3E-01	7.3E-01	NA	NA	3
Benzo(g,h,i)perylene	1.3E-01	NA	NA	NA	NA	1
Benzo(k)fluoranthene	1.3E-01	7.3E-02	7.3E-02	NA	NA	3
Bis(2-ethylhexyl)phthalate	1.0E-01	1.4E-02	1.4E-02	2.0E-02	2.0E-02	1
Butyl Benzyl Phthalate	1.0E-01	1.9E-03	1.9E-03	2.0E-01	2.0E-01	1
Carbazole	1.0E-01	NA	NA	NA	NA	1
Chrysene	1.3E-01	7.3E-03	7.3E-03	NA	NA	3
Dibenzo(a,h)anthracene	1.3E-01	7.3E+00	7.3E+00	NA	NA	3
Dibenzofuran	1.0E-01	NA	NA	1.0E-03	1.0E-03	1
Fluoranthene	1.3E-01	NA	NA	4.0E-02	4.0E-02	1
Fluorene	1.3E-01	NA	NA	4.0E-02	4.0E-02	1
Indeno(1,2,3-cd)pyrene	1.3E-01	7.3E-01	7.3E-01	NA	NA	3
Naphthalene	1.3E-01	NA	NA	2.0E-02	2.0E-02	1
Phenanthrene	1.3E-01	NA	NA	NA	NA	1
Pyrene	1.3E-01	NA	NA	3.0E-02	3.0E-02	1
Aroclor-1248	1.4E-01	2.0E+00	2.0E+00	NA	NA	1
Aroclor-1254	1.4E-01	2.0E+00	2.0E+00	2.0E-05	2.0E-05	1
Aroclor-1260	1.4E-01	2.0E+00	2.0E+00	NA	NA	1
Antimony	1.0E-02	NA	NA	4.0E-04	6.0E-05	1
Arsenic	3.0E-02	1.5E+00	1.5E+00	3.0E-04	3.0E-04	1
Barium	1.0E-02	NA	NA	2.0E-01	1.4E-02	1
Beryllium	1.0E-02	NA	NA	2.0E-03	1.4E-05	1
Cadmium	1.0E-03	NA	NA	1.0E-03	2.5E-05	1
Chromium	1.0E-02	NA	NA	1.5E+00	2.0E-02	1
Cobalt	1.0E-02	NA	NA	3.0E-04	3.0E-04	1
Copper	1.0E-02	NA	NA	4.0E-02	4.0E-02	1
Lead	1.0E-02	NA	NA	NA	NA	1
Mercury	1.0E-02	NA	NA	3.0E-04	2.1E-05	1
Molybdenum	1.0E-02	NA	NA	5.0E-03	5.0E-03	1
Nickel	1.0E-02	NA	NA	2.0E-02	8.0E-04	1
Selenium	1.0E-02	NA	NA	5.0E-03	5.0E-03	1
Silver	1.0E-02	NA	NA	5.0E-03	2.0E-04	1
Thallium	1.0E-02	NA	NA	NA	NA	1
Vanadium	1.0E-02	NA	NA	5.0E-03	5.0E-03	1
Zinc	1.0E-02	NA	NA	3.0E-01	3.0E-01	1
Hexavalent Chromium	1.0E-02	5.0E-01	1.3E-02	3.0E-03	7.5E-05	3
Dibutyltin	1.0E-02	NA	NA	3.0E-04	3.0E-04	1

Notes:
1 - All values from EPA's Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, July 2004.
2 - See Tables B-1 and B-2 for toxicity value sources.

CALCULATION OF SEDIMENT SCREENING LEVELS (PAGE 3)

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: ADOLESCENT RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

CHEMICAL	Carcinogenic Intake Factors		Noncarcinogenic Intakes Factors	
	Oral (kg/kg/day)	Dermal (kg/kg/day)	Oral (kg/kg/day)	Dermal (kg/kg/day)
1,3-Dichlorobenzene	8.22E-08	7.46E-09	4.79E-07	4.35E-08
1,4-Dichlorobenzene	8.22E-08	7.46E-09	4.79E-07	4.35E-08
2-Butanone	8.22E-08	7.46E-09	4.79E-07	4.35E-08
Acetone	8.22E-08	7.46E-09	4.79E-07	4.35E-08
Carbon Disulfide	8.22E-08	7.46E-09	4.79E-07	4.35E-08
Chlorobenzene	8.22E-08	7.46E-09	4.79E-07	4.35E-08
Chloromethane	8.22E-08	7.46E-09	4.79E-07	4.35E-08
cis-1,2-Dichloroethene	8.22E-08	7.46E-09	4.79E-07	4.35E-08
Isopropylbenzene	8.22E-08	7.46E-09	4.79E-07	4.35E-08
Methyl Tert-Butyl Ether	8.22E-08	7.46E-09	4.79E-07	4.35E-08
Naphthalene	8.22E-08	3.23E-08	4.79E-07	1.88E-07
sec-Butylbenzene	8.22E-08	7.46E-09	4.79E-07	4.35E-08
Tert-Butylbenzene	8.22E-08	7.46E-09	4.79E-07	4.35E-08
Toluene	8.22E-08	7.46E-09	4.79E-07	4.35E-08
1,2-Dichlorobenzene	8.22E-08	7.46E-09	4.79E-07	4.35E-08
1-Methylnaphthalene	8.22E-08	2.49E-08	4.79E-07	1.45E-07
2-Methylnaphthalene	8.22E-08	2.49E-08	4.79E-07	1.45E-07
Acenaphthene	8.22E-08	3.23E-08	4.79E-07	1.88E-07
Acenaphthylene	8.22E-08	3.23E-08	4.79E-07	1.88E-07
Anthracene	8.22E-08	3.23E-08	4.79E-07	1.88E-07
BaP Equivalent	2.47E-07	9.69E-08	4.79E-07	1.88E-07
Benzo(a)anthracene	2.47E-07	9.69E-08	4.79E-07	1.88E-07
Benzo(a)pyrene	2.47E-07	9.69E-08	4.79E-07	1.88E-07
Benzo(b)fluoranthene	2.47E-07	9.69E-08	4.79E-07	1.88E-07
Benzo(g,h,i)perylene	8.22E-08	3.23E-08	4.79E-07	1.88E-07
Benzo(k)fluoranthene	2.47E-07	9.69E-08	4.79E-07	1.88E-07
Bis(2-ethylhexyl)phthalate	8.22E-08	2.49E-08	4.79E-07	1.45E-07
Butyl Benzyl Phthalate	8.22E-08	2.49E-08	4.79E-07	1.45E-07
Carbazole	8.22E-08	2.49E-08	4.79E-07	1.45E-07
Chrysene	2.47E-07	9.69E-08	4.79E-07	1.88E-07
Dibenzo(a,h)anthracene	2.47E-07	9.69E-08	4.79E-07	1.88E-07
Dibenzofuran	8.22E-08	2.49E-08	4.79E-07	1.45E-07
Fluoranthene	8.22E-08	3.23E-08	4.79E-07	1.88E-07
Fluorene	8.22E-08	3.23E-08	4.79E-07	1.88E-07
Indeno(1,2,3-cd)pyrene	2.47E-07	9.69E-08	4.79E-07	1.88E-07
Naphthalene	8.22E-08	3.23E-08	4.79E-07	1.88E-07
Phenanthrene	8.22E-08	3.23E-08	4.79E-07	1.88E-07
Pyrene	8.22E-08	3.23E-08	4.79E-07	1.88E-07
Aroclor-1248	8.22E-08	3.48E-08	4.79E-07	2.03E-07
Aroclor-1254	8.22E-08	3.48E-08	4.79E-07	2.03E-07
Aroclor-1260	8.22E-08	3.48E-08	4.79E-07	2.03E-07
Antimony	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Arsenic	8.22E-08	7.46E-09	4.79E-07	4.35E-08
Barium	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Beryllium	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Cadmium	8.22E-08	2.49E-10	4.79E-07	1.45E-09
Chromium	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Cobalt	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Copper	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Lead	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Mercury	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Molybdenum	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Nickel	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Selenium	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Silver	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Thallium	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Vanadium	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Zinc	8.22E-08	2.49E-09	4.79E-07	1.45E-08
Hexavalent Chromium	2.47E-07	7.46E-09	4.79E-07	1.45E-08
Dibutyltin	8.22E-08	2.49E-09	4.79E-07	1.45E-08

CALCULATION OF SEDIMENT SCREENING LEVELS (PAGE 4)

SITE NAME: LOCKHEED MARTIN MIDDLE RIVER COMPLEX
EXPOSURE POINT: COW PEN CREEK/DARK HEAD COVE
EXPOSURE SCENARIO: ADOLESCENT RECREATIONAL USERS
MEDIA: SEDIMENT
DATE: JANUARY 20, 2011

CHEMICAL	Sediment Concentration		Risk-Based[(1)] Concentration (mg/kg)
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	
1,3-Dichlorobenzene	NA	NA	NA
1,4-Dichlorobenzene	2,066	133,857	2,066
2-Butanone	NA	1,147,342	1,147,342
Acetone	NA	1,721,013	1,721,013
Carbon Disulfide	NA	191,224	191,224
Chlorobenzene	NA	38,245	38,245
Chloromethane	NA	NA	NA
cis-1,2-Dichloroethene	NA	3,824	3,824
Isopropylbenzene	NA	191,224	191,224
Methyl Tert-Butyl Ether	6,197	NA	6,197
Naphthalene	NA	29,943	29,943
sec-Butylbenzene	NA	NA	NA
Tert-Butylbenzene	NA	NA	NA
Toluene	NA	152,979	152,979
1,2-Dichlorobenzene	NA	172,101	172,101
1-Methylnaphthalene	322	112,101	322
2-Methylnaphthalene	NA	6,406	6,406
Acenaphthene	NA	89,829	89,829
Acenaphthylene	NA	NA	NA
Anthracene	NA	449,146	449,146
BaP Equivalent	0.40	NA	0.40
Benzo(a)anthracene	4.0	NA	4.0
Benzo(a)pyrene	0.40	NA	0.40
Benzo(b)fluoranthene	4.0	NA	4.0
Benzo(g,h,i)perylene	NA	NA	NA
Benzo(k)fluoranthene	40	NA	40
Bis(2-ethylhexyl)phthalate	667	32,029	667
Butyl Benzyl Phthalate	4,917	320,288	4,917
Carbazole	NA	NA	NA
Chrysene	399	NA	399
Dibenzo(a,h)anthracene	0.40	NA	0.40
Dibenzofuran	NA	1601	1601
Fluoranthene	NA	59,886	59,886
Fluorene	NA	59,886	59,886
Indeno(1,2,3-cd)pyrene	4.0	NA	4.0
Naphthalene	NA	29,943	29,943
Phenanthrene	NA	NA	NA
Pyrene	NA	44,915	44,915
Aroclor-1248	4.27	NA	4.27
Aroclor-1254	4.27	29.3	4.27
Aroclor-1260	4.27	NA	4.27
Antimony	NA	694	694
Arsenic	7.44	574	7.44
Barium	NA	291,301	291,301
Beryllium	NA	784	784
Cadmium	NA	1,861	1,861
Chromium	NA	940597	940597
Cobalt	NA	607	607
Copper	NA	80,980	80,980
Lead	NA	NA	NA
Mercury	NA	437	437
Molybdenum	NA	10,122	10,122
Nickel	NA	23,755	23,755
Selenium	NA	10,122	10,122
Silver	NA	5,939	5,939
Thallium	NA	NA	NA
Vanadium	NA	10,122	10,122
Zinc	NA	607,348	607,348
Hexavalent Chromium	8.10	2,832	8.10
Dibutyltin	NA	607	607

Notes:
1 - Screening level is the lower of the carcinogenic sediment concentration and noncarcinogenic sediment concentration.

CALCULATION WORKSHEET

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		**JOB NUMBER:** 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN CHILD RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	**CHECKED BY:** Matthew D Kraus	**DATE:** 6/8/2009

PURPOSE: This spreadsheet calculates risk-based cleanup goals for exposures to sediment. Exposures through incidental ingestion and dermal contact are considered.

RELEVANT EQUATIONS:

Carcinogens

$$RBC_{sed} = \frac{TCR}{Intake_{oral} \cdot CSF_{oral} + Intake_{derm} \cdot CSF_{derm}}$$

NonCarcinogens

$$RBC_{sed} = \frac{THI}{\left(\frac{Intake_{oral}}{RfD_{oral}}\right) + \left(\frac{Intake_{derm}}{RfD_{derm}}\right)}$$

$$Intake_{oral} = \frac{IR \times EF \times ED \times FI \times CF}{BW \times AT}$$

$$Intake_{derm} = \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$$

CLIENT:		JOB NUMBER:
LOCKHEED MARTIN MIDDLE RIVER COMPLEX		2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN CHILD RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 6/8/2009

INPUT ASSUMPTIONS:			
	Parameter	Value	Definition
General	PRG = :		Screening level in soil (mg/kg)
	TCR = :	1.0E-06	Target Cancer Risk
	THI = :	1	Target Hazard Index
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	EF = :	70	Exposure Frequency (days/year)
	ED = :	6	Exposure Duration (years)
	BW = :	15	Body Weight (kg) (USEPA, 1997)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	2,190	Averaging time for noncarcinogenic exposures (days)
Incidental Ingestion	IR = :	200	Soil Ingestion Rate (mg/day) (USEPA, 1993)
	FI = :	1	Fraction from contaminated source (unitless)
Dermal Contact	SA = :	2800	Skin surface available for contact (cm^2/event)(1)
	AF = :	0.2	Soil to skin adherence factor (mg/cm^2) (USEPA, 2004)
	ABS = :	0.03	Absorption factor (unitless) Chemical Specific (USEPA, 2004)
Toxicity Values	CSForal = :	1.5E+00	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
	RfDoral = :	3.0E-04	oral noncarcinogenic reference dose (mg/kg/day)
	CSFderm = :	1.5E+00	dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)
	RfDderm = :	3.0E-04	dermal noncarcinogenic reference dose (mg/kg/day)

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		JOB NUMBER: 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN CHILD RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 6/8/2009

EXAMPLE CALCULATION FOR INCIDENTAL INGESTION OF SEDIMENT - CARCINOGENS

$$Intake_{oral} = \frac{200\ mg/day \times 70\ days/year \times 6\ years \times 1 \times 1.0E\text{-}06\ kg/mg}{15\ kg \times 25550\ days}$$

$Intake_{oral}$ = 2.19E-07 kg/kg-day

EXAMPLE CALCULATION FOR INCIDENTAL INGESTION OF SEDIMENT - NONCARCINOGENS

$$Intake_{oral} = \frac{200\ mg/day \times 70\ days/year \times 6\ years \times 1 \times 1.0E\text{-}06\ kg/mg}{15\ kg \times 2190\ days}$$

$Intake_{oral}$ = 2.56E-06 kg/kg-day

EXAMPLE CALCULATION FOR DERMAL CONTACT WITH SEDIMENT - CARCINOGENS

$$Intake_{derm} = \frac{2800\ cm2/event \times 0.2\ mg/cm2 \times 0.03 \times 70\ events/year \times 6\ years \times 1.0E\text{-}06\ kg/mg}{15\ kg \times 25550\ days}$$

$Intake_{derm}$ = 1.84E-08 kg/kg-day

EXAMPLE CALCULATION FOR DERMAL CONTACT WITH SEDIMENT - NONCARCINOGENS

$$Intake_{derm} = \frac{2800\ cm2/event \times 0.2\ mg/cm2 \times 0.03 \times 70\ events/year \times 6\ years \times 1.0E\text{-}06\ kg/mg}{15\ kg \times 2190\ days}$$

$Intake_{derm}$ = 2.15E-07 kg/kg-day

CALCULATION WORKSHEET

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		**JOB NUMBER:** 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN CHILD RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	**CHECKED BY:** Matthew J Olivares	**DATE:** 6/8/2009

EXAMPLE CALCULATION OF PRGsed - CARCINOGENS

$$PRG_{sed} = \frac{1.0E\text{-}06}{(2.19E\text{-}07\ kg/kg\text{-}day \times 1.5E{+}00\ kg\text{-}day/mg) + (1.84E\text{-}08\ kg/kg\text{-}day \times 1.5E{+}00\ kg\text{-}day/mg)}$$

PRG_{sed} = 2.81 mg/kg

EXAMPLE CALCULATION OF PRGsed - NONCARCINOGENS

$$PRG_{sed} = \frac{1}{(2.56E\text{-}06\ kg/kg/day\ /\ 3.0E\text{-}04\ mg/kg\text{-}day) + (2.15E\text{-}07\ kg/kg/day\ /\ 3.0E\text{-}04\ mg/kg\text{-}day)}$$

PRG_{sed} = 108 mg/kg

CALCULATION WORKSHEET

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		**JOB NUMBER:** 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN ADOLESCENT RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	**CHECKED BY:** Matthew D Kraus	**DATE:** 6/8/2009

PURPOSE: This spreadsheet calculates risk-based cleanup goals for exposures to sediment. Exposures through incidental ingestion and dermal contact are considered.

RELEVANT EQUATIONS:

Carcinogens

$$RBC_{sed} = \frac{TCR}{Intake_{oral} \cdot CSF_{oral} + Intake_{derm} \cdot CSF_{derm}}$$

NonCarcinogens

$$RBC_{sed} = \frac{THI}{\left(\frac{Intake_{oral}}{RfD_{oral}}\right) + \left(\frac{Intake_{derm}}{RfD_{derm}}\right)}$$

$$Intake_{oral} = \frac{IR \times EF \times ED \times FI \times CF}{BW \times AT}$$

$$Intake_{derm} = \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$$

CLIENT:		JOB NUMBER:
LOCKHEED MARTIN MIDDLE RIVER COMPLEX		2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN ADOLESCENT RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 6/8/2009

INPUT ASSUMPTIONS:

	Parameter	Value	Definition
General	PRG = :		Screening level in soil (mg/kg)
	TCR = :	1.0E-06	Target Cancer Risk
	THI = :	1	Target Hazard Index
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	EF = :	70	Exposure Frequency (days/year)
	ED = :	12	Exposure Duration (years)
	BW = :	40	Body Weight (kg) (USEPA, 1997)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	4,380	Averaging time for noncarcinogenic exposures (days)
Incidental Ingestion	IR = :	100	Soil Ingestion Rate (mg/day) (USEPA, 1993)
	FI = :	1	Fraction from contaminated source (unitless)
Dermal Contact	SA = :	4320	Skin surface available for contact (cm^2/event)(1)
	AF = :	0.07	Soil to skin adherence factor (mg/cm^2) (USEPA, 2004)
	ABS = :	0.03	Absorption factor (unitless) Chemical Specific (USEPA, 2004)
Toxicity Values	CSForal = :	1.5E+00	oral carcinogenic slope factor $((mg/kg/day)^{-1})$
	RfDoral = :	3.0E-04	oral noncarcinogenic reference dose (mg/kg/day)
	CSFderm = :	1.5E+00	dermal carcinogenic slope factor $((mg/kg/day)^{-1})$
	RfDderm = :	3.0E-04	dermal noncarcinogenic reference dose (mg/kg/day)

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		JOB NUMBER: 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN ADOLESCENT RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY: Matthew D Kraus	DATE: 6/8/2009

EXAMPLE CALCULATION FOR INCIDENTAL INGESTION OF SEDIMENT - CARCINOGENS

$$Intake_{oral} = \frac{100\ mg/day \times 70\ days/year \times 12\ years \times 1 \times 1.0E\text{-}06\ kg/mg}{40\ kg \times 25550\ days}$$

$Intake_{oral}$ = 8.22E-08 kg/kg-day

EXAMPLE CALCULATION FOR INCIDENTAL INGESTION OF SEDIMENT - NONCARCINOGENS

$$Intake_{oral} = \frac{100\ mg/day \times 70\ days/year \times 12\ years \times 1 \times 1.0E\text{-}06\ kg/mg}{40\ kg \times 4380\ days}$$

$Intake_{oral}$ = 4.79E-07 kg/kg-day

EXAMPLE CALCULATION FOR DERMAL CONTACT WITH SEDIMENT - CARCINOGENS

$$Intake_{derm} = \frac{4320\ cm2/event \times 0.07\ mg/cm2 \times 0.03 \times 70\ events/year \times 12\ years \times 1.0E\text{-}06\ kg/mg}{40\ kg \times 25550\ days}$$

$Intake_{derm}$ = 7.46E-09 kg/kg-day

EXAMPLE CALCULATION FOR DERMAL CONTACT WITH SEDIMENT - NONCARCINOGENS

$$Intake_{derm} = \frac{4320\ cm2/event \times 0.07\ mg/cm2 \times 0.03 \times 70\ events/year \times 12\ years \times 1.0E\text{-}06\ kg/mg}{40\ kg \times 4380\ days}$$

$Intake_{derm}$ = 4.35E-08 kg/kg-day

CALCULATION WORKSHEET

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		**JOB NUMBER:** 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN ADOLESCENT RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 6/8/2009

EXAMPLE CALCULATION OF PRGsed - CARCINOGENS

$$PRG_{sed} = \frac{1.0E\text{-}06}{(8.22E\text{-}08 \text{ kg/kg-day} \times 1.5E{+}00 \text{ kg-day/mg}) + (7.46E\text{-}09 \text{ kg/kg-day} \times 1.5E{+}00 \text{ kg-day/mg})}$$

PRG_{sed} = 7.44 mg/kg

EXAMPLE CALCULATION OF PRGsed - NONCARCINOGENS

$$PRG_{sed} = \frac{1}{(4.79E\text{-}07 \text{ kg/kg/day} / 3.0E\text{-}04 \text{ mg/kg-day}) + (4.35E\text{-}08 \text{ kg/kg/day} / 3.0E\text{-}04 \text{ mg/kg-day})}$$

PRG_{sed} = 574 mg/kg

CALCULATION WORKSHEET

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		**JOB NUMBER:** 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN ADULT RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	**CHECKED BY:** Matthew T. Olsen	**DATE:** 6/8/2009

PURPOSE: This spreadsheet calculates risk-based cleanup goals for exposures to sediment. Exposures through incidental ingestion and dermal contact are considered.

RELEVANT EQUATIONS:

Carcinogens

$$RBC_{sed} = \frac{TCR}{Intake_{oral} \cdot CSF_{oral} + Intake_{derm} \cdot CSF_{derm}}$$

NonCarcinogens

$$RBC_{sed} = \frac{THI}{\left(\frac{Intake_{oral}}{RfD_{oral}}\right) + \left(\frac{Intake_{derm}}{RfD_{derm}}\right)}$$

$$Intake_{oral} = \frac{IR \times EF \times ED \times FI \times CF}{BW \times AT}$$

$$Intake_{derm} = \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$$

CLIENT:		JOB NUMBER:
LOCKHEED MARTIN MIDDLE RIVER COMPLEX		2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN ADULT RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY: Matthew D Haus	DATE: 6/8/2009

INPUT ASSUMPTIONS:			
	Parameter	Value	Definition
General	PRG = :		Screening level in soil (mg/kg)
	TCR = :	1.0E-06	Target Cancer Risk
	THI = :	1	Target Hazard Index
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	EF = :	70	Exposure Frequency (days/year)
	ED = :	30	Exposure Duration (years)
	BW = :	70	Body Weight (kg) (USEPA, 1997)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	10,950	Averaging time for noncarcinogenic exposures (days)
Incidental Ingestion	IR = :	100	Soil Ingestion Rate (mg/day) (USEPA, 1993)
	FI = :	1	Fraction from contaminated source (unitless)
Dermal Contact	SA = :	5700	Skin surface available for contact (cm^2/event)(1)
	AF = :	0.07	Soil to skin adherence factor (mg/cm^2) (USEPA, 2004)
	ABS = :	0.03	Absorption factor (unitless) Chemical Specific (USEPA, 2004)
Toxicity Values	CSForal = :	1.5E+00	oral carcinogenic slope factor $((mg/kg/day)^{-1})$
	RfDoral = :	3.0E-04	oral noncarcinogenic reference dose (mg/kg/day)
	CSFderm = :	1.5E+00	dermal carcinogenic slope factor $((mg/kg/day)^{-1})$
	RfDderm = :	3.0E-04	dermal noncarcinogenic reference dose (mg/kg/day)

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		JOB NUMBER: 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN ADULT RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 6/8/2009

EXAMPLE CALCULATION FOR INCIDENTAL INGESTION OF SEDIMENT - CARCINOGENS

$$Intake_{oral} = \frac{100\ mg/day \times 70\ days/year \times 30\ years \times 1 \times 1.0E\text{-}06\ kg/mg}{70\ kg \times 25550\ days}$$

$Intake_{oral}$ = 1.17E-07 kg/kg-day

EXAMPLE CALCULATION FOR INCIDENTAL INGESTION OF SEDIMENT - NONCARCINOGENS

$$Intake_{oral} = \frac{100\ mg/day \times 70\ days/year \times 30\ years \times 1 \times 1.0E\text{-}06\ kg/mg}{70\ kg \times 10950\ days}$$

$Intake_{oral}$ = 2.74E-07 kg/kg-day

EXAMPLE CALCULATION FOR DERMAL CONTACT WITH SEDIMENT - CARCINOGENS

$$Intake_{derm} = \frac{5700\ cm2/event \times 0.07\ mg/cm2 \times 0.03 \times 70\ events/year \times 30\ years \times 1.0E\text{-}06\ kg/mg}{70\ kg \times 25550\ days}$$

$Intake_{derm}$ = 1.41E-08 kg/kg-day

EXAMPLE CALCULATION FOR DERMAL CONTACT WITH SEDIMENT - NONCARCINOGENS

$$Intake_{derm} = \frac{5700\ cm2/event \times 0.07\ mg/cm2 \times 0.03 \times 70\ events/year \times 30\ years \times 1.0E\text{-}06\ kg/mg}{70\ kg \times 10950\ days}$$

$Intake_{derm}$ = 3.28E-08 kg/kg-day

CALCULATION WORKSHEET

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		**JOB NUMBER:** 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN ADULT RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 6/8/2009

EXAMPLE CALCULATION OF PRGsed - CARCINOGENS

$$PRG_{sed} = \frac{1.0E\text{-}06}{(1.17E\text{-}07 \text{ kg/kg-day} \times 1.5E{+}00 \text{ kg-day/mg}) + (1.41E\text{-}08 \text{ kg/kg-day} \times 1.5E{+}00 \text{ kg-day/mg})}$$

PRG_{sed} = 5.07 mg/kg

EXAMPLE CALCULATION OF PRGsed - NONCARCINOGENS

$$PRG_{sed} = \frac{1}{(2.74E\text{-}07 \text{ kg/kg/day} / 3.0E\text{-}04 \text{ mg/kg-day}) + (3.28E\text{-}08 \text{ kg/kg/day} / 3.0E\text{-}04 \text{ mg/kg-day})}$$

PRG_{sed} = 978 mg/kg

CALCULATION WORKSHEET

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		**JOB NUMBER:** 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN LIFELONG RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 6/8/2009

PURPOSE: This spreadsheet calculates risk-based cleanup goals for exposures to sediment. Exposures through incidental ingestion and dermal contact are considered.

RELEVANT EQUATIONS:

Carcinogens

$$RBC_{sed} = \frac{TCR}{Intake_{oral} \cdot CSF_{oral} + Intake_{derm} \cdot CSF_{derm}}$$

$$Intake_{oral} = \frac{EF \cdot FI \cdot CF}{AT} \cdot \left[\frac{IR_{child} \cdot ED_{child}}{BW_{child}} + \frac{IR_{adol} \cdot ED_{Adol}}{BW_{adol}} + \frac{IR_{adult} \cdot IR_{adult}}{BW_{adult}} \right]$$

$$Intake_{derm} = \frac{ABS \cdot EF \cdot CF}{AT} \cdot \left[\frac{SA_{child} \cdot AF_{child} \cdot ED_{child}}{BW_{child}} + \frac{SA_{adol} \cdot AF_{adol} \cdot ED_{adol}}{BW_{adol}} + \frac{SA_{adult} \cdot AF_{adult} \cdot ED_{adult}}{BW_{adult}} \right]$$

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		JOB NUMBER: 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN LIFELONG RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 6/8/2009

INPUT ASSUMPTIONS:					
	Parameter	Child	Adolescent	Adult	Definition
General	PRG = :				Screening level in soil (mg/kg)
	TCR = :	1.0E-06	1.0E-06	1.0E-06	Target Cancer Risk
	CF = :	1.0E-06	1.0E-06	1.0E-06	Conversion Factor (kg/mg)
	EF = :	70	70	70	Exposure Frequency (days/year)
	ED = :	6	10	14	Exposure Duration (years)
	BW = :	15	40	70	Body Weight (kg) (USEPA, 1997)
	ATc = :	25,550	25,550	25,550	Averaging time for carcinogenic exposures (days)
Incidental Ingestion	IR = :	200	100	100	Soil Ingestion Rate (mg/day) (USEPA, 1993)
	FI = :	1	1	1	Fraction from contaminated source (unitless)
Dermal Contact	SA = :	2800	4320	5700	Skin surface available for contact (cm^2/event)(1)
	AF = :	0.2	0.07	0.07	Soil to skin adherence factor (mg/cm^2) (USEPA, 2004)
	ABS = :	0.03	0.03	0.03	Absorption factor (unitless) Chemical Specific (USEPA, 2004)
Toxicity Values	CSForal = :	1.5E+00			oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
	CSFderm = :	1.5E+00			dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)

An exposure duration of 10 years is used for the adolescent recreational user when calculating a PRG for lifelong exposures in order to conform with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005) which defines an adolescent as being between the ages of 6 to 16 years old.

CLIENT: LOCKHEED MARTIN MIDDLE RIVER COMPLEX		JOB NUMBER: 2135
SUBJECT: CALCULATION OF RISK BASED CLEANUP GOAL FOR AN LIFELONG RECREATIONAL USER EXPOSED TO ARSENIC IN SEDIMENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 6/8/2009

EXAMPLE CALCULATION FOR INCIDENTAL INGESTION OF SEDIMENT - CARCINOGENS

$$Intake_{oral} = \frac{70\ days/yr \times 1 \times 1.0E\text{-}06\ kg/mg}{25550\ days} \times \left[\frac{200\ mg/day \times 6\ years}{15\ kg} + \frac{100\ mg/day \times 10\ years}{40\ kg} + \frac{100\ mg/day \times 14\ years}{70\ kg}\right]$$

$Intake_{oral}$ = 3.42E-07 kg/kg-day

EXAMPLE CALCULATION FOR DERMAL CONTACT WITH SEDIMENT - CARCINOGENS

$$Intake_{derm} = \frac{0.03 \times 70\ days/yr \times 1.0E\text{-}06}{25550\ days} \times \left[\frac{2800\ cm2/event \times 0.2\ mg/cm2 \times 6\ yrs}{15\ kg} + \frac{4320\ cm2/event \times 0.07\ mg/cm2 \times 10\ yrs}{40\ kg} + \frac{5700\ cm2/event \times 0.07\ mg/cm2 \times 14\ yrs}{70\ kg}\right]$$

$Intake_{derm}$ = 3.12E-08 kg/kg-day

EXAMPLE CALCULATION OF PRGsed - CARCINOGENS

$$PRG_{sed} = \frac{1.0E\text{-}06}{3.42E\text{-}07\ kg/kg/day \times 1.5E{+}00\ kg\text{-}day/mg + 3.12E\text{-}08\ kg/kg/day \times 1.5E{+}00\ kg\text{-}day/mg}$$

PRG_{sed} = 1.78E+00 mg/kg

APPENDIX B-4—SEDIMENT-TO-FISH TISSUE PRELIMINARY REMEDIATION GOALS

TABLE B-4
EXPOSURE ASSUMPTIONS FOR ADULT RECREATIONAL USERS FOR THE FISH CONSUMPTION EXPOSURE ROUTE
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Parameter Code	Parameter Definition	Units	Value	Reference	Equation
IR	Ingestion Rate of fish	kg/meal	0.129	USEPA, August 1997	$\frac{Cfish \times IR \times FI \times EF \times ED}{BW \times AT}$
FI	Fraction ingested from source	unitless	1	Professional Judgement	
EF	Exposure Frequency	meals/year	52	Professional Judgement	
ED	Exposure Duration	years	30	USEPA, May 1993	
BW	Body Weight	kg	70	USEPA, May 1993	
AT-C	Averaging Time (Cancer)	days	25,550	USEPA, December 1989	
AT-N	Averaging Time (Non-Cancer)	days	10,950	USEPA, December 1989	

Ingestion Intake - Cancer	**1.13E-04**
Ingestion Intake - Noncancer	**2.63E-04**

TABLE B-5A
0-6 FT. SEDIMENT RISK-BASED CONCENTRATIONS (RBCS) FOR ADULT RECREATIONAL USERS FOR THE FISH CONSUMPTION EXPOSURE ROUTE
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Target Cancer Risk (TCR)	1.00E-06	
Target Hazard Quotient (THQ)	1	
Percent Lipids (%)	1.2	(Average % lipids in fish tissue samples)
Percent TOC (%)	3.19	(Average TOC in sediment)

Chemical	CAS #	CSFo[2]	RfDo[3]	Fish Tissue Concentration - Cancer	Fish Tissue Concentration - Noncancer	BSAF[1]	Sediment RBC - Cancer	Sediment RBC - Noncancer	Sediment RBC
		(mg/kg/day)$^{-1}$	(mg/kg/day)	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg
Antimony (metallic)	7440-36-0		0.0004		1.52E+00	0.16		9.52E+00	9.52E+00
Arsenic, Inorganic	7440-38-2	1.5	0.0003	1.48E-01	2.86E+01	0.02288	6.47E+00	1.25E+03	6.47E+00
Barium	7440-39-3		0.2		7.62E+02	0.16		4.76E+03	4.76E+03
Beryllium and compounds	7440-41-7		0.002		7.62E+00	0.16		4.76E+01	4.76E+01
Cadmium (Diet)	7440-43-9		0.001		3.81E+00	0.096		3.97E+01	3.97E+01
Chromium VI (particulates)	18540-29-9	0.5	0.003	1.78E-02	1.14E+01	0.016	1.11E+00	7.14E+02	1.11E+00
Cobalt	7440-48-4		0.0003		1.14E+00	0.16		7.14E+00	7.14E+00
Copper	7440-50-8		0.04		1.52E+02	0.24896		6.12E+02	6.12E+02
Lead	7439-92-1					0.01136			
Methyl Mercury	22967-92-6		0.0001		3.81E-01	0.18176		2.10E+00	2.10E+00
Molybdenum	7439-98-7		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Nickel Soluble Salts	7440-02-0		0.02		7.62E+01	0.07776		9.80E+02	9.80E+02
Selenium	7782-49-2		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Silver	7440-22-4		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Thallium (Soluble Salts)	7440-28-0					0.16			
Vanadium and Compounds	NA		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Zinc (Metallic)	7440-66-6		0.3		1.14E+03	0.30976		3.69E+03	3.69E+03
Chromium III	18540-29-9		1.5		5.71E+03	0.016		3.57E+05	3.57E+05
Dibutyltin	1002-53-5		3.00E-04		1.14E+00	16		7.14E-02	7.14E-02
~Methylnaphthalene, 1-	90-12-0	2.9E-02	7.0E-02	3.06E-01	2.67E+02	1	8.15E-01	7.09E+02	8.15E-01
~Methylnaphthalene, 2-	91-57-6		0.004		1.52E+01	1		4.05E+01	4.05E+01
~Acenaphthene	83-32-9		0.06		2.29E+02	0.29		2.09E+03	2.09E+03
~Acenaphthylene	208-96-8		0.06		2.29E+02	0.29		2.09E+03	2.09E+03
~Anthracene	120-12-7		0.3		1.14E+03	0.29		1.05E+04	1.05E+04
~Benz[a]anthracene	56-55-3	0.73		1.22E-02		0.29	1.12E-01		1.12E-01
Benzo[a]pyrene	50-32-8	7.3		1.22E-03		0.29	1.12E-02		1.12E-02
Benzo[b]fluoranthene	205-99-2	0.73		1.22E-02		0.29	1.12E-01		1.12E-01
Benzo(g,h,i)perylene	191-24-2		0.03		1.14E+02	0.29		1.05E+03	1.05E+03
Benzo[k]fluoranthene	207-08-9	0.073		1.22E-01		0.29	1.12E+00		1.12E+00
Bis(2-ethylhexyl)phthalate	117-81-7	0.014	0.02	6.35E-01	7.62E+01	1	1.69E+00	2.03E+02	1.69E+00
Butyl Benzyl Phthlate	85-68-7	0.0019	0.2		7.62E+02	1		2.03E+03	2.03E+03
Carbazole	86-74-8					0.29			
Chrysene	218-01-9	0.0073		1.22E+00		0.29	1.12E+01		1.12E+01
Dibenz[a,h]anthracene	53-70-3	7.3		1.22E-03		0.29	1.12E-02		1.12E-02
Dibenzofuran	132-64-9		0.001		3.81E+00	1		1.01E+01	1.01E+01
Fluoranthene	206-44-0		0.04		1.52E+02	0.29		1.40E+03	1.40E+03
Fluorene	86-73-7		0.04		1.52E+02	0.29		1.40E+03	1.40E+03
Indeno[1,2,3-cd]pyrene	193-39-5	0.73		1.22E-02		0.29	1.12E-01		1.12E-01
Naphthalene	91-20-3		0.02		7.62E+01	0.29		6.98E+02	6.98E+02
Phenanthrene	85-01-8		0.03		1.14E+02	0.29		1.05E+03	1.05E+03
Pyrene	129-00-0		0.03		1.14E+02	0.29		1.05E+03	1.05E+03
Dichlorobenzene, 1,2-	95-50-1		0.09		3.43E+02	1		9.11E+02	9.11E+02
Dichlorobenzene, 1,3-	541-73-1					1			
Dichlorobenzene, 1,4-	106-46-7	0.0054	0.07	1.65E+00		1	4.38E+00		4.38E+00
Methyl Ethyl Ketone (2-Butanone)	78-93-3		0.6		2.29E+03	1		6.08E+03	6.08E+03
Acetone	67-64-1		0.9		3.43E+03	1		9.11E+03	9.11E+03
Carbon Disulfide	75-15-0		0.1		3.81E+02	1		1.01E+03	1.01E+03
Chlorobenzene	108-90-7		0.02		7.62E+01	1		2.03E+02	2.03E+02
Chloromethane	74-87-3					1			
Dichloroethylene, 1,2-cis-	156-59-2		2.00E-03		7.62E+00	1		2.03E+01	2.03E+01
Cumene	98-82-8		0.1		3.81E+02	1		1.01E+03	1.01E+03
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.0018		4.94E+00		1	1.31E+01		1.31E+01
sec-Butylbenzene	135-9-88					1			
tert-Butylbenzene	98-06-6					1			
Toluene	108-88-3		0.08		3.05E+02	1		8.10E+02	8.10E+02
Aroclor 1260	11096-82-5	2.0		4.44E-03		1.85	6.39E-03		6.39E-03
Aroclor 1254	11097-69-1	2.0	0.00002	4.44E-03	7.62E-02	1.85	6.39E-03	1.09E-01	6.39E-03

1 - For inorganics the biota-sediment accumulation factor (BSAF) was multipled by 0.16 to convert from dry weight to wet weight.

TABLE B-5B
>6-18 FT. SEDIMENT RISK-BASED CONCENTRATIONS (RBCS) FOR ADULT RECREATIONAL USERS FOR THE FISH CONSUMPTION EXPOSURE ROUTE
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Target Cancer Risk (TCR)	1.00E-06	
Target Hazard Quotient (THQ)	1	
Percent Lipids (%)	1.2	(Average % lipids in fish tissue samples)
Percent TOC (%)	2.56	(Average TOC in sediment)

Chemical	CAS #	CSFo[2]	RfDo[3]	Fish Tissue Concentration - Cancer	Fish Tissue Concentration - Noncancer	BSAF[1]	Sediment RBC - Cancer	Sediment RBC - Noncancer	Sediment RBC
		(mg/kg/day)$^{-1}$	(mg/kg/day)	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg
Antimony (metallic)	7440-36-0		0.0004		1.52E+00	0.16		9.52E+00	9.52E+00
Arsenic, Inorganic	7440-38-2	1.5	0.0003	1.48E-01	2.86E+01	0.02288	6.47E+00	1.25E+03	6.47E+00
Barium	7440-39-3		0.2		7.62E+02	0.16		4.76E+03	4.76E+03
Beryllium and compounds	7440-41-7		0.002		7.62E+00	0.16		4.76E+01	4.76E+01
Cadmium (Diet)	7440-43-9		0.001		3.81E+00	0.096		3.97E+01	3.97E+01
Chromium VI (particulates)	18540-29-9	0.5	0.003	1.78E-02	1.14E+01	0.016	1.11E+00	7.14E+02	1.11E+00
Cobalt	7440-48-4		0.0003		1.14E+00	0.16		7.14E+00	7.14E+00
Copper	7440-50-8		0.04		1.52E+02	0.24896		6.12E+02	6.12E+02
Lead	7439-92-1					0.01136			
Methyl Mercury	22967-92-6		0.0001		3.81E-01	0.18176		2.10E+00	2.10E+00
Molybdenum	7439-98-7		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Nickel Soluble Salts	7440-02-0		0.02		7.62E+01	0.07776		9.80E+02	9.80E+02
Selenium	7782-49-2		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Silver	7440-22-4		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Thallium (Soluble Salts)	7440-28-0					0.16			
Vanadium and Compounds	NA		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Zinc (Metallic)	7440-66-6		0.3		1.14E+03	0.30976		3.69E+03	3.69E+03
Chromium III	18540-29-9		1.5		5.71E+03	0.016		3.57E+05	3.57E+05
Dibutyltin	1002-53-5		3.00E-04		1.14E+00	16		7.14E-02	7.14E-02
~Methylnaphthalene, 1-	90-12-0	2.9E-02	7.0E-02	3.06E-01	2.67E+02	1	6.54E-01	5.69E+02	6.54E-01
~Methylnaphthalene, 2-	91-57-6		0.004		1.52E+01	1		3.25E+01	3.25E+01
~Acenaphthene	83-32-9		0.06		2.29E+02	0.29		1.68E+03	1.68E+03
~Acenaphthylene	208-96-8		0.06		2.29E+02	0.29		1.68E+03	1.68E+03
~Anthracene	120-12-7		0.3		1.14E+03	0.29		8.41E+03	8.41E+03
~Benz[a]anthracene	56-55-3	0.73		1.22E-02		0.29	8.96E-02		8.96E-02
Benzo[a]pyrene	50-32-8	7.3		1.22E-03		0.29	8.96E-03		8.96E-03
Benzo[b]fluoranthene	205-99-2	0.73		1.22E-02		0.29	8.96E-02		8.96E-02
Benzo(g,h,i)perylene	191-24-2		0.03		1.14E+02	0.29		8.41E+02	8.41E+02
Benzo[k]fluoranthene	207-08-9	0.073		1.22E-01		0.29	8.96E-01		8.96E-01
Bis(2-ethylhexyl)phthalate	117-81-7	0.014	0.02	6.35E-01	7.62E+01	1	1.35E+00	1.63E+02	1.35E+00
Butyl Benzyl Phthlate	85-68-7	0.0019	0.2		7.62E+02	1		1.63E+03	1.63E+03
Carbazole	86-74-8					0.29			
Chrysene	218-01-9	0.0073		1.22E+00		0.29	8.96E+00		8.96E+00
Dibenz[a,h]anthracene	53-70-3	7.3		1.22E-03		0.29	8.96E-03		8.96E-03
Dibenzofuran	132-64-9		0.001		3.81E+00	1		8.13E+00	8.13E+00
Fluoranthene	206-44-0		0.04		1.52E+02	0.29		1.12E+03	1.12E+03
Fluorene	86-73-7		0.04		1.52E+02	0.29		1.12E+03	1.12E+03
Indeno[1,2,3-cd]pyrene	193-39-5	0.73		1.22E-02		0.29	8.96E-02		8.96E-02
Naphthalene	91-20-3		0.02		7.62E+01	0.29		5.60E+02	5.60E+02
Phenanthrene	85-01-8		0.03		1.14E+02	0.29		8.41E+02	8.41E+02
Pyrene	129-00-0		0.03		1.14E+02	0.29		8.41E+02	8.41E+02
Dichlorobenzene, 1,2-	95-50-1		0.09		3.43E+02	1		7.31E+02	7.31E+02
Dichlorobenzene, 1,3-	541-73-1					1			
Dichlorobenzene, 1,4-	106-46-7	0.0054	0.07	1.65E+00		1	3.51E+00		3.51E+00
Methyl Ethyl Ketone (2-Butanone)	78-93-3		0.6		2.29E+03	1		4.88E+03	4.88E+03
Acetone	67-64-1		0.9		3.43E+03	1		7.31E+03	7.31E+03
Carbon Disulfide	75-15-0		0.1		3.81E+02	1		8.13E+02	8.13E+02
Chlorobenzene	108-90-7		0.02		7.62E+01	1		1.63E+02	1.63E+02
Chloromethane	74-87-3					1			
Dichloroethylene, 1,2-cis-	156-59-2		2.00E-03		7.62E+00	1		1.63E+01	1.63E+01
Cumene	98-82-8		0.1		3.81E+02	1		8.13E+02	8.13E+02
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.0018		4.94E+00		1	1.05E+01		1.05E+01
sec-Butylbenzene	135-9-88					1			
tert-Butylbenzene	98-06-6					1			
Toluene	108-88-3		0.08		3.05E+02	1		6.50E+02	6.50E+02
Aroclor 1260	11096-82-5	2		4.44E-03		1.85	5.12E-03		5.12E-03
Aroclor 1254	11097-69-1	2.0E+00	2.0E-05	4.44E-03	7.62E-02	1.85	5.12E-03	8.78E-02	5.12E-03

1 - For inorganics the biota-sediment accumulation factor (BSAF) was multipled by 0.16 to convert from dry weight to wet weight.

TABLE B-5C
>18-30 FT. SEDIMENT RISK-BASED CONCENTRATIONS (RBCS) FOR ADULT RECREATIONAL USERS FOR THE FISH CONSUMPTION EXPOSURE ROUTE
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Target Cancer Risk (TCR)	1.00E-06	
Target Hazard Quotient (THQ)	1	
Percent Lipids (%)	1.2	(Average % lipids in fish tissue samples)
Percent TOC (%)	2.51	(Average TOC in sediment)

Chemical	CAS #	CSFo[2]	RfDo[3]	Fish Tissue Concentration - Cancer	Fish Tissue Concentration - Noncancer	BSAF[1]	Sediment RBC - Cancer	Sediment RBC - Noncancer	Sediment RBC
		(mg/kg/day)$^{-1}$	(mg/kg/day)	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg
Antimony (metallic)	7440-36-0		0.0004		1.52E+00	0.16		9.52E+00	9.52E+00
Arsenic, Inorganic	7440-38-2	1.5	0.0003	1.48E-01	2.86E+01	0.02288	6.47E+00	1.25E+03	6.47E+00
Barium	7440-39-3		0.2		7.62E+02	0.16		4.76E+03	4.76E+03
Beryllium and compounds	7440-41-7		0.002		7.62E+00	0.16		4.76E+01	4.76E+01
Cadmium (Diet)	7440-43-9		0.001		3.81E+00	0.096		3.97E+01	3.97E+01
Chromium VI (particulates)	18540-29-9	0.5	0.003	1.78E-02	1.14E+01	0.016	1.11E+00	7.14E+02	1.11E+00
Cobalt	7440-48-4		0.0003		1.14E+00	0.16		7.14E+00	7.14E+00
Copper	7440-50-8		0.04		1.52E+02	0.24896		6.12E+02	6.12E+02
Lead	7439-92-1					0.01136			
Methyl Mercury	22967-92-6		0.0001		3.81E-01	0.18176		2.10E+00	2.10E+00
Molybdenum	7439-98-7		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Nickel Soluble Salts	7440-02-0		0.02		7.62E+01	0.07776		9.80E+02	9.80E+02
Selenium	7782-49-2		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Silver	7440-22-4		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Thallium (Soluble Salts)	7440-28-0					0.16			
Vanadium and Compounds	NA		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Zinc (Metallic)	7440-66-6		0.3		1.14E+03	0.30976		3.69E+03	3.69E+03
Chromium III	18540-29-9		1.5		5.71E+03	0.016		3.57E+05	3.57E+05
Dibutyltin	1002-53-5		3.00E-04		1.14E+00	16		7.14E-02	7.14E-02
~Methylnaphthalene, 1-	90-12-0	2.9E-02	7.0E-02	3.06E-01	2.67E+02	1	6.41E-01	5.58E+02	6.41E-01
~Methylnaphthalene, 2-	91-57-6		0.004		1.52E+01	1		3.19E+01	3.19E+01
~Acenaphthene	83-32-9		0.06		2.29E+02	0.29		1.65E+03	1.65E+03
~Acenaphthylene	208-96-8		0.06		2.29E+02	0.29		1.65E+03	1.65E+03
~Anthracene	120-12-7		0.3		1.14E+03	0.29		8.24E+03	8.24E+03
~Benz[a]anthracene	56-55-3	0.73		1.22E-02		0.29	8.78E-02		8.78E-02
Benzo[a]pyrene	50-32-8	7.3		1.22E-03		0.29	8.78E-03		8.78E-03
Benzo[b]fluoranthene	205-99-2	0.73		1.22E-02		0.29	8.78E-02		8.78E-02
Benzo(g,h,i)perylene	191-24-2		0.03		1.14E+02	0.29		8.24E+02	8.24E+02
Benzo[k]fluoranthene	207-08-9	0.073		1.22E-01		0.29	8.78E-01		8.78E-01
Bis(2-ethylhexyl)phthalate	117-81-7	0.014	0.02	6.35E-01	7.62E+01	1	1.33E+00	1.59E+02	1.33E+00
Butyl Benzyl Phthlate	85-68-7	0.0019	0.2		7.62E+02	1		1.59E+03	1.59E+03
Carbazole	86-74-8					0.29			
Chrysene	218-01-9	0.0073		1.22E+00		0.29	8.78E+00		8.78E-00
Dibenz[a,h]anthracene	53-70-3	7.3		1.22E-03		0.29	8.78E-03		8.78E-03
Dibenzofuran	132-64-9		0.001		3.81E+00	1		7.97E+00	7.97E+00
Fluoranthene	206-44-0		0.04		1.52E+02	0.29		1.10E+03	1.10E+03
Fluorene	86-73-7		0.04		1.52E+02	0.29		1.10E+03	1.10E+03
Indeno[1,2,3-cd]pyrene	193-39-5	0.73		1.22E-02		0.29	8.78E-02		8.78E-02
Naphthalene	91-20-3		0.02		7.62E+01	0.29		5.49E+02	5.49E+02
Phenanthrene	85-01-8		0.03		1.14E+02	0.29		8.24E+02	8.24E+02
Pyrene	129-00-0		0.03		1.14E+02	0.29		8.24E+02	8.24E+02
Dichlorobenzene, 1,2-	95-50-1		0.09		3.43E+02	1		7.17E+02	7.17E+02
Dichlorobenzene, 1,3-	541-73-1					1			
Dichlorobenzene, 1,4-	106-46-7	0.0054	0.07	1.65E+00		1	3.44E+00		3.44E+00
Methyl Ethyl Ketone (2-Butanone)	78-93-3		0.6		2.29E+03	1		4.78E+03	4.78E+03
Acetone	67-64-1		0.9		3.43E+03	1		7.17E+03	7.17E+03
Carbon Disulfide	75-15-0		0.1		3.81E+02	1		7.97E+02	7.97E+02
Chlorobenzene	108-90-7		0.02		7.62E+01	1		1.59E+02	1.59E+02
Chloromethane	74-87-3					1			
Dichloroethylene, 1,2-cis-	156-59-2		2.00E-03		7.62E+00	1		1.59E+01	1.59E+01
Cumene	98-82-8		0.1		3.81E+02	1		7.97E+02	7.97E+02
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.0018		4.94E+00		1	1.03E+01		1.03E+01
sec-Butylbenzene	135-9-88					1			
tert-Butylbenzene	98-06-6					1			
Toluene	108-88-3		0.08		3.05E+02	1		6.37E+02	6.37E+02
Aroclor 1260	11096-82-5	2		4.44E-03		1.85	5.02E-03		5.02E-03
Aroclor 1254	11097-69-1	2.0E+00	2.0E-05	4.44E-03	7.62E-02	1.85	5.02E-03	8.61E-02	5.02E-03

1 - For inorganics the biota-sediment accumulation factor (BSAF) was multipled by 0.16 to convert from dry weight to wet weight.

TABLE B-5D
>30 FT. RISK-BASED CONCENTRATIONS (RBCS) FOR ADULT RECREATIONAL USERS FOR THE FISH CONSUMPTION EXPOSURE ROUTE
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Target Cancer Risk (TCR)	1.00E-06	
Target Hazard Quotient (THQ)	1	
Percent Lipids (%)	1.2	(Average % lipids in fish tissue samples)
Percent TOC (%)	1.14	(Average TOC in sediment)

Chemical	CAS #	CSFo[2]	RfDo[3]	Fish Tissue Concentration - Cancer	Fish Tissue Concentration - Noncancer	BSAF[1]	Sediment RBC - Cancer	Sediment RBC - Noncancer	Sediment RBC
		(mg/kg/day)$^{-1}$	(mg/kg/day)	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg
Antimony (metallic)	7440-36-0		0.0004		1.52E+00	0.16		9.52E+00	9.52E+00
Arsenic, Inorganic	7440-38-2	1.5	0.0003	1.48E-01	2.86E+01	0.02288	6.47E+00	1.25E+03	6.47E+00
Barium	7440-39-3		0.2		7.62E+02	0.16		4.76E+03	4.76E+03
Beryllium and compounds	7440-41-7		0.002		7.62E+00	0.16		4.76E+01	4.76E+01
Cadmium (Diet)	7440-43-9		0.001		3.81E+00	0.096		3.97E+01	3.97E+01
Chromium VI (particulates)	18540-29-9	0.5	0.003	1.78E-02	1.14E+01	0.016	1.11E+00	7.14E+02	1.11E+00
Cobalt	7440-48-4		0.0003		1.14E+00	0.16		7.14E+00	7.14E+00
Copper	7440-50-8		0.04		1.52E+02	0.24896		6.12E+02	6.12E+02
Lead	7439-92-1					0.01136			
Methyl Mercury	22967-92-6		0.0001		3.81E-01	0.18176		2.10E+00	2.10E+00
Molybdenum	7439-98-7		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Nickel Soluble Salts	7440-02-0		0.02		7.62E+01	0.07776		9.80E+02	9.80E+02
Selenium	7782-49-2		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Silver	7440-22-4		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Thallium (Soluble Salts)	7440-28-0					0.16			
Vanadium and Compounds	NA		0.005		1.90E+01	0.16		1.19E+02	1.19E+02
Zinc (Metallic)	7440-66-6		0.3		1.14E+03	0.30976		3.69E+03	3.69E+03
Chromium III	18540-29-9		1.5		5.71E+03	0.016		3.57E+05	3.57E+05
Dibutyltin	1002-53-5		3.00E-04		1.14E+00	16		7.14E-02	7.14E-02
~Methylnaphthalene, 1-	90-12-0	2.9E-02	7.0E-02	3.06E-01	2.67E+02	1	2.91E-01	2.53E+02	2.91E-01
~Methylnaphthalene, 2-	91-57-6		0.004		1.52E+01	1		1.45E+01	1.45E+01
~Acenaphthene	83-32-9		0.06		2.29E+02	0.29		7.49E+02	7.49E+02
~Acenaphthylene	208-96-8		0.06		2.29E+02	0.29		7.49E+02	7.49E+02
~Anthracene	120-12-7		0.3		1.14E+03	0.29		3.74E+03	3.74E+03
~Benz[a]anthracene	56-55-3	0.73		1.22E-02		0.29	3.99E-02		3.99E-02
Benzo[a]pyrene	50-32-8	7.3		1.22E-03		0.29	3.99E-03		3.99E-03
Benzo[b]fluoranthene	205-99-2	0.73		1.22E-02		0.29	3.99E-02		3.99E-02
Benzo(g,h,i)perylene	191-24-2		0.03		1.14E+02	0.29		3.74E+02	3.74E+02
Benzo[k]fluoranthene	207-08-9	0.073		1.22E-01		0.29	3.99E-01		3.99E-01
Bis(2-ethylhexyl)phthalate	117-81-7	0.014	0.02	6.35E-01	7.62E+01	1	6.03E-01	7.24E+01	6.03E-01
Butyl Benzyl Phthlate	85-68-7	0.0019	0.2		7.62E+02	1		7.24E+02	7.24E+02
Carbazole	86-74-8					0.29			
Chrysene	218-01-9	0.0073		1.22E+00		0.29	3.99E+00		3.99E+00
Dibenz[a,h]anthracene	53-70-3	7.3		1.22E-03		0.29	3.99E-03		3.99E-03
Dibenzofuran	132-64-9		0.001		3.81E+00	1		3.62E+00	3.62E+00
Fluoranthene	206-44-0		0.04		1.52E+02	0.29		4.99E+02	4.99E+02
Fluorene	86-73-7		0.04		1.52E+02	0.29		4.99E+02	4.99E+02
Indeno[1,2,3-cd]pyrene	193-39-5	0.73		1.22E-02		0.29	3.99E-02		3.99E-02
Naphthalene	91-20-3		0.02		7.62E+01	0.29		2.50E+02	2.50E+02
Phenanthrene	85-01-8		0.03		1.14E+02	0.29		3.74E+02	3.74E+02
Pyrene	129-00-0		0.03		1.14E+02	0.29		3.74E+02	3.74E+02
Dichlorobenzene, 1,2-	95-50-1		0.09		3.43E+02	1		3.26E+02	3.26E+02
Dichlorobenzene, 1,3-	541-73-1					1			
Dichlorobenzene, 1,4-	106-46-7	0.0054	0.07	1.65E+00		1	1.56E+00		1.56E+00
Methyl Ethyl Ketone (2-Butanone)	78-93-3		0.6		2.29E+03	1		2.17E+03	2.17E+03
Acetone	67-64-1		0.9		3.43E+03	1		3.26E+03	3.26E+03
Carbon Disulfide	75-15-0		0.1		3.81E+02	1		3.62E+02	3.62E+02
Chlorobenzene	108-90-7		0.02		7.62E+01	1		7.24E+01	7.24E+01
Chloromethane	74-87-3					1			
Dichloroethylene, 1,2-cis-	156-59-2		2.00E-03		7.62E+00	1		7.24E+00	7.24E+00
Cumene	98-82-8		0.1		3.81E+02	1		3.62E+02	3.62E+02
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.0018		4.94E+00		1	4.69E+00		4.69E+00
sec-Butylbenzene	135-9-88					1			
tert-Butylbenzene	98-06-6					1			
Toluene	108-88-3		0.08		3.05E+02	1		2.89E+02	2.89E+02
Aroclor 1248	12672-29-6	2		4.44E-03		1.85	2.28E-03		2.28E-03
Aroclor 1260	11096-82-5	2		4.44E-03		1.85	2.28E-03		2.28E-03
Aroclor 1254	11097-69-1	2.0E+00	2.0E-05	4.44E-03	7.62E-02	1.85	2.28E-03	3.91E-02	2.28E-03

1 - For inorganics the biota-sediment accumulation factor (BSAF) was multipled by 0.16 to convert from dry weight to wet weight.

CALCULATION WORKSHEET

CLIENT: LOCKHEED MARTIN, MIDDLE RIVER COMPLEX		**JOB NUMBER:** 03214
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF FISH CURRENT/FUTURE ADULT RECREATIONAL USER		
BASED ON: USEPA, DEC. 1989		
BY: L. CIOFANI	**CHECKED BY:**	**DATE:** 03/08/11

PURPOSE: This spreadsheet calculates risk-based concentrations for ingestion of fish.

Carcinogens

$$RBC_{fish} = \frac{TCR}{Intake \cdot CSF}$$

Noncarcinogens

$$RBC_{fish} = \frac{THI}{\left(\frac{Intake}{RfD}\right)}$$

$$Intake = \frac{IR \times EF \times ED \times FI}{BW \times AT}$$

Where:

Intake	=	estimated exposure intake (mg/kg/day)
TCR	=	target cancer risk (unitless)
THI	=	target hazard index (unitless)
RBC_{fish}	=	risk-based concentration for fish tissue (mg/kg)
IR	=	incidental soil ingestion rate (kg/meal)
EF	=	exposure frequency (meals/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSF	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfD	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

$RBCfish_c$ (Carcinogens) = Intake (mg/kg/day) x CSFo $(mg/kg/day)^{-1}$

$RBCfish_{nc}$ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

CLIENT:		JOB NUMBER:
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX		03214
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF FISH CURRENT/FUTURE ADULT RECREATIONAL USER		
BASED ON: USEPA, DEC. 1989		
BY: L. CIOFANI	**CHECKED BY:**	**DATE:** 03/08/11

ASSUMPTIONS:

Intake	=	mg/kg	Chemical: Aroclor-1254
TCR	=	1.0E-06	unitless
THI	=	1	unitless
IR	=	0.129	kg/meal
EF	=	52	meals/year
ED	=	30	years
FI	=	1	unitless
BW	=	70	kg
ATc	=	25550	days
ATnc	=	10950	days
CSF	=	2.0E+00	$(mg/kg/day)^{-1}$
RfD	=	2.0E-05	(mg/kg/day)

EXAMPLE FISH TISSUE RBC CALCULATION - CARCINOGENIC

$$Intake_c = \frac{0.129 \text{ kg/meal} \times 52 \text{ meals/year} \times 30 \text{ years} \times 1}{70 \text{ kg} \times 25550 \text{ days}}$$

$Intake_c$ = 1.13E-04 / day

$RBCfish_c$ = 0.000001 / (1.13E-04 / day x 2.00E+00 (mg/kg/day)-1)

$RBCfish_c$ = **4.44E-03** mg/kg

EXAMPLE FISH TISSUE RBC CALCULATION - NONCARCINOGENIC

$$Intake_{nc} = \frac{0.129 \text{ kg/meal} \times 52 \text{ meals/year} \times 30 \text{ years} \times 1}{70 \text{ kg} \times 10950 \text{ days}}$$

$Intake_{nc}$ = 2.63E-04 / day

$RBCfish_{nc}$ = 1 / (2.63E-04 / day / 2.00E-05 (mg/kg/day))

$RBCfish_{nc}$ = **7.62E-02** mg/kg

CALCULATION WORKSHEET

CLIENT: LOCKHEED MARTIN, MIDDLE RIVER COMPLEX		**JOB NUMBER:** 03214
SUBJECT: CALCULATION OF SEDIMENT CONCENTRATION PROTECTIVE OF INGESTION OF FISH CURRENT/FUTURE ADULT RECREATIONAL USER		
BASED ON: USEPA, DEC. 1989		
BY: L. CIOFANI	**CHECKED BY:**	**DATE:** 03/08/11

PURPOSE: This spreadsheet calculates risk-based concentrations for surface sediment protective of fish ingestion.

FOR ORGANICS:

$$RBC_{sed\text{-}to\text{-}fish} = \frac{Cfish \times \%\ TOC}{BSAF \times \%\ Lipids}$$

Where:

$Cfish_c$	=	target carcinogenic concentration in fish tissue (mg/kg)
$Cfish_{nc}$	=	target noncarcinogenic concentration in fish tissue (mg/kg)
% TOC	=	average percent total organic carbon in surface sediment (%)
BSAF	=	biota-sediment accumulation factor (unitless)
% lipids	=	average percent lipids in site fish tissue data (%)

CLIENT:		JOB NUMBER:
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX		03214
SUBJECT: CALCULATION OF SEDIMENT CONCENTRATION PROTECTIVE OF INGESTION OF FISH CURRENT/FUTURE ADULT RECREATIONAL USER		
BASED ON: USEPA, DEC. 1989		
BY: L. CIOFANI	CHECKED BY:	DATE: 03/08/11

ASSUMPTIONS:

$Cfish_c$	=	4.44E-03 mg/kg	Chemical: Aroclor-1254
$Cfish_{nc}$	=	7.6E-02 mg/kg	
% TOC	=	3.19 %	
BSAF	=	1.85 unitless	
% Lipids	=	1.2 %	

EXAMPLE SEDIMENT-TO-FISH INGESTION RBC CALCULATION - CARCINOGENIC

$$RBC_{sed\text{-}to\text{-}fishc} = \frac{0.00444 \text{ mg/kg} \times 0.0319}{1.85 \times 0.012}$$

$RBC_{sed\text{-}to\text{-}fishc}$ = 6.38E-03 mg/kg

EXAMPLE FISH TISSUE RBC CALCULATION - NONCARCINOGENIC

$$RBC_{sed\text{-}to\text{-}fishnc} = \frac{0.0762 \text{ mg/kg} \times 0.0319}{1.85 \times 0.012}$$

$RBC_{sed\text{-}to\text{-}fishnc}$ = 1.09E-01 mg/kg

Final $RBC_{sed\text{-}to\text{-}fish}$ = 6.38E-03 mg/kg

APPENDIX B-5—EXPOSURE POINT CONCENTRATIONS AND PROUCL OUTPUT FILES

TABLE B-6
EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE SEDIMENT 0-6"
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration (EPC)			
						Value	Units	Statistic	Rationale
Middle River Complex	1,4-DICHLOROBENZENE	mg/kg	0.39	0.24 (G)	0.85 J	0.24	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	1-METHYLNAPHTHALENE	mg/kg	NA	NA	0.039 J	0.039	mg/kg	Maximum Concentration	(1)
	2-METHYLNAPHTHALENE	mg/kg	NA	NA	0.034 J	0.034	mg/kg	Maximum Concentration	(1)
	BAP EQUIVALENT-1/2 NON-DETECT	mg/kg	1.2	1.7 (NP)	6.5	1.7	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	BAP EQUIVALENT-POSITIVE RESULTS	mg/kg	0.73	1.1 (G)	6.5	1.1	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	BENZO(A)ANTHRACENE	mg/kg	0.67	0.69 (G)	5.2 J	0.69	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	BENZO(A)PYRENE	mg/kg	0.65	0.67 (G)	4.4 J	0.67	mg/kg	95% KM (Percentile Bootstrap)	Pro UCL Version 4.00.05
	BENZO(B)FLUORANTHENE	mg/kg	0.84	1.2 (NP)	5.8 J	1.2	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	BENZO(K)FLUORANTHENE	mg/kg	0.45	0.41 (G)	2.7 J	0.41	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg	0.77	1.2 (L)	2.9 J	1.2	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	CHRYSENE	mg/kg	0.75	1.1 (NP)	5.4	1.1	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	DIBENZO(A,H)ANTHRACENE	mg/kg	0.47	0.22 (L)	0.72	0.22	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	DIBENZOFURAN	mg/kg	NA	NA	0.34 J	0.34	mg/kg	Maximum Concentration	(1)
	FLUORANTHENE	mg/kg	1.1	1.7 (L)	10	1.7	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	INDENO(1,2,3-CD)PYRENE	mg/kg	0.58	0.54 (G)	3.4 J	0.54	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	PHENANTHRENE	mg/kg	0.75	1.2 (NP)	12 J	1.2	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	PYRENE	mg/kg	1.3	2.1 (NP)	13 J	2.1	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	AROCLOR-1248	mg/kg	ND	ND	ND	ND	mg/kg	ND	(2)
	AROCLOR-1254	mg/kg	NA	NA	0.4 J	0.4	mg/kg	Maximum Concentration	(1)
	AROCLOR-1260	mg/kg	1.4	5 (L)	54	5	mg/kg	97.5% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	TOTAL AROCLOR	mg/kg	1.8	2.3 (L)	54	2.3	mg/kg	95% H-UCL	Pro UCL Version 4.00.05
	ANTIMONY	mg/kg	23.2	68.3 (NP)	2320 L	68.3	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	ARSENIC	mg/kg	8.2	10 (NP)	37.2 J	10	mg/kg	95% Chebyshev (Mean, SD) UCL	Pro UCL Version 4.00.05
	BERYLLIUM	mg/kg	1.7	1.8 (NP)	6.9	1.8	mg/kg	95% Student's T UCL	Pro UCL Version 4.00.05
	CADMIUM	mg/kg	10.9	23.8 (NP)	296	23.8	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	COBALT	mg/kg	16.4	17.5 (NP)	28.5	17.5	mg/kg	95% Modified T UCL	Pro UCL Version 4.00.05
	COPPER	mg/kg	90.8	112 (NP)	183 J	112	mg/kg	95% Chebyshev (Mean, SD) UCL	Pro UCL Version 4.00.05
	DIBUTYLTIN	mg/kg	0.0055	0.0095 (N)	0.0011 J	0.0095	mg/kg	95% KM (t) UCL	Pro UCL Version 4.00.05
	MERCURY	mg/kg	0.36	0.43 (NP)	3.5 J	0.43	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	NICKEL	mg/kg	31.8	33.8 (NP)	62.8 J	33.8	mg/kg	95% Student's T UCL or 95% Modified T UCL	Pro UCL Version 4.00.05
	HEXAVALENT CHROMIUM	mg/kg	1.3	1.8 (L)	13 J	1.8	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	LEAD	mg/kg	407	1740 (NP)	31500	407	mg/kg	Average Concentration	(3)
	SILVER	mg/kg	2.2	3.7 (NP)	28.6 J	3.7	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	VANADIUM	mg/kg	48.4	52 (NP)	120 J	52	mg/kg	95% Modified T UCL	Pro UCL Version 4.00.05
	ZINC	mg/kg	290	352 (NP)	636 J	352	mg/kg	95% Chebyshev (Mean, SD) UCL	Pro UCL Version 4.00.05

Notes:
(1) There are less than three detected concentrations; meaningful statistics cannot be calculated. Therefore the maximum concentration is used as the EPC.
(2) The chemical was not detected in any sample.
(3) The average concentration is used as the EPC for lead based on recommendations by USEPA.

G = Gamma distribution.
L = Lognormal distribution.
NA = Not applicable/not available.
ND = Not detected.
NP = Non-parametric distribution.

TABLE B-7
EXPOSURE POINT CONCENTRATION SUMMARY - SUBSURFACE SEDIMENT >6-18"
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration (EPC)			
						Value	Units	Statistic	Rationale
Middle River Complex	1,4-DICHLOROBENZENE	mg/kg	NA	NA	0.18 J	0.18	mg/kg	Maximum Concentration	(1)
	1-METHYLNAPHTHALENE	mg/kg	NA	NA	0.15 J	0.15	mg/kg	Maximum Concentration	(1)
	2-METHYLNAPHTHALENE	mg/kg	NA	NA	0.34 J	0.34	mg/kg	Maximum Concentration	(1)
	BAP EQUIVALENT-1/2 NON-DETECT	mg/kg	1.28	1.8 (NP)	12.1	1.8	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	BAP EQUIVALENT-POSITIVE RESULTS	mg/kg	0.99	1.4 (G)	12.1	1.4	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	BENZO(A)ANTHRACENE	mg/kg	0.85	1.2 (L)	12	1.2	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	BENZO(A)PYRENE	mg/kg	0.81	1.1 (L)	9	1.1	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	BENZO(B)FLUORANTHENE	mg/kg	1	2 (NP)	10 J	2	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	BENZO(K)FLUORANTHENE	mg/kg	0.52	0.79 (L)	7.3	0.79	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg	0.85	1.5 (G)	3.4 J	1.5	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	CHRYSENE	mg/kg	0.93	1.9 (L)	12	1.9	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	DIBENZO(A,H)ANTHRACENE	mg/kg	0.35	0.28 (N)	0.79 J	0.28	mg/kg	95% KM (Percentile Bootstrap)	Pro UCL Version 4.00.05
	DIBENZOFURAN	mg/kg	NA	NA	0.4 J	0.4	mg/kg	Maximum Concentration	(1)
	FLUORANTHENE	mg/kg	1.4	3.6 (NP)	20 J	3.6	mg/kg	97.5 % KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	INDENO(1,2,3-CD)PYRENE	mg/kg	0.59	1.1 (L)	5.6 J	1.1	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	PHENANTHRENE	mg/kg	0.86	2.4 (NP)	15 J	2.4	mg/kg	97.5% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	PYRENE	mg/kg	1.8	4.5 (NP)	24 J	4.5	mg/kg	97.5% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	AROCLOR-1248	mg/kg	NA	NA	2.3	2.3	mg/kg	Maximum Concentration	(1)
	AROCLOR-1254	mg/kg	ND	ND	ND	ND	mg/kg	ND	(2)
	AROCLOR-1260	mg/kg	0.58	1.5 (NP)	14	1.5	mg/kg	95% KM(Chebyshev) UCL	Pro UCL Version 4.00.05
	TOTAL AROCLOR	mg/kg	1	2.5 (NP)	14	2.5	mg/kg	95% Chebyshev (Mean, SD) UCL	Pro UCL Version 4.00.05
	ANTIMONY	mg/kg	1.5	4.8 (L)	55.1 J	4.8	mg/kg	95% KM(Chebyshev) UCL	Pro UCL Version 4.00.05
	ARSENIC	mg/kg	7	7.6 (N)	12.6	7.6	mg/kg	95% KM (t) UCL	Pro UCL Version 4.00.05
	BERYLLIUM	mg/kg	1.8	2 (NP)	6.9	2	mg/kg	95% Student's T UCL	Pro UCL Version 4.00.05
	CADMIUM	mg/kg	20.2	52.4 (NP)	306	52.4	mg/kg	97.5% KM(Chebyshev) UCL	Pro UCL Version 4.00.05
	COBALT	mg/kg	15.9	17.2 (NP)	33	17.2	mg/kg	95% Student's T UCL	Pro UCL Version 4.00.05
	COPPER	mg/kg	70.1	93.6 (NP)	178 J	93.6	mg/kg	95% Chebyshev (Mean, SD) UCL	Pro UCL Version 4.00.05
	DIBUTYLTIN	mg/kg	NA	NA	0.005	0.005	mg/kg	Maximum Concentration	(1)
	MERCURY	mg/kg	0.52	0.82 (NP)	3.5 L	0.82	mg/kg	95% KM(Chebyshev) UCL	Pro UCL Version 4.00.05
	NICKEL	mg/kg	34.2	37.2 (N)	70.4	37.2	mg/kg	95% Student's T UCL	Pro UCL Version 4.00.05
	HEXAVALENT CHROMIUM	mg/kg	NA	NA	1.6	1.6	mg/kg	Maximum Concentration	(1)
	LEAD	mg/kg	131	220 (NP)	1370	131	mg/kg	Average Concentration	(3)
	SILVER	mg/kg	4.8	9.7 (NP)	37.2	9.7	mg/kg	97.5% KM(Chebyshev) UCL	Pro UCL Version 4.00.05
	VANADIUM	mg/kg	54.4	60 (N)	110	60	mg/kg	95% Student's T UCL	Pro UCL Version 4.00.05
	ZINC	mg/kg	293	411 (N)	1300	411	mg/kg	95% Chebyshev (Mean, SD) UCL	Pro UCL Version 4.00.05

Notes:
(1) There are less than three detected concentrations meaningful statistics cannot be calculated. Therefore the maximum concentration is used as the EPC.
(2) The chemical was not detected in any sample.
(3) The average concentration is used as the EPC for lead based on recommendations by USEPA.

G = Gamma distribution.
L = Lognormal distribution.
N = Normal distribution.
NA = Not applicable/not available.
ND = Not detected.
NP = Non-parametric distribution.

TABLE B-8
EXPOSURE POINT CONCENTRATION SUMMARY - SUBSURFACE SEDIMENT >18-30"
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration (EPC)			
						Value	Units	Statistic	Rationale
Middle River Complex	1,4-DICHLOROBENZENE	mg/kg	ND	ND	ND	ND	mg/kg	ND	(2)
	1-METHYLNAPHTHALENE	mg/kg	0.35	0.19 (N)	0.95	0.19	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	2-METHYLNAPHTHALENE	mg/kg	0.36	0.39 (N)	1.1 J	0.39	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	BAP EQUIVALENT-1/2 NON-DETECT	mg/kg	1.7	3.0 (L)	38.7	3.0	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	BAP EQUIVALENT-POSITIVE RESULTS	mg/kg	1.6	2.5 (G)	38.4	2.5	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	BENZO(A)ANTHRACENE	mg/kg	1.3	2.2 (G)	38	2.2	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	BENZO(A)PYRENE	mg/kg	1.2	1.9 (G)	30	1.9	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	BENZO(B)FLUORANTHENE	mg/kg	1.5	3.7 (L)	31	3.7	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	BENZO(K)FLUORANTHENE	mg/kg	0.74	1.3 (G)	25	1.3	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg	0.53	0.9 (N)	1.7	0.9	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	CHRYSENE	mg/kg	1.4	3.9 (L)	37	3.9	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	DIBENZO(A,H)ANTHRACENE	mg/kg	0.33	0.29 (N)	1.4	0.29	mg/kg	95% KM (Percentile Bootstrap) UCL	Pro UCL Version 4.00.05
	DIBENZOFURAN	mg/kg	NA	NA	0.33 J	0.33	mg/kg	Maximum Concentration	(1)
	FLUORANTHENE	mg/kg	2.5	9.9 (L)	78	9.9	mg/kg	97.5% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	INDENO(1,2,3-CD)PYRENE	mg/kg	0.72	1.1 (L)	12 J	1.1	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	PHENANTHRENE	mg/kg	1.9	8.9 (L)	76	8.9	mg/kg	97.5% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	PYRENE	mg/kg	2.7	10.1 (L)	76	10.1	mg/kg	97.5% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	AROCLOR-1248	mg/kg	NA	NA	0.43 J	0.43	mg/kg	Maximum Concentration	Pro UCL Version 4.00.05
	AROCLOR-1254	mg/kg	ND	ND	ND	ND	mg/kg	ND	(2)
	AROCLOR-1260	mg/kg	0.15	0.22 (G)	1.3	0.22	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	TOTAL AROCLOR	mg/kg	0.39	0.55 (G)	1.3	0.55	mg/kg	95% Approximate Gamma UCL	Pro UCL Version 4.00.05
	ANTIMONY	mg/kg	2.7	6.8 (NP)	132 L	6.8	mg/kg	95% KM BCA	Pro UCL Version 4.00.05
	ARSENIC	mg/kg	6.2	6.8 (N)	12.3	6.8	mg/kg	95% Student's T UCL	Pro UCL Version 4.00.05
	BERYLLIUM	mg/kg	1.8	1.9 (NP)	2.9	1.9	mg/kg	95% Student's T UCL	Pro UCL Version 4.00.05
	CADMIUM	mg/kg	19.8	53 (NP)	296	53	mg/kg	97.5% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	COBALT	mg/kg	14	18.1 (NP)	37.9	18.1	mg/kg	95% Chebyshev (Mean, SD) UCL	Pro UCL Version 4.00.05
	COPPER	mg/kg	47.6	67.3 (NP)	147 J	67.3	mg/kg	95% Chebyshev (Mean, SD) UCL	Pro UCL Version 4.00.05
	DIBUTYLTIN	mg/kg	NA	NA	0.0085	0.0085	mg/kg	Maximum Concentration	(1)
	MERCURY	mg/kg	0.82	1.5 (G)	6.1 L	1.5	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	NICKEL	mg/kg	30.5	34.3 (G)	66.2	34.3	mg/kg	95% Approximate Gamma UCL	Pro UCL Version 4.00.05
	HEXAVALENT CHROMIUM	mg/kg	ND	ND	ND	ND	mg/kg	ND	(2)
	LEAD	mg/kg	89.4	137 (NP)	316	89.4	mg/kg	Average Concentration	(3)
	SILVER	mg/kg	7.8	13.8 (G)	55.8	13.8	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	VANADIUM	mg/kg	45.2	50.3 (G)	110 K	50.3	mg/kg	95% Approximate Gamma UCL	Pro UCL Version 4.00.05
	ZINC	mg/kg	288	508 (NP)	2980	508	mg/kg	95% Chebyshev (Mean, SD) UCL	Pro UCL Version 4.00.05

Notes:
(1) There are less than three detected concentrations meaningful statistics cannot be calculated. Therefore the maximum concentration is used as the EPC.
(2) The chemical was not detected in any sample.
(3) The average concentration is used as the EPC for lead based on recommendations by USEPA.

G = Gamma distribution.
L = Lognormal distribution.
N = Normal distribution.
NA = Not applicable/not available.
ND = Not detected.
NP = Non-parametric distribution.

TABLE B-9
EXPOSURE POINT CONCENTRATION SUMMARY - SUBSURFACE SEDIMENT >30-52"
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration (EPC)			
						Value	Units	Statistic	Rationale
Middle River Complex	1,4-DICHLOROBENZENE	mg/kg	NA	NA	NA	NA	mg/kg	NA	Not Analyzed
	1-METHYLNAPHTHALENE	mg/kg	ND	ND	ND	ND	mg/kg	ND	(1)
	2-METHYLNAPHTHALENE	mg/kg	ND	ND	ND	ND	mg/kg	ND	(1)
	BAP EQUIVALENT-1/2 NON-DETECT	mg/kg	0.22	0.18 (G)	0.81	0.18	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	BAP EQUIVALENT-POSITIVE RESULTS	mg/kg	0.18	0.12 (N)	0.32	0.12	mg/kg	95% KM (Percentile Bootstrap)	Pro UCL Version 4.00.05
	BENZO(A)ANTHRACENE	mg/kg	0.18	0.081 (L)	0.19	0.081	mg/kg	95% KM (Percentile Bootstrap)	Pro UCL Version 4.00.05
	BENZO(A)PYRENE	mg/kg	0.18	0.074 (N)	0.17	0.074	mg/kg	95% KM (Percentile Bootstrap)	Pro UCL Version 4.00.05
	BENZO(B)FLUORANTHENE	mg/kg	0.19	0.13 (N)	0.31	0.13	mg/kg	95% KM (Percentile Bootstrap)	Pro UCL Version 4.00.05
	BENZO(K)FLUORANTHENE	mg/kg	0.16	0.039 (N)	0.2	0.039	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg	NA	NA	NA	NA	mg/kg	NA	Not Analyzed
	CHRYSENE	mg/kg	0.17	0.10 (N)	0.22	0.1	mg/kg	95% KM (Percentile Bootstrap)	Pro UCL Version 4.00.05
	DIBENZO(A,H)ANTHRACENE	mg/kg	0.17	0.048 (N)	0.083	0.048	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	DIBENZOFURAN	mg/kg	NA	NA	NA	NA	mg/kg	NA	Not Analyzed
	FLUORANTHENE	mg/kg	0.19	0.15 (N)	0.43	0.15	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	INDENO(1,2,3-CD)PYRENE	mg/kg	0.18	0.099 (N)	0.16	0.099	mg/kg	95% KM (Percentile Bootstrap)	Pro UCL Version 4.00.05
	PHENANTHRENE	mg/kg	0.18	0.11 (G)	0.7	0.11	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	PYRENE	mg/kg	0.2	0.16 (N)	0.48	0.16	mg/kg	95% KM (Percentile Bootstrap)	Pro UCL Version 4.00.05
	AROCLOR-1248	mg/kg	ND	ND	ND	ND	mg/kg	ND	(1)
	AROCLOR-1254	mg/kg	ND	ND	ND	ND	mg/kg	ND	(1)
	AROCLOR-1260	mg/kg	0.014	0.02 (N)	0.12	0.02	mg/kg	95% KM (T) UCL	Pro UCL Version 4.00.05
	TOTAL AROCLOR	mg/kg	0.044	0.082 (N)	0.12	0.082	mg/kg	95% Student's T UCL	Pro UCL Version 4.00.05
	ANTIMONY	mg/kg	0.63	1.6 (NP)	23.9	1.6	mg/kg	95% KM (BCA) UCL	Pro UCL Version 4.00.05
	ARSENIC	mg/kg	5.2	6.6 (G)	35.9	6.6	mg/kg	95% KM BCA	Pro UCL Version 4.00.05
	BERYLLIUM	mg/kg	1.7	2.2 (NP)	5.6	2.2	mg/kg	95% Chebyshev (Mean, SD) UCL	Pro UCL Version 4.00.05
	CADMIUM	mg/kg	2.4	10 (L)	33.6	10	mg/kg	99% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	COBALT	mg/kg	12.2	16.4 (G)	70.8	16.4	mg/kg	95% Approximate Gamma UCL	Pro UCL Version 4.00.05
	COPPER	mg/kg	18.9	22.1 (G)	84.1	22.1	mg/kg	95% Approximate Gamma UCL	Pro UCL Version 4.00.05
	DIBUTYLTIN	mg/kg	NA	NA	NA	NA	mg/kg	NA	Not Analyzed
	MERCURY	mg/kg	0.1	0.23 (L)	1.5	0.23	mg/kg	95% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	NICKEL	mg/kg	21.7	25.3 (G)	103	25.3	mg/kg	95% Approximate Gamma UCL	Pro UCL Version 4.00.05
	HEXAVALENT CHROMIUM	mg/kg	NA	NA	NA	NA	mg/kg	NA	Not Analyzed
	LEAD	mg/kg	18.9	24.6 (L)	163	18.9	mg/kg	Average Concentration	(2)
	SILVER	mg/kg	0.91	2.6 (NP)	9.1	2.6	mg/kg	97.5% KM (Chebyshev) UCL	Pro UCL Version 4.00.05
	VANADIUM	mg/kg	30	32.9 (N)	48.1	32.9	mg/kg	95% Student's T UCL	Pro UCL Version 4.00.05
	ZINC	mg/kg	159	144 (L)	4370	144	mg/kg	95% H UCL	Pro UCL Version 4.00.05

Notes:
(1) The chemical was not detected in any sample.
(2) The average concentration is used as the EPC for lead based on recommendations by USEPA.

G = Gamma distribution.
L = Lognormal distribution.
N = Normal distribution.
NA = Not applicable/not available.
ND = Not detected.
NP = Non-parametric distribution.

TABLE B-10
EXPOSURE POINT CONCENTRATION SUMMARY - FISH TISSUE
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration (EPC)			
						Value	Units	Statistic	Rationale
Complex	TOTAL PCBs	mg/kg	0.37	0.98 (G)	1.63	0.98	mg/kg	95% Approximate Gamma UCL	Pro UCL Version 4.00.05
	ANTIMONY	mg/kg	NA	NA	0.27 J	0.27	mg/kg	Maximum Concentration	(1)
	CHROMIUM	mg/kg	0.16	0.23 (NP)	0.41 J	0.23	mg/kg	95% Student's-t UCL	Pro UCL Version 4.00.05
	MERCURY	mg/kg	0.050	0.070(L)	0.12 J	0.070	mg/kg	95% Student's-t UCL	Pro UCL Version 4.00.05

Notes:
(1) There are less than three detected concentrations; meaningful statistics cannot be calculated. Therefore the maximum concentration is used as the EPC.

G = Gamma distribution.
L = Lognormal distribution.
NA = Not applicable/not available.
NP = Non-parametric distribution.

PROUCL OUTPUT – FISH TISSUE

	General UCL Statistics for Full Data Sets	
User Selected Options		
From File	WorkSheet.wst	
Full Precision	OFF	
Confidence Coefficient	95%	
Number of Bootstrap Operations	2000	

TOTAL PCBS

General Statistics

Number of Valid Observations	7	Number of Distinct Observations	7
Number of Missing Values	1		

Raw Statistics		**Log-transformed Statistics**	
Minimum	12.4	Minimum of Log Data	2.518
Maximum	217	Maximum of Log Data	5.38
Mean	87.86	Mean of log Data	4.076
Median	60	SD of log Data	1.026
SD	77.99		
Coefficient of Variation	0.888		
Skewness	0.955		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!

If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data

Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.877	Shapiro Wilk Test Statistic	0.972
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	145.1	95% H-UCL	483.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	243.7
95% Adjusted-CLT UCL (Chen-1995)	147.7	97.5% Chebyshev (MVUE) UCL	310
95% Modified-t UCL (Johnson-1978)	146.9	99% Chebyshev (MVUE) UCL	440.3
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.892	**Data appear Normal at 5% Significance Level**	

51				Theta Star	98.45							
52				MLE of Mean	87.86							
53				MLE of Standard Deviation	93							
54				nu star	12.49							
55				Approximate Chi Square Value (.05)	5.554		**Nonparametric Statistics**					
56				Adjusted Level of Significance	0.0158						95% CLT UCL	136.3
57				Adjusted Chi Square Value	4.24						95% Jackknife UCL	145.1
58											95% Standard Bootstrap UCL	131.1
59				Anderson-Darling Test Statistic	0.207						95% Bootstrap-t UCL	215.1
60				Anderson-Darling 5% Critical Value	0.723						95% Hall's Bootstrap UCL	277.9
61				Kolmogorov-Smirnov Test Statistic	0.163						95% Percentile Bootstrap UCL	134.2
62				Kolmogorov-Smirnov 5% Critical Value	0.318						95% BCA Bootstrap UCL	138.4
63				**Data appear Gamma Distributed at 5% Significance Level**							95% Chebyshev(Mean, Sd) UCL	216.3
64											97.5% Chebyshev(Mean, Sd) UCL	271.9
65				**Assuming Gamma Distribution**							99% Chebyshev(Mean, Sd) UCL	381.1
66				95% Approximate Gamma UCL	197.6							
67				95% Adjusted Gamma UCL	258.9							
68												
69				**Potential UCL to Use**							Use 95% Student's-t UCL	145.1
70												
71	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
72	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
73	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
74												
75												
76	**CHROMIUM**											
77												
78	**General Statistics**											
79				Number of Valid Observations	7		Number of Distinct Observations	5				
80				Number of Missing Values	1							
81												
82	**Raw Statistics**						**Log-transformed Statistics**					
83				Minimum	0.092		Minimum of Log Data	-2.386				
84				Maximum	2		Maximum of Log Data	0.693				
85				Mean	0.395		Mean of log Data	-1.693				
86				Median	0.13		SD of log Data	1.076				
87				SD	0.709							
88				Coefficient of Variation	1.796							
89				Skewness	2.635							
90												
91												
92	**Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!**											
93												
94	**It is suggested to collect at least 8 to 10 observations using these statistical methods!**											
95	**If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.**											
96												
97												
98	**Warning: There are only 7 Values in this data**											
99	**Note: It should be noted that even though bootstrap methods may be performed on this data set,**											
100	**the resulting calculations may not be reliable enough to draw conclusions**											

101												
102	**The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.**											
103												
104	**Relevant UCL Statistics**											
105	**Normal Distribution Test**						**Lognormal Distribution Test**					
106				Shapiro Wilk Test Statistic	0.491					Shapiro Wilk Test Statistic	0.64	
107				Shapiro Wilk Critical Value	0.803					Shapiro Wilk Critical Value	0.803	
108	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
109												
110	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
111				95% Student's-t UCL	0.915					95% H-UCL	1.832	
112	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	0.816	
113				95% Adjusted-CLT UCL (Chen-1995)	1.12					97.5% Chebyshev (MVUE) UCL	1.042	
114				95% Modified-t UCL (Johnson-1978)	0.959					99% Chebyshev (MVUE) UCL	1.486	
115												
116	**Gamma Distribution Test**						**Data Distribution**					
117				k star (bias corrected)	0.541		**Data do not follow a Discernable Distribution (0.05)**					
118				Theta Star	0.729							
119				MLE of Mean	0.395							
120				MLE of Standard Deviation	0.536							
121				nu star	7.579							
122				Approximate Chi Square Value (.05)	2.494		**Nonparametric Statistics**					
123				Adjusted Level of Significance	0.0158					95% CLT UCL	0.835	
124				Adjusted Chi Square Value	1.705					95% Jackknife UCL	0.915	
125										95% Standard Bootstrap UCL	0.805	
126				Anderson-Darling Test Statistic	1.583					95% Bootstrap-t UCL	13.36	
127				Anderson-Darling 5% Critical Value	0.735					95% Hall's Bootstrap UCL	6.628	
128				Kolmogorov-Smirnov Test Statistic	0.428					95% Percentile Bootstrap UCL	0.92	
129				Kolmogorov-Smirnov 5% Critical Value	0.322					95% BCA Bootstrap UCL	1.188	
130	**Data not Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	1.562	
131										97.5% Chebyshev(Mean, Sd) UCL	2.067	
132	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	3.059	
133				95% Approximate Gamma UCL	1.199							
134				95% Adjusted Gamma UCL	1.754							
135												
136	**Potential UCL to Use**									Use 95% Hall's Bootstrap UCL	6.628	
137	**Recommended UCL exceeds the maximum observation**											
138	**In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL**											
139												
140	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
141	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
142	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
143												
144												
145	**MERCURY**											
146												
147	**General Statistics**											
148				Number of Valid Observations	7					Number of Distinct Observations	6	
149				Number of Missing Values	1							
150												

	A	B	C	D	E	F	G	H	I	J	K	L
151	**Raw Statistics**						**Log-transformed Statistics**					
152					Minimum	0.029					Minimum of Log Data	-3.54
153					Maximum	0.055					Maximum of Log Data	-2.9
154					Mean	0.0403					Mean of log Data	-3.229
155					Median	0.041					SD of log Data	0.201
156					SD	0.0082						
157					Coefficient of Variation	0.204						
158					Skewness	0.652						
159												
160												
161	**Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!**											
162												
163	**It is suggested to collect at least 8 to 10 observations using these statistical methods!**											
164	**If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.**											
165												
166												
167	**Warning: There are only 7 Values in this data**											
168	**Note: It should be noted that even though bootstrap methods may be performed on this data set,**											
169	**the resulting calculations may not be reliable enough to draw conclusions**											
170												
171	**The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.**											
172												
173	**Relevant UCL Statistics**											
174	**Normal Distribution Test**						**Lognormal Distribution Test**					
175					Shapiro Wilk Test Statistic	0.958					Shapiro Wilk Test Statistic	0.977
176					Shapiro Wilk Critical Value	0.803					Shapiro Wilk Critical Value	0.803
177	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
178												
179	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
180					95% Student's-t UCL	0.0463					95% H-UCL	0.0476
181	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	0.0537
182					95% Adjusted-CLT UCL (Chen-1995)	0.0462					97.5% Chebyshev (MVUE) UCL	0.0595
183					95% Modified-t UCL (Johnson-1978)	0.0464					99% Chebyshev (MVUE) UCL	0.0708
184												
185	**Gamma Distribution Test**						**Data Distribution**					
186					k star (bias corrected)	16.57	**Data appear Normal at 5% Significance Level**					
187					Theta Star	0.00243						
188					MLE of Mean	0.0403						
189					MLE of Standard Deviation	0.0099						
190					nu star	232						
191					Approximate Chi Square Value (.05)	197.8	**Nonparametric Statistics**					
192					Adjusted Level of Significance	0.0158					95% CLT UCL	0.0454
193					Adjusted Chi Square Value	188.2					95% Jackknife UCL	0.0463
194											95% Standard Bootstrap UCL	0.0449
195					Anderson-Darling Test Statistic	0.223					95% Bootstrap-t UCL	0.047
196					Anderson-Darling 5% Critical Value	0.707					95% Hall's Bootstrap UCL	0.0494
197					Kolmogorov-Smirnov Test Statistic	0.152					95% Percentile Bootstrap UCL	0.0454
198					Kolmogorov-Smirnov 5% Critical Value	0.311					95% BCA Bootstrap UCL	0.0454
199	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	0.0538
200											97.5% Chebyshev(Mean, Sd) UCL	0.0596

	A	B	C	D	E	F	G	H	I	J	K	L
201	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					0.0711
202	95% Approximate Gamma UCL					0.0473						
203	95% Adjusted Gamma UCL					0.0497						
204												
205	**Potential UCL to Use**						Use 95% Student's-t UCL					0.0463
206												
207	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
208	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
209	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
210												

	A	B	C	D	E	F	G	H	I	J	K	L
1				**General UCL Statistics for Data Sets with Non-Detects**								
2			**User Selected Options**									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	**ANTIMONY**											
10												
11						**General Statistics**						
12						Number of Valid Data	8			Number of Detected Data		1
13						Number of Distinct Detected Data	1			Number of Non-Detect Data		7
14						Number of Missing Values	1			Percent Non-Detects		87.50%
15												
16						**Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!**						
17						**It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).**						
18												
19						**The data set for variable ANTIMONY was not processed!**						
20												
21												

General UCL Statistics for Full Data Sets		
User Selected Options		
From File	WorkSheet.wst	
Full Precision	OFF	
Confidence Coefficient	95%	
Number of Bootstrap Operations	2000	

TOTAL PCBS

General Statistics

Number of Valid Observations	8	Number of Distinct Observations	8
Number of Missing Values	1		

Raw Statistics		**Log-transformed Statistics**	
Minimum	32	Minimum of Log Data	3.466
Maximum	1630	Maximum of Log Data	7.396
Mean	374.5	Mean of log Data	5.201
Median	175	SD of log Data	1.278
SD	531.6		
Coefficient of Variation	1.419		
Skewness	2.362		

Warning: There are only 8 Values in this data

Note: It should be noted that even though bootstrap methods may be performed on this data set, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.675	Shapiro Wilk Test Statistic	0.97
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	730.6	95% H-UCL	3034
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1060
95% Adjusted-CLT UCL (Chen-1995)	851.3	97.5% Chebyshev (MVUE) UCL	1366
95% Modified-t UCL (Johnson-1978)	756.7	99% Chebyshev (MVUE) UCL	1967
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.594	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	630.8		
MLE of Mean	374.5		
MLE of Standard Deviation	486		
nu star	9.499		
Approximate Chi Square Value (.05)	3.631	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	683.6

51				Adjusted Chi Square Value	2.775					95% Jackknife UCL	730.6
52										95% Standard Bootstrap UCL	664
53				Anderson-Darling Test Statistic	0.381					95% Bootstrap-t UCL	1376
54				Anderson-Darling 5% Critical Value	0.743					95% Hall's Bootstrap UCL	1804
55				Kolmogorov-Smirnov Test Statistic	0.193					95% Percentile Bootstrap UCL	705.8
56				Kolmogorov-Smirnov 5% Critical Value	0.303					95% BCA Bootstrap UCL	838.5
57				**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	1194
58										97.5% Chebyshev(Mean, Sd) UCL	1548
59				**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	2245
60				95% Approximate Gamma UCL	979.7						
61				95% Adjusted Gamma UCL	1282						
62											
63				**Potential UCL to Use**						Use 95% Approximate Gamma UCL	979.7
64											
65	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**										
66	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**										
67	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**										
68											
69											
70	**CHROMIUM**										
71											
72	**General Statistics**										
73				Number of Valid Observations	8					Number of Distinct Observations	6
74				Number of Missing Values	1						
75											
76				**Raw Statistics**						**Log-transformed Statistics**	
77				Minimum	0.09					Minimum of Log Data	-2.408
78				Maximum	0.41					Maximum of Log Data	-0.892
79				Mean	0.159					Mean of log Data	-1.957
80				Median	0.13					SD of log Data	0.46
81				SD	0.103						
82				Coefficient of Variation	0.651						
83				Skewness	2.635						
84											
85											
86	**Warning: There are only 8 Values in this data**										
87	**Note: It should be noted that even though bootstrap methods may be performed on this data set,**										
88	**the resulting calculations may not be reliable enough to draw conclusions**										
89											
90	**The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.**										
91											
92	**Relevant UCL Statistics**										
93				**Normal Distribution Test**						**Lognormal Distribution Test**	
94				Shapiro Wilk Test Statistic	0.599					Shapiro Wilk Test Statistic	0.756
95				Shapiro Wilk Critical Value	0.818					Shapiro Wilk Critical Value	0.818
96				**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**	
97											
98				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
99				95% Student's-t UCL	0.228					95% H-UCL	0.234
100				**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	0.266

101	95% Adjusted-CLT UCL (Chen-1995)				0.255					97.5% Chebyshev (MVUE) UCL		0.313
102	95% Modified-t UCL (Johnson-1978)				0.234					99% Chebyshev (MVUE) UCL		0.408
103												
104	**Gamma Distribution Test**						**Data Distribution**					
105	k star (bias corrected)				2.859		**Data do not follow a Discernable Distribution (0.05)**					
106	Theta Star				0.0555							
107	MLE of Mean				0.159							
108	MLE of Standard Deviation				0.0939							
109	nu star				45.74							
110	Approximate Chi Square Value (.05)				31.23		**Nonparametric Statistics**					
111	Adjusted Level of Significance				0.0195		95% CLT UCL					0.219
112	Adjusted Chi Square Value				28.22		95% Jackknife UCL					0.228
113							95% Standard Bootstrap UCL					0.215
114	Anderson-Darling Test Statistic				1.144		95% Bootstrap-t UCL					0.431
115	Anderson-Darling 5% Critical Value				0.719		95% Hall's Bootstrap UCL					0.513
116	Kolmogorov-Smirnov Test Statistic				0.359		95% Percentile Bootstrap UCL					0.228
117	Kolmogorov-Smirnov 5% Critical Value				0.295		95% BCA Bootstrap UCL					0.24
118	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					0.318
119							97.5% Chebyshev(Mean, Sd) UCL					0.387
120	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					0.522
121	95% Approximate Gamma UCL				0.233							
122	95% Adjusted Gamma UCL				0.257							
123												
124	**Potential UCL to Use**						Use 95% Student's-t UCL					0.228
125							or 95% Modified-t UCL					0.234
126												
127	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
128	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
129	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
130												
131												
132	**MERCURY**											
133												
134	**General Statistics**											
135	Number of Valid Observations				8		Number of Distinct Observations					8
136	Number of Missing Values				1							
137												
138	**Raw Statistics**						**Log-transformed Statistics**					
139	Minimum				0.027		Minimum of Log Data					-3.612
140	Maximum				0.12		Maximum of Log Data					-2.12
141	Mean				0.0494		Mean of log Data					-3.116
142	Median				0.0445		SD of log Data					0.453
143	SD				0.0295							
144	Coefficient of Variation				0.598							
145	Skewness				2.447							
146												
147												
148	**Warning: There are only 8 Values in this data**											
149	**Note: It should be noted that even though bootstrap methods may be performed on this data set,**											
150	**the resulting calculations may not be reliable enough to draw conclusions**											

151												
152	**The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.**											
153												
154	**Relevant UCL Statistics**											
155	**Normal Distribution Test**						**Lognormal Distribution Test**					
156					Shapiro Wilk Test Statistic	0.659					Shapiro Wilk Test Statistic	0.824
157					Shapiro Wilk Critical Value	0.818					Shapiro Wilk Critical Value	0.818
158	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
159												
160	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
161					95% Student's-t UCL	0.0692					95% H-UCL	0.0726
162	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	0.0826
163					95% Adjusted-CLT UCL (Chen-1995)	0.0762					97.5% Chebyshev (MVUE) UCL	0.0974
164					95% Modified-t UCL (Johnson-1978)	0.0707					99% Chebyshev (MVUE) UCL	0.126
165												
166	**Gamma Distribution Test**						**Data Distribution**					
167					k star (bias corrected)	3.098	**Data appear Lognormal at 5% Significance Level**					
168					Theta Star	0.0159						
169					MLE of Mean	0.0494						
170					MLE of Standard Deviation	0.0281						
171					nu star	49.57						
172					Approximate Chi Square Value (.05)	34.4	**Nonparametric Statistics**					
173					Adjusted Level of Significance	0.0195					95% CLT UCL	0.0666
174					Adjusted Chi Square Value	31.24					95% Jackknife UCL	0.0692
175											95% Standard Bootstrap UCL	0.0654
176					Anderson-Darling Test Statistic	0.87					95% Bootstrap-t UCL	0.0979
177					Anderson-Darling 5% Critical Value	0.719					95% Hall's Bootstrap UCL	0.145
178					Kolmogorov-Smirnov Test Statistic	0.357					95% Percentile Bootstrap UCL	0.069
179					Kolmogorov-Smirnov 5% Critical Value	0.295					95% BCA Bootstrap UCL	0.0729
180	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	0.0949
181											97.5% Chebyshev(Mean, Sd) UCL	0.115
182	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	0.153
183					95% Approximate Gamma UCL	0.0711						
184					95% Adjusted Gamma UCL	0.0783						
185												
186	**Potential UCL to Use**										Use 95% Student's-t UCL	0.0692
187											or 95% Modified-t UCL	0.0707
188											or 95% H-UCL	0.0726
189												
190	**ProUCL computes and outputs H-statistic based UCLs for historical reasons only.**											
191	**H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.**											
192	**It is therefore recommended to avoid the use of H-statistic based 95% UCLs.**											
193	**Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.**											
194												
195	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
196	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
197	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
198												

PROUCL OUTPUT - SEDIMENT

1				**General UCL Statistics for Data Sets with Non-Detects**								
2		**User Selected Options**										
3		From File		WorkSheet.wst								
4		Full Precision		OFF								
5		Confidence Coefficient		95%								
6		Number of Bootstrap Operations		2000								
7												
8												
9	**BAP EQUIVALENTNONDETECTS**											
10												
11						**General Statistics**							
12						Number of Valid Data	101			Number of Detected Data		82
13						Number of Distinct Detected Data	82			Number of Non-Detect Data		19
14						Number of Missing Values	2			Percent Non-Detects		18.81%
15												
16				**Raw Statistics**						**Log-transformed Statistics**		
17						Minimum Detected	3.39			Minimum Detected		1.221
18						Maximum Detected	6472			Maximum Detected		8.775
19						Mean of Detected	1343			Mean of Detected		6.767
20						SD of Detected	1202			SD of Detected		1.218
21						Minimum Non-Detect	8.7			Minimum Non-Detect		2.163
22						Maximum Non-Detect	6400			Maximum Non-Detect		8.764
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		100
25	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		1
26	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		99.01%
27												
28						**UCL Statistics**							
29				**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**		
30						Lilliefors Test Statistic	0.202			Lilliefors Test Statistic		0.191
31						5% Lilliefors Critical Value	0.0978			5% Lilliefors Critical Value		0.0978
32				**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**		
33												
34				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**		
35						DL/2 Substitution Method				DL/2 Substitution Method		
36						Mean	1196			Mean		6.599
37						SD	1160			SD		1.263
38						95% DL/2 (t) UCL	1387			95% H-Stat (DL/2) UCL		2226
39												
40						Maximum Likelihood Estimate(MLE) Method	N/A			Log ROS Method		
41				**MLE method failed to converge properly**						Mean in Log Scale		6.534
42										SD in Log Scale		1.223
43										Mean in Original Scale		1145
44										SD in Original Scale		1161
45										95% t UCL		1337
46										95% Percentile Bootstrap UCL		1350
47										95% BCA Bootstrap UCL		1397
48												
49				**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**		
50						k star (bias corrected)	1.249			**Data do not follow a Discernable Distribution (0.05)**		

	A	B	C	D	E	F	G	H	I	J	K	L
51					Theta Star	1075						
52					nu star	204.9						
53												
54					A-D Test Statistic	2.229	**Nonparametric Statistics**					
55					5% A-D Critical Value	0.775					Kaplan-Meier (KM) Method	
56					K-S Test Statistic	0.775					Mean	1168
57					5% K-S Critical Value	0.101					SD	1153
58	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	116.7
59											95% KM (t) UCL	1362
60	**Assuming Gamma Distribution**										95% KM (z) UCL	1360
61				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	1362
62					Minimum	1E-12					95% KM (bootstrap t) UCL	1411
63					Maximum	6472					95% KM (BCA) UCL	1365
64					Mean	1216					95% KM (Percentile Bootstrap) UCL	1369
65					Median	1005					95% KM (Chebyshev) UCL	1677
66					SD	1133					97.5% KM (Chebyshev) UCL	1897
67					k star	0.772					99% KM (Chebyshev) UCL	2330
68					Theta star	1576						
69					Nu star	155.9	**Potential UCLs to Use**					
70					AppChi2	128					95% KM (Chebyshev) UCL	1677
71					95% Gamma Approximate UCL	1481						
72					95% Adjusted Gamma UCL	1485						
73	**Note: DL/2 is not a recommended method.**											
74												
75	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
76	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
77	**For additional insight, the user may want to consult a statistician.**											
78												

	General UCL Statistics for Full Data Sets	
User Selected Options		
From File	WorkSheet.wst	
Full Precision	OFF	
Confidence Coefficient	95%	
Number of Bootstrap Operations	2000	

TOTAL AROCLOR

General Statistics

Number of Valid Observations	79	Number of Distinct Observations	56
Number of Missing Values	23		

Raw Statistics		**Log-transformed Statistics**	
Minimum	14	Minimum of Log Data	2.639
Maximum	54000	Maximum of Log Data	10.9
Mean	1769	Mean of log Data	6.041
Median	400	SD of log Data	1.545
SD	6443		
Coefficient of Variation	3.643		
Skewness	7.307		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.393	Lilliefors Test Statistic	0.0508
Lilliefors Critical Value	0.0997	Lilliefors Critical Value	0.0997
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	2975	95% H-UCL	2288
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2751
95% Adjusted-CLT UCL (Chen-1995)	3598	97.5% Chebyshev (MVUE) UCL	3361
95% Modified-t UCL (Johnson-1978)	3075	99% Chebyshev (MVUE) UCL	4558
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.441	**Data appear Lognormal at 5% Significance Level**	
Theta Star	4013		
MLE of Mean	1769		
MLE of Standard Deviation	2664		
nu star	69.64		
Approximate Chi Square Value (.05)	51.43	**Nonparametric Statistics**	
Adjusted Level of Significance	0.047	95% CLT UCL	2961
Adjusted Chi Square Value	51.14	95% Jackknife UCL	2975
		95% Standard Bootstrap UCL	2937
Anderson-Darling Test Statistic	4.654	95% Bootstrap-t UCL	7527
Anderson-Darling 5% Critical Value	0.83	95% Hall's Bootstrap UCL	7465
Kolmogorov-Smirnov Test Statistic	0.18	95% Percentile Bootstrap UCL	3095
Kolmogorov-Smirnov 5% Critical Value	0.107	95% BCA Bootstrap UCL	3812
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4928

51											97.5% Chebyshev(Mean, Sd) UCL	6296
52	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	8981
53					95% Approximate Gamma UCL	2395						
54					95% Adjusted Gamma UCL	2408						
55												
56	**Potential UCL to Use**										Use 95% H-UCL	2288
57												
58	**ProUCL computes and outputs H-statistic based UCLs for historical reasons only.**											
59	**H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.**											
60	**It is therefore recommended to avoid the use of H-statistic based 95% UCLs.**											
61	**Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.**											
62												
63	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
64	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
65	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
66												
67												
68	**ARSENIC**											
69												
70	**General Statistics**											
71					Number of Valid Observations	103					Number of Distinct Observations	72
72												
73	**Raw Statistics**						**Log-transformed Statistics**					
74					Minimum	1.5					Minimum of Log Data	0.405
75					Maximum	37.2					Maximum of Log Data	3.616
76					Mean	8.16					Mean of log Data	1.98
77					Median	8.6					SD of log Data	0.512
78					SD	4.2						
79					Coefficient of Variation	0.515						
80					Skewness	3.09						
81												
82	**Relevant UCL Statistics**											
83	**Normal Distribution Test**						**Lognormal Distribution Test**					
84					Lilliefors Test Statistic	0.133					Lilliefors Test Statistic	0.149
85					Lilliefors Critical Value	0.0873					Lilliefors Critical Value	0.0873
86	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
87												
88	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
89					95% Student's-t UCL	8.847					95% H-UCL	9.069
90	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	10.17
91					95% Adjusted-CLT UCL (Chen-1995)	8.976					97.5% Chebyshev (MVUE) UCL	11
92					95% Modified-t UCL (Johnson-1978)	8.868					99% Chebyshev (MVUE) UCL	12.63
93												
94	**Gamma Distribution Test**						**Data Distribution**					
95					k star (bias corrected)	4.249	**Data do not follow a Discernable Distribution (0.05)**					
96					Theta Star	1.921						
97					MLE of Mean	8.16						
98					MLE of Standard Deviation	3.959						
99					nu star	875.2						
100					Approximate Chi Square Value (.05)	807.6	**Nonparametric Statistics**					

101					Adjusted Level of Significance	0.0477					95% CLT UCL	8.841
102					Adjusted Chi Square Value	806.7					95% Jackknife UCL	8.847
103											95% Standard Bootstrap UCL	8.835
104					Anderson-Darling Test Statistic	2.047					95% Bootstrap-t UCL	9.049
105					Anderson-Darling 5% Critical Value	0.756					95% Hall's Bootstrap UCL	9.35
106					Kolmogorov-Smirnov Test Statistic	0.121					95% Percentile Bootstrap UCL	8.901
107					Kolmogorov-Smirnov 5% Critical Value	0.0889					95% BCA Bootstrap UCL	9.023
108					**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	9.964
109											97.5% Chebyshev(Mean, Sd) UCL	10.74
110					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	12.28
111					95% Approximate Gamma UCL	8.844						
112					95% Adjusted Gamma UCL	8.854						
113												
114					**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL	9.964
115												
116	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
117	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
118	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
119												
120												
121	**BERYLLIUM**											
122												
123	**General Statistics**											
124					Number of Valid Observations	103					Number of Distinct Observations	32
125												
126					**Raw Statistics**						**Log-transformed Statistics**	
127					Minimum	0.19					Minimum of Log Data	-1.661
128					Maximum	6.1					Maximum of Log Data	1.808
129					Mean	1.716					Mean of log Data	0.451
130					Median	1.8					SD of log Data	0.461
131					SD	0.701						
132					Coefficient of Variation	0.409						
133					Skewness	2.042						
134												
135	**Relevant UCL Statistics**											
136					**Normal Distribution Test**						**Lognormal Distribution Test**	
137					Lilliefors Test Statistic	0.134					Lilliefors Test Statistic	0.18
138					Lilliefors Critical Value	0.0873					Lilliefors Critical Value	0.0873
139					**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**	
140												
141					**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
142					95% Student's-t UCL	1.83					95% H-UCL	1.896
143					**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	2.106
144					95% Adjusted-CLT UCL (Chen-1995)	1.844					97.5% Chebyshev (MVUE) UCL	2.262
145					95% Modified-t UCL (Johnson-1978)	1.833					99% Chebyshev (MVUE) UCL	2.57
146												
147					**Gamma Distribution Test**						**Data Distribution**	
148					k star (bias corrected)	5.61					**Data do not follow a Discernable Distribution (0.05)**	
149					Theta Star	0.306						
150					MLE of Mean	1.716						

151				MLE of Standard Deviation	0.724							
152				nu star	1156							
153				Approximate Chi Square Value (.05)	1078				**Nonparametric Statistics**			
154				Adjusted Level of Significance	0.0477						95% CLT UCL	1.829
155				Adjusted Chi Square Value	1077						95% Jackknife UCL	1.83
156											95% Standard Bootstrap UCL	1.829
157				Anderson-Darling Test Statistic	3.097						95% Bootstrap-t UCL	1.845
158				Anderson-Darling 5% Critical Value	0.754						95% Hall's Bootstrap UCL	1.881
159				Kolmogorov-Smirnov Test Statistic	0.158						95% Percentile Bootstrap UCL	1.824
160				Kolmogorov-Smirnov 5% Critical Value	0.0888						95% BCA Bootstrap UCL	1.85
161				**Data not Gamma Distributed at 5% Significance Level**							95% Chebyshev(Mean, Sd) UCL	2.017
162											97.5% Chebyshev(Mean, Sd) UCL	2.147
163				**Assuming Gamma Distribution**							99% Chebyshev(Mean, Sd) UCL	2.403
164				95% Approximate Gamma UCL	1.84							
165				95% Adjusted Gamma UCL	1.841							
166												
167				**Potential UCL to Use**							Use 95% Student's-t UCL	1.83
168											or 95% Modified-t UCL	1.833
169												
170	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
171	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
172	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
173												
174												
175	**COBALT**											
176												
177	**General Statistics**											
178				Number of Valid Observations	68				Number of Distinct Observations			59
179				Number of Missing Values	11							
180												
181				**Raw Statistics**					**Log-transformed Statistics**			
182				Minimum	3				Minimum of Log Data			1.099
183				Maximum	28.3				Maximum of Log Data			3.343
184				Mean	16.39				Mean of log Data			2.719
185				Median	17.95				SD of log Data			0.45
186				SD	5.33							
187				Coefficient of Variation	0.325							
188				Skewness	-0.634							
189												
190	**Relevant UCL Statistics**											
191				**Normal Distribution Test**					**Lognormal Distribution Test**			
192				Lilliefors Test Statistic	0.133				Lilliefors Test Statistic			0.173
193				Lilliefors Critical Value	0.107				Lilliefors Critical Value			0.107
194				**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**			
195												
196				**Assuming Normal Distribution**					**Assuming Lognormal Distribution**			
197				95% Student's-t UCL	17.47						95% H-UCL	18.57
198				**95% UCLs (Adjusted for Skewness)**							95% Chebyshev (MVUE) UCL	20.92
199				95% Adjusted-CLT UCL (Chen-1995)	17.4						97.5% Chebyshev (MVUE) UCL	22.72
200				95% Modified-t UCL (Johnson-1978)	17.46						99% Chebyshev (MVUE) UCL	26.25

201												
202	**Gamma Distribution Test**						**Data Distribution**					
203	k star (bias corrected)					6.324	**Data do not follow a Discernable Distribution (0.05)**					
204	Theta Star					2.592						
205	MLE of Mean					16.39						
206	MLE of Standard Deviation					6.519						
207	nu star					860.1						
208	Approximate Chi Square Value (.05)					793	**Nonparametric Statistics**					
209	Adjusted Level of Significance					0.0465	95% CLT UCL					17.46
210	Adjusted Chi Square Value					791.6	95% Jackknife UCL					17.47
211							95% Standard Bootstrap UCL					17.45
212	Anderson-Darling Test Statistic					3.016	95% Bootstrap-t UCL					17.42
213	Anderson-Darling 5% Critical Value					0.753	95% Hall's Bootstrap UCL					17.42
214	Kolmogorov-Smirnov Test Statistic					0.164	95% Percentile Bootstrap UCL					17.41
215	Kolmogorov-Smirnov 5% Critical Value					0.108	95% BCA Bootstrap UCL					17.42
216	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					19.21
217							97.5% Chebyshev(Mean, Sd) UCL					20.43
218	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					22.82
219	95% Approximate Gamma UCL					17.78						
220	95% Adjusted Gamma UCL					17.81						
221												
222	**Potential UCL to Use**						Use 95% Student's-t UCL					17.47
223							or 95% Modified-t UCL					17.46
224												
225	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
226	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
227	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
228												
229												
230	COPPER											
231												
232	**General Statistics**											
233	Number of Valid Observations					103	Number of Distinct Observations					86
234												
235	**Raw Statistics**						**Log-transformed Statistics**					
236	Minimum					6.7	Minimum of Log Data					1.902
237	Maximum					183	Maximum of Log Data					5.209
238	Mean					90.81	Mean of log Data					4.267
239	Median					101	SD of log Data					0.807
240	SD					48.85						
241	Coefficient of Variation					0.538						
242	Skewness					-0.326						
243												
244	**Relevant UCL Statistics**											
245	**Normal Distribution Test**						**Lognormal Distribution Test**					
246	Lilliefors Test Statistic					0.143	Lilliefors Test Statistic					0.253
247	Lilliefors Critical Value					0.0873	Lilliefors Critical Value					0.0873
248	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
249												
250	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					

251				95% Student's-t UCL	98.8					95% H-UCL	116.2
252	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	137.1
253				95% Adjusted-CLT UCL (Chen-1995)	98.57					97.5% Chebyshev (MVUE) UCL	153.8
254				95% Modified-t UCL (Johnson-1978)	98.78					99% Chebyshev (MVUE) UCL	186.8
255											
256	**Gamma Distribution Test**						**Data Distribution**				
257				k star (bias corrected)	2.159		**Data do not follow a Discernable Distribution (0.05)**				
258				Theta Star	42.07						
259				MLE of Mean	90.81						
260				MLE of Standard Deviation	61.81						
261				nu star	444.7						
262				Approximate Chi Square Value (.05)	396.8		**Nonparametric Statistics**				
263				Adjusted Level of Significance	0.0477					95% CLT UCL	98.73
264				Adjusted Chi Square Value	396.2					95% Jackknife UCL	98.8
265										95% Standard Bootstrap UCL	98.71
266				Anderson-Darling Test Statistic	6.143					95% Bootstrap-t UCL	98.89
267				Anderson-Darling 5% Critical Value	0.764					95% Hall's Bootstrap UCL	98.74
268				Kolmogorov-Smirnov Test Statistic	0.227					95% Percentile Bootstrap UCL	98.32
269				Kolmogorov-Smirnov 5% Critical Value	0.0897					95% BCA Bootstrap UCL	97.82
270	**Data not Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	111.8
271										97.5% Chebyshev(Mean, Sd) UCL	120.9
272	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	138.7
273				95% Approximate Gamma UCL	101.8						
274				95% Adjusted Gamma UCL	101.9						
275											
276	**Potential UCL to Use**									Use 95% Chebyshev (Mean, Sd) UCL	111.8
277											
278	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**										
279	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**										
280	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**										
281											
282											
283	**NICKEL**										
284											
285	**General Statistics**										
286				Number of Valid Observations	103					Number of Distinct Observations	92
287											
288	**Raw Statistics**						**Log-transformed Statistics**				
289				Minimum	4.8					Minimum of Log Data	1.569
290				Maximum	62.8					Maximum of Log Data	4.14
291				Mean	31.8					Mean of log Data	3.358
292				Median	35.3					SD of log Data	0.499
293				SD	12.34						
294				Coefficient of Variation	0.388						
295				Skewness	-0.28						
296											
297	**Relevant UCL Statistics**										
298	**Normal Distribution Test**						**Lognormal Distribution Test**				
299				Lilliefors Test Statistic	0.13					Lilliefors Test Statistic	0.181
300				Lilliefors Critical Value	0.0873					Lilliefors Critical Value	0.0873

301	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
302												
303	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
304	95% Student's-t UCL					33.81	95% H-UCL					35.6
305	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					39.83
306	95% Adjusted-CLT UCL (Chen-1995)					33.76	97.5% Chebyshev (MVUE) UCL					43
307	95% Modified-t UCL (Johnson-1978)					33.81	99% Chebyshev (MVUE) UCL					49.25
308												
309	**Gamma Distribution Test**						**Data Distribution**					
310	k star (bias corrected)					4.931	**Data do not follow a Discernable Distribution (0.05)**					
311	Theta Star					6.448						
312	MLE of Mean					31.8						
313	MLE of Standard Deviation					14.32						
314	nu star					1016						
315	Approximate Chi Square Value (.05)					942.8	**Nonparametric Statistics**					
316	Adjusted Level of Significance					0.0477	95% CLT UCL					33.8
317	Adjusted Chi Square Value					941.8	95% Jackknife UCL					33.81
318							95% Standard Bootstrap UCL					33.78
319	Anderson-Darling Test Statistic					3.497	95% Bootstrap-t UCL					33.76
320	Anderson-Darling 5% Critical Value					0.754	95% Hall's Bootstrap UCL					33.83
321	Kolmogorov-Smirnov Test Statistic					0.17	95% Percentile Bootstrap UCL					33.76
322	Kolmogorov-Smirnov 5% Critical Value					0.0888	95% BCA Bootstrap UCL					33.81
323	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					37.1
324							97.5% Chebyshev(Mean, Sd) UCL					39.39
325	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					43.9
326	95% Approximate Gamma UCL					34.26						
327	95% Adjusted Gamma UCL					34.29						
328												
329	**Potential UCL to Use**						Use 95% Student's-t UCL					33.81
330							or 95% Modified-t UCL					33.81
331												
332	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
333	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
334	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
335												
336												
337	**LEAD**											
338												
339	**General Statistics**											
340	Number of Valid Observations					103	Number of Distinct Observations					87
341												
342	**Raw Statistics**						**Log-transformed Statistics**					
343	Minimum					3.95	Minimum of Log Data					1.374
344	Maximum					31500	Maximum of Log Data					10.36
345	Mean					407.2	Mean of log Data					4.434
346	Median					114	SD of log Data					1.051
347	SD					3094						
348	Coefficient of Variation					7.599						
349	Skewness					10.14						
350												

351	**Relevant UCL Statistics**											
352	**Normal Distribution Test**						**Lognormal Distribution Test**					
353					Lilliefors Test Statistic	0.511					Lilliefors Test Statistic	0.206
354					Lilliefors Critical Value	0.0873					Lilliefors Critical Value	0.0873
355	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
356												
357	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
358					95% Student's-t UCL	913.3					95% H-UCL	185
359	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	224.9
360					95% Adjusted-CLT UCL (Chen-1995)	1234					97.5% Chebyshev (MVUE) UCL	259.5
361					95% Modified-t UCL (Johnson-1978)	964					99% Chebyshev (MVUE) UCL	327.3
362												
363	**Gamma Distribution Test**						**Data Distribution**					
364					k star (bias corrected)	0.41	**Data do not follow a Discernable Distribution (0.05)**					
365					Theta Star	993.9						
366					MLE of Mean	407.2						
367					MLE of Standard Deviation	636.1						
368					nu star	84.4						
369					Approximate Chi Square Value (.05)	64.22	**Nonparametric Statistics**					
370					Adjusted Level of Significance	0.0477					95% CLT UCL	908.7
371					Adjusted Chi Square Value	63.97					95% Jackknife UCL	913.3
372											95% Standard Bootstrap UCL	909.9
373					Anderson-Darling Test Statistic	21.8					95% Bootstrap-t UCL	19249
374					Anderson-Darling 5% Critical Value	0.839					95% Hall's Bootstrap UCL	5147
375					Kolmogorov-Smirnov Test Statistic	0.408					95% Percentile Bootstrap UCL	1016
376					Kolmogorov-Smirnov 5% Critical Value	0.0948					95% BCA Bootstrap UCL	1329
377	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	1736
378											97.5% Chebyshev(Mean, Sd) UCL	2311
379	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	3441
380					95% Approximate Gamma UCL	535.1						
381					95% Adjusted Gamma UCL	537.2						
382												
383	**Potential UCL to Use**										Use 95% Chebyshev (Mean, Sd) UCL	1736
384												
385	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
386	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
387	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
388												
389												
390	**VANADIUM**											
391												
392	**General Statistics**											
393					Number of Valid Observations	68					Number of Distinct Observations	63
394					Number of Missing Values	11						
395												
396	**Raw Statistics**						**Log-transformed Statistics**					
397					Minimum	6.5					Minimum of Log Data	1.872
398					Maximum	120					Maximum of Log Data	4.787
399					Mean	48.38					Mean of log Data	3.792
400					Median	53.1					SD of log Data	0.466

401					SD	18.01						
402					Coefficient of Variation	0.372						
403					Skewness	0.393						
404												
405	**Relevant UCL Statistics**											
406	**Normal Distribution Test**						**Lognormal Distribution Test**					
407					Lilliefors Test Statistic	0.114					Lilliefors Test Statistic	0.166
408					Lilliefors Critical Value	0.107					Lilliefors Critical Value	0.107
409	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
410												
411	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
412					95% Student's-t UCL	52.02					95% H-UCL	54.89
413	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	62.04
414					95% Adjusted-CLT UCL (Chen-1995)	52.08					97.5% Chebyshev (MVUE) UCL	67.54
415					95% Modified-t UCL (Johnson-1978)	52.04					99% Chebyshev (MVUE) UCL	78.34
416												
417	**Gamma Distribution Test**						**Data Distribution**					
418					k star (bias corrected)	5.634	**Data do not follow a Discernable Distribution (0.05)**					
419					Theta Star	8.587						
420					MLE of Mean	48.38						
421					MLE of Standard Deviation	20.38						
422					nu star	766.2						
423					Approximate Chi Square Value (.05)	703	**Nonparametric Statistics**					
424					Adjusted Level of Significance	0.0465					95% CLT UCL	51.97
425					Adjusted Chi Square Value	701.7					95% Jackknife UCL	52.02
426											95% Standard Bootstrap UCL	51.94
427					Anderson-Darling Test Statistic	2.222					95% Bootstrap-t UCL	52.38
428					Anderson-Darling 5% Critical Value	0.753					95% Hall's Bootstrap UCL	52.44
429					Kolmogorov-Smirnov Test Statistic	0.156					95% Percentile Bootstrap UCL	51.98
430					Kolmogorov-Smirnov 5% Critical Value	0.108					95% BCA Bootstrap UCL	52.15
431	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	57.9
432											97.5% Chebyshev(Mean, Sd) UCL	62.02
433	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	70.11
434					95% Approximate Gamma UCL	52.73						
435					95% Adjusted Gamma UCL	52.83						
436												
437	**Potential UCL to Use**										Use 95% Student's-t UCL	52.02
438											or 95% Modified-t UCL	52.04
439												
440	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
441	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
442	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
443												
444												
445	**ZINC**											
446												
447	**General Statistics**											
448					Number of Valid Observations	103					Number of Distinct Observations	88
449												
450	**Raw Statistics**						**Log-transformed Statistics**					

451					Minimum	26				Minimum of Log Data		3.258
452					Maximum	636				Maximum of Log Data		6.455
453					Mean	289.8				Mean of log Data		5.465
454					Median	338				SD of log Data		0.744
455					SD	145.3						
456					Coefficient of Variation	0.501						
457					Skewness	-0.25						
458												
459					**Relevant UCL Statistics**							
460				**Normal Distribution Test**						**Lognormal Distribution Test**		
461					Lilliefors Test Statistic	0.159				Lilliefors Test Statistic		0.229
462					Lilliefors Critical Value	0.0873				Lilliefors Critical Value		0.0873
463				**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**		
464												
465				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**		
466					95% Student's-t UCL	313.6				95% H-UCL		361.1
467				**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL		421.7
468					95% Adjusted-CLT UCL (Chen-1995)	313				97.5% Chebyshev (MVUE) UCL		469.8
469					95% Modified-t UCL (Johnson-1978)	313.5				99% Chebyshev (MVUE) UCL		564.2
470												
471				**Gamma Distribution Test**						**Data Distribution**		
472					k star (bias corrected)	2.535				**Data do not follow a Discernable Distribution (0.05)**		
473					Theta Star	114.3						
474					MLE of Mean	289.8						
475					MLE of Standard Deviation	182						
476					nu star	522.1						
477					Approximate Chi Square Value (.05)	470.1				**Nonparametric Statistics**		
478					Adjusted Level of Significance	0.0477				95% CLT UCL		313.4
479					Adjusted Chi Square Value	469.4				95% Jackknife UCL		313.6
480										95% Standard Bootstrap UCL		313.1
481					Anderson-Darling Test Statistic	5.268				95% Bootstrap-t UCL		313.4
482					Anderson-Darling 5% Critical Value	0.761				95% Hall's Bootstrap UCL		313.2
483					Kolmogorov-Smirnov Test Statistic	0.217				95% Percentile Bootstrap UCL		313
484					Kolmogorov-Smirnov 5% Critical Value	0.0895				95% BCA Bootstrap UCL		312.9
485				**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL		352.2
486										97.5% Chebyshev(Mean, Sd) UCL		379.2
487				**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL		432.2
488					95% Approximate Gamma UCL	321.9						
489					95% Adjusted Gamma UCL	322.4						
490												
491				**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL		352.2
492												
493	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
494	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
495	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
496												

1				General UCL Statistics for Data Sets with Non-Detects								
2			User Selected Options									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	1-METHYLNAPHTHALENE											
10												
11						General Statistics						
12						Number of Valid Data	66			Number of Detected Data	1	
13						Number of Distinct Detected Data	1			Number of Non-Detect Data	65	
14						Number of Missing Values	13			Percent Non-Detects	98.48%	
15												
16					Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!							
17					It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).							
18												
19					The data set for variable 1-METHYLNAPHTHALENE was not processed!							
20												
21												
22												
23	BAP EQUIVALENT-POSITIVE RESULTS											
24												
25						General Statistics						
26						Number of Valid Data	101			Number of Detected Data	82	
27						Number of Distinct Detected Data	82			Number of Non-Detect Data	19	
28						Number of Missing Values	2			Percent Non-Detects	18.81%	
29												
30						Raw Statistics				Log-transformed Statistics		
31						Minimum Detected	0.17			Minimum Detected	-1.772	
32						Maximum Detected	6472			Maximum Detected	8.775	
33						Mean of Detected	771.5			Mean of Detected	5.592	
34						SD of Detected	1106			SD of Detected	2.054	
35						Minimum Non-Detect	8.7			Minimum Non-Detect	2.163	
36						Maximum Non-Detect	6400			Maximum Non-Detect	8.764	
37												
38					Note: Data have multiple DLs - Use of KM Method is recommended					Number treated as Non-Detect	100	
39					For all methods (except KM, DL/2, and ROS Methods),					Number treated as Detected	1	
40					Observations < Largest ND are treated as NDs					Single DL Non-Detect Percentage	99.01%	
41												
42						UCL Statistics						
43						Normal Distribution Test with Detected Values Only				Lognormal Distribution Test with Detected Values Only		
44						Lilliefors Test Statistic	0.243			Lilliefors Test Statistic	0.167	
45						5% Lilliefors Critical Value	0.0978			5% Lilliefors Critical Value	0.0978	
46						Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level		
47												
48						Assuming Normal Distribution				Assuming Lognormal Distribution		
49						DL/2 Substitution Method				DL/2 Substitution Method		
50						Mean	731.6			Mean	5.646	

51					SD	1038					SD	1.923
52					95% DL/2 (t) UCL	903					95% H-Stat (DL/2) UCL	3333
53												
54					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
55					**MLE method failed to converge properly**						Mean in Log Scale	5.399
56											SD in Log Scale	1.925
57											Mean in Original Scale	649.6
58											SD in Original Scale	1028
59											95% t UCL	819.4
60											95% Percentile Bootstrap UCL	830.8
61											95% BCA Bootstrap UCL	860.4
62												
63					**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**	
64					k star (bias corrected)	0.574					**Data appear Gamma Distributed at 5% Significance Level**	
65					Theta Star	1345						
66					nu star	94.09						
67												
68					A-D Test Statistic	0.732					**Nonparametric Statistics**	
69					5% A-D Critical Value	0.81					Kaplan-Meier (KM) Method	
70					K-S Test Statistic	0.81					Mean	680.1
71					5% K-S Critical Value	0.104					SD	1019
72					**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean	103.1
73											95% KM (t) UCL	851.2
74					**Assuming Gamma Distribution**						95% KM (z) UCL	849.7
75					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	851.1
76					Minimum	1E-12					95% KM (bootstrap t) UCL	941.5
77					Maximum	6472					95% KM (BCA) UCL	855.2
78					Mean	712.3					95% KM (Percentile Bootstrap) UCL	847.5
79					Median	498.9					95% KM (Chebyshev) UCL	1129
80					SD	1012					97.5% KM (Chebyshev) UCL	1324
81					k star	0.503					99% KM (Chebyshev) UCL	1706
82					Theta star	1415						
83					Nu star	101.7					**Potential UCLs to Use**	
84					AppChi2	79.43					95% KM (Chebyshev) UCL	1129
85					95% Gamma Approximate UCL	912						
86					95% Adjusted Gamma UCL	915.2						
87	**Note: DL/2 is not a recommended method.**											
88												
89	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
90	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
91	**For additional insight, the user may want to consult a statistician.**											
92												
93												
94	**BENZO(A)ANTHRACENE**											
95												
96	**General Statistics**											
97					Number of Valid Data	101					Number of Detected Data	59
98					Number of Distinct Detected Data	47					Number of Non-Detect Data	42
99					Number of Missing Values	2					Percent Non-Detects	41.58%
100												

	A	B	C	D	E	F	G	H	I	J	K	L
101	**Raw Statistics**						**Log-transformed Statistics**					
102					Minimum Detected	5.6					Minimum Detected	1.723
103					Maximum Detected	5200					Maximum Detected	8.556
104					Mean of Detected	699.9					Mean of Detected	5.889
105					SD of Detected	945.2					SD of Detected	1.336
106					Minimum Non-Detect	11					Minimum Non-Detect	2.398
107					Maximum Non-Detect	6400					Maximum Non-Detect	8.764
108												
109	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	101
110	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
111	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
112												
113	**UCL Statistics**											
114	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
115					Lilliefors Test Statistic	0.231					Lilliefors Test Statistic	0.157
116					5% Lilliefors Critical Value	0.115					5% Lilliefors Critical Value	0.115
117	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
118												
119	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
120					DL/2 Substitution Method						DL/2 Substitution Method	
121					Mean	665.5					Mean	5.989
122					SD	810.9					SD	1.178
123					95% DL/2 (t) UCL	799.4					95% H-Stat (DL/2) UCL	1056
124												
125					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
126	**MLE method failed to converge properly**										Mean in Log Scale	5.635
127											SD in Log Scale	1.122
128											Mean in Original Scale	503
129											SD in Original Scale	761.5
130											95% t UCL	628.8
131											95% Percentile Bootstrap UCL	637.8
132											95% BCA Bootstrap UCL	671
133												
134	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
135					k star (bias corrected)	0.852	**Data appear Gamma Distributed at 5% Significance Level**					
136					Theta Star	821.9						
137					nu star	100.5						
138												
139					A-D Test Statistic	0.783	**Nonparametric Statistics**					
140					5% A-D Critical Value	0.785					Kaplan-Meier (KM) Method	
141					K-S Test Statistic	0.785					Mean	543.7
142					5% K-S Critical Value	0.12					SD	765
143	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	79.81
144											95% KM (t) UCL	676.2
145	**Assuming Gamma Distribution**										95% KM (z) UCL	675
146					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	675.9
147					Minimum	5.6					95% KM (bootstrap t) UCL	759.9
148					Maximum	5200					95% KM (BCA) UCL	690.4
149					Mean	699.2					95% KM (Percentile Bootstrap) UCL	678
150					Median	624.4					95% KM (Chebyshev) UCL	891.6

151					SD	727.4				97.5% KM (Chebyshev) UCL		1042
152					k star	1.365				99% KM (Chebyshev) UCL		1338
153					Theta star	512.2						
154					Nu star	275.7				**Potential UCLs to Use**		
155					AppChi2	238.3				95% KM (BCA) UCL		690.4
156					95% Gamma Approximate UCL	809.1						
157					95% Adjusted Gamma UCL	810.8						
158	**Note: DL/2 is not a recommended method.**											
159												
160	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
161	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
162	**For additional insight, the user may want to consult a statistician.**											
163												
164												
165	**BENZO(A)PYRENE**											
166												
167	**General Statistics**											
168					Number of Valid Data	101				Number of Detected Data		63
169					Number of Distinct Detected Data	43				Number of Non-Detect Data		38
170					Number of Missing Values	2				Percent Non-Detects		37.62%
171												
172	**Raw Statistics**						**Log-transformed Statistics**					
173					Minimum Detected	9.4				Minimum Detected		2.241
174					Maximum Detected	4400				Maximum Detected		8.389
175					Mean of Detected	693.9				Mean of Detected		6.03
176					SD of Detected	814.1				SD of Detected		1.134
177					Minimum Non-Detect	2.4				Minimum Non-Detect		0.875
178					Maximum Non-Detect	6400				Maximum Non-Detect		8.764
179												
180	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		101
181	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		0
182	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		100.00%
183												
184	**UCL Statistics**											
185	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
186					Lilliefors Test Statistic	0.2				Lilliefors Test Statistic		0.138
187					5% Lilliefors Critical Value	0.112				5% Lilliefors Critical Value		0.112
188	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
189												
190	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
191					DL/2 Substitution Method					DL/2 Substitution Method		
192					Mean	652.1				Mean		5.944
193					SD	746.6				SD		1.296
194					95% DL/2 (t) UCL	775.5				95% H-Stat (DL/2) UCL		1221
195												
196					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
197	**MLE method failed to converge properly**									Mean in Log Scale		5.75
198										SD in Log Scale		1.043
199										Mean in Original Scale		520.7
200										SD in Original Scale		683.6

201											95% t UCL	633.7
202											95% Percentile Bootstrap UCL	640.5
203											95% BCA Bootstrap UCL	666.3
204												
205	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
206					k star (bias corrected)	1.07	**Data appear Gamma Distributed at 5% Significance Level**					
207					Theta Star	648.5						
208					nu star	134.8						
209												
210					A-D Test Statistic	0.711	**Nonparametric Statistics**					
211					5% A-D Critical Value	0.777	Kaplan-Meier (KM) Method					
212					K-S Test Statistic	0.777	Mean	552.6				
213					5% K-S Critical Value	0.115	SD	689.9				
214	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean	71.97				
215							95% KM (t) UCL	672				
216	**Assuming Gamma Distribution**						95% KM (z) UCL	670.9				
217					Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	671.3				
218					Minimum	9.4	95% KM (bootstrap t) UCL	720.1				
219					Maximum	4400	95% KM (BCA) UCL	681.2				
220					Mean	682.7	95% KM (Percentile Bootstrap) UCL	671.3				
221					Median	574.6	95% KM (Chebyshev) UCL	866.3				
222					SD	658.6	97.5% KM (Chebyshev) UCL	1002				
223					k star	1.49	99% KM (Chebyshev) UCL	1269				
224					Theta star	458.3						
225					Nu star	300.9	**Potential UCLs to Use**					
226					AppChi2	261.8	95% KM (Percentile Bootstrap) UCL	671.3				
227					95% Gamma Approximate UCL	784.9						
228					95% Adjusted Gamma UCL	786.5						
229	**Note: DL/2 is not a recommended method.**											
230												
231	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
232	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
233	**For additional insight, the user may want to consult a statistician.**											
234												
235												
236	**BENZO(B)FLUORANTHENE**											
237												
238	**General Statistics**											
239					Number of Valid Data	101	Number of Detected Data	78				
240					Number of Distinct Detected Data	57	Number of Non-Detect Data	23				
241					Number of Missing Values	2	Percent Non-Detects	22.77%				
242												
243	**Raw Statistics**						**Log-transformed Statistics**					
244					Minimum Detected	14	Minimum Detected	2.639				
245					Maximum Detected	5800	Maximum Detected	8.666				
246					Mean of Detected	940.4	Mean of Detected	6.363				
247					SD of Detected	1057	SD of Detected	1.071				
248					Minimum Non-Detect	3.7	Minimum Non-Detect	1.308				
249					Maximum Non-Detect	6400	Maximum Non-Detect	8.764				
250												

	A	B	C	D	E	F	G	H	I	J	K	L
251	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	101
252	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
253	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
254												
255	**UCL Statistics**											
256	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
257	Lilliefors Test Statistic					0.221	Lilliefors Test Statistic					0.118
258	5% Lilliefors Critical Value					0.1	5% Lilliefors Critical Value					0.1
259	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
260												
261	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
262	DL/2 Substitution Method						DL/2 Substitution Method					
263	Mean					843.4	Mean					6.207
264	SD					988.1	SD					1.213
265	95% DL/2 (t) UCL					1007	95% H-Stat (DL/2) UCL					1386
266												
267	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
268	**MLE method failed to converge properly**						Mean in Log Scale					6.17
269							SD in Log Scale					1.05
270							Mean in Original Scale					791.9
271							SD in Original Scale					969.6
272							95% t UCL					952.1
273							95% Percentile Bootstrap UCL					961.2
274							95% BCA Bootstrap UCL					983.3
275												
276	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
277	k star (bias corrected)					1.137	**Data do not follow a Discernable Distribution (0.05)**					
278	Theta Star					827						
279	nu star					177.4						
280												
281	A-D Test Statistic					0.962	**Nonparametric Statistics**					
282	5% A-D Critical Value					0.778	Kaplan-Meier (KM) Method					
283	K-S Test Statistic					0.778	Mean					807.5
284	5% K-S Critical Value					0.104	SD					968
285	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					98.08
286							95% KM (t) UCL					970.3
287	**Assuming Gamma Distribution**						95% KM (z) UCL					968.8
288	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					969.8
289	Minimum					1E-12	95% KM (bootstrap t) UCL					1034
290	Maximum					5800	95% KM (BCA) UCL					980.8
291	Mean					896.3	95% KM (Percentile Bootstrap) UCL					973.9
292	Median					660	95% KM (Chebyshev) UCL					1235
293	SD					944.9	97.5% KM (Chebyshev) UCL					1420
294	k star					0.581	99% KM (Chebyshev) UCL					1783
295	Theta star					1544						
296	Nu star					117.3	**Potential UCLs to Use**					
297	AppChi2					93.27	95% KM (Chebyshev) UCL					1235
298	95% Gamma Approximate UCL					1127						
299	95% Adjusted Gamma UCL					1131						
300	**Note: DL/2 is not a recommended method.**											

	A	B	C	D	E	F	G	H	I	J	K	L
301												
302	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
303	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
304	**For additional insight, the user may want to consult a statistician.**											
305												
306												
307	**BENZO(K)FLUORANTHENE**											
308												
309	**General Statistics**											
310	Number of Valid Data					101	Number of Detected Data					47
311	Number of Distinct Detected Data					40	Number of Non-Detect Data					54
312	Number of Missing Values					2	Percent Non-Detects					53.47%
313												
314	**Raw Statistics**						**Log-transformed Statistics**					
315	Minimum Detected					9.7	Minimum Detected					2.272
316	Maximum Detected					2700	Maximum Detected					7.901
317	Mean of Detected					549.1	Mean of Detected					5.892
318	SD of Detected					535.5	SD of Detected					1.042
319	Minimum Non-Detect					2.5	Minimum Non-Detect					0.916
320	Maximum Non-Detect					6400	Maximum Non-Detect					8.764
321												
322	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					101
323	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
324	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
325												
326	**UCL Statistics**											
327	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
328	Shapiro Wilk Test Statistic					0.75	Shapiro Wilk Test Statistic					0.904
329	5% Shapiro Wilk Critical Value					0.946	5% Shapiro Wilk Critical Value					0.946
330	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
331												
332	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
333	DL/2 Substitution Method						DL/2 Substitution Method					
334	Mean					446.5	Mean					5.177
335	SD					512	SD					1.86
336	95% DL/2 (t) UCL					531.1	95% H-Stat (DL/2) UCL					1789
337												
338	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
339	**MLE method failed to converge properly**						Mean in Log Scale					5.176
340							SD in Log Scale					1.09
341							Mean in Original Scale					319.2
342							SD in Original Scale					427.2
343							95% t UCL					389.8
344							95% Percentile Bootstrap UCL					391.8
345							95% BCA Bootstrap UCL					407.5
346												
347	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
348	k star (bias corrected)					1.271	**Data Follow Appr. Gamma Distribution at 5% Significance Level**					
349	Theta Star					432.2						
350	nu star					119.4						

351												
352					A-D Test Statistic	1.049	**Nonparametric Statistics**					
353					5% A-D Critical Value	0.771					Kaplan-Meier (KM) Method	
354					K-S Test Statistic	0.771					Mean	331.9
355					5% K-S Critical Value	0.132					SD	442.5
356	**Data follow Appr. Gamma Distribution at 5% Significance Level**										SE of Mean	47.24
357											95% KM (t) UCL	410.3
358	**Assuming Gamma Distribution**										95% KM (z) UCL	409.6
359	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	408.5
360					Minimum	1E-12					95% KM (bootstrap t) UCL	434.2
361					Maximum	2700					95% KM (BCA) UCL	426.4
362					Mean	536.8					95% KM (Percentile Bootstrap) UCL	419.2
363					Median	430					95% KM (Chebyshev) UCL	537.8
364					SD	449.4					97.5% KM (Chebyshev) UCL	626.9
365					k star	0.842					99% KM (Chebyshev) UCL	801.9
366					Theta star	637.5						
367					Nu star	170.1	**Potential UCLs to Use**					
368					AppChi2	140.9					95% KM (t) UCL	410.3
369					95% Gamma Approximate UCL	647.8						
370					95% Adjusted Gamma UCL	649.6						
371	**Note: DL/2 is not a recommended method.**											
372												
373	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
374	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
375	**For additional insight, the user may want to consult a statistician.**											
376												
377												
378	**BIS(2-ETHYLHEXYL)PHTHALATE**											
379												
380	**General Statistics**											
381					Number of Valid Data	39					Number of Detected Data	37
382					Number of Distinct Detected Data	30					Number of Non-Detect Data	2
383											Percent Non-Detects	5.13%
384												
385	**Raw Statistics**						**Log-transformed Statistics**					
386					Minimum Detected	78					Minimum Detected	4.357
387					Maximum Detected	2900					Maximum Detected	7.972
388					Mean of Detected	781.3					Mean of Detected	6.381
389					SD of Detected	608.6					SD of Detected	0.776
390					Minimum Non-Detect	860					Minimum Non-Detect	6.757
391					Maximum Non-Detect	1500					Maximum Non-Detect	7.313
392												
393	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	33
394	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	6
395	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	84.62%
396												
397	**UCL Statistics**											
398	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
399					Shapiro Wilk Test Statistic	0.841					Shapiro Wilk Test Statistic	0.963
400					5% Shapiro Wilk Critical Value	0.936					5% Shapiro Wilk Critical Value	0.936

	A	B	C	D	E	F	G	H	I	J	K	L
401	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
402												
403	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
404	DL/2 Substitution Method						DL/2 Substitution Method					
405	Mean					771.5	Mean					6.379
406	SD					595.1	SD					0.758
407	95% DL/2 (t) UCL					932.1	95% H-Stat (DL/2) UCL					1023
408												
409	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
410	Mean					665.9	Mean in Log Scale					6.367
411	SD					786.8	SD in Log Scale					0.758
412	95% MLE (t) UCL					878.3	Mean in Original Scale					764.4
413	95% MLE (Tiku) UCL					1312	SD in Original Scale					597
414							95% t UCL					925.6
415							95% Percentile Bootstrap UCL					916.3
416							95% BCA Bootstrap UCL					956.2
417												
418	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
419	k star (bias corrected)					1.799	**Data appear Lognormal at 5% Significance Level**					
420	Theta Star					434.3						
421	nu star					133.1						
422												
423	A-D Test Statistic					0.935	**Nonparametric Statistics**					
424	5% A-D Critical Value					0.76	Kaplan-Meier (KM) Method					
425	K-S Test Statistic					0.76	Mean					766.4
426	5% K-S Critical Value					0.147	SD					592
427	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					96.69
428							95% KM (t) UCL					929.4
429	**Assuming Gamma Distribution**						95% KM (z) UCL					925.5
430	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					929.4
431	Minimum					78	95% KM (bootstrap t) UCL					979.7
432	Maximum					2900	95% KM (BCA) UCL					934.7
433	Mean					775.6	95% KM (Percentile Bootstrap) UCL					930.4
434	Median					520	95% KM (Chebyshev) UCL					1188
435	SD					593.2	97.5% KM (Chebyshev) UCL					1370
436	k star					1.89	99% KM (Chebyshev) UCL					1728
437	Theta star					410.4						
438	Nu star					147.4	**Potential UCLs to Use**					
439	AppChi2					120.3	95% KM (Chebyshev) UCL					1188
440	95% Gamma Approximate UCL					950						
441	95% Adjusted Gamma UCL					957.7						
442	**Note: DL/2 is not a recommended method.**											
443												
444	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
445	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
446	**For additional insight, the user may want to consult a statistician.**											
447												
448												
449	**CHRYSENE**											
450												

451	**General Statistics**											
452					Number of Valid Data	101				Number of Detected Data		77
453					Number of Distinct Detected Data	53				Number of Non-Detect Data		24
454					Number of Missing Values	2				Percent Non-Detects		23.76%
455												
456	**Raw Statistics**						**Log-transformed Statistics**					
457					Minimum Detected	9.1				Minimum Detected		2.208
458					Maximum Detected	5400				Maximum Detected		8.594
459					Mean of Detected	804.6				Mean of Detected		6.136
460					SD of Detected	1006				SD of Detected		1.152
461					Minimum Non-Detect	2.8				Minimum Non-Detect		1.03
462					Maximum Non-Detect	6400				Maximum Non-Detect		8.764
463												
464	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		101
465	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		0
466	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		100.00%
467												
468	**UCL Statistics**											
469	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
470					Lilliefors Test Statistic	0.217				Lilliefors Test Statistic		0.108
471					5% Lilliefors Critical Value	0.101				5% Lilliefors Critical Value		0.101
472	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
473												
474	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
475					DL/2 Substitution Method					DL/2 Substitution Method		
476					Mean	745.8				Mean		6.046
477					SD	929.4				SD		1.271
478					95% DL/2 (t) UCL	899.3				95% H-Stat (DL/2) UCL		1297
479												
480					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
481	**MLE method failed to converge properly**									Mean in Log Scale		5.959
482										SD in Log Scale		1.108
483										Mean in Original Scale		675.9
484										SD in Original Scale		909.5
485										95% t UCL		826.1
486										95% Percentile Bootstrap UCL		831.3
487										95% BCA Bootstrap UCL		859.7
488												
489	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
490					k star (bias corrected)	1.005	**Data do not follow a Discernable Distribution (0.05)**					
491					Theta Star	800.7						
492					nu star	154.7						
493												
494					A-D Test Statistic	1.021	**Nonparametric Statistics**					
495					5% A-D Critical Value	0.781				Kaplan-Meier (KM) Method		
496					K-S Test Statistic	0.781				Mean		694.7
497					5% K-S Critical Value	0.105				SD		909.1
498	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		92.39
499										95% KM (t) UCL		848.1
500	**Assuming Gamma Distribution**									95% KM (z) UCL		846.7

501	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	847.7
502					Minimum	1E-12					95% KM (bootstrap t) UCL	895.6
503					Maximum	5400					95% KM (BCA) UCL	844.6
504					Mean	770.5					95% KM (Percentile Bootstrap) UCL	853.7
505					Median	530					95% KM (Chebyshev) UCL	1097
506					SD	894.4					97.5% KM (Chebyshev) UCL	1272
507					k star	0.556					99% KM (Chebyshev) UCL	1614
508					Theta star	1387						
509					Nu star	112.2	**Potential UCLs to Use**					
510					AppChi2	88.78					95% KM (Chebyshev) UCL	1097
511				95% Gamma Approximate UCL		974						
512				95% Adjusted Gamma UCL		977.3						
513	**Note: DL/2 is not a recommended method.**											
514												
515	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
516	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
517	**For additional insight, the user may want to consult a statistician.**											
518												
519												
520	**DIBENZO(A,H)ANTHRACENE**											
521												
522	**General Statistics**											
523					Number of Valid Data	101					Number of Detected Data	16
524					Number of Distinct Detected Data	15					Number of Non-Detect Data	85
525					Number of Missing Values	2					Percent Non-Detects	84.16%
526												
527	**Raw Statistics**						**Log-transformed Statistics**					
528					Minimum Detected	49					Minimum Detected	3.892
529					Maximum Detected	720					Maximum Detected	6.579
530					Mean of Detected	294.3					Mean of Detected	5.371
531					SD of Detected	227.6					SD of Detected	0.857
532					Minimum Non-Detect	1.4					Minimum Non-Detect	0.336
533					Maximum Non-Detect	6400					Maximum Non-Detect	8.764
534												
535	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	101
536	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
537	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
538												
539	**UCL Statistics**											
540	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
541					Shapiro Wilk Test Statistic	0.858					Shapiro Wilk Test Statistic	0.946
542					5% Shapiro Wilk Critical Value	0.887					5% Shapiro Wilk Critical Value	0.887
543	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
544												
545	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
546					DL/2 Substitution Method						DL/2 Substitution Method	
547					Mean	467.8					Mean	5.559
548					SD	437.4					SD	1.593
549					95% DL/2 (t) UCL	540.1					95% H-Stat (DL/2) UCL	1444
550												

551	Maximum Likelihood Estimate(MLE) Method					N/A					Log ROS Method	
552	**MLE method failed to converge properly**										Mean in Log Scale	4.492
553											SD in Log Scale	0.771
554											Mean in Original Scale	124.9
555											SD in Original Scale	130.8
556											95% t UCL	146.5
557											95% Percentile Bootstrap UCL	146.5
558											95% BCA Bootstrap UCL	149.4
559												
560	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
561	k star (bias corrected)					1.455	**Data appear Gamma Distributed at 5% Significance Level**					
562	Theta Star					202.3						
563	nu star					46.55						
564												
565	A-D Test Statistic					0.393	**Nonparametric Statistics**					
566	5% A-D Critical Value					0.753	Kaplan-Meier (KM) Method					
567	K-S Test Statistic					0.753	Mean					167.5
568	5% K-S Critical Value					0.218	SD					178.2
569	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					30.68
570							95% KM (t) UCL					218.4
571	**Assuming Gamma Distribution**						95% KM (z) UCL					218
572	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					213.2
573	Minimum					1E-12	95% KM (bootstrap t) UCL					224.7
574	Maximum					883.5	95% KM (BCA) UCL					230.7
575	Mean					411.6	95% KM (Percentile Bootstrap) UCL					222.3
576	Median					444.4	95% KM (Chebyshev) UCL					301.2
577	SD					217.7	97.5% KM (Chebyshev) UCL					359.1
578	k star					1.074	99% KM (Chebyshev) UCL					472.7
579	Theta star					383.1						
580	Nu star					217	**Potential UCLs to Use**					
581	AppChi2					183.9	95% KM (t) UCL					218.4
582	95% Gamma Approximate UCL					485.7						
583	95% Adjusted Gamma UCL					486.9						
584	**Note: DL/2 is not a recommended method.**											
585												
586	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
587	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
588	**For additional insight, the user may want to consult a statistician.**											
589												
590												
591	**DIBENZOFURAN**											
592												
593	**General Statistics**											
594	Number of Valid Data					39	Number of Detected Data					1
595	Number of Distinct Detected Data					1	Number of Non-Detect Data					38
596							Percent Non-Detects					97.44%
597												
598	**Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!**											
599	**It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).**											
600												

601	**The data set for variable DIBENZOFURAN was not processed!**											
602												
603												
604												
605	**FLUORANTHENE**											
606												
607	**General Statistics**											
608						Number of Valid Data	101				Number of Detected Data	84
609						Number of Distinct Detected Data	63				Number of Non-Detect Data	17
610						Number of Missing Values	2				Percent Non-Detects	16.83%
611												
612	**Raw Statistics**							**Log-transformed Statistics**				
613						Minimum Detected	8				Minimum Detected	2.079
614						Maximum Detected	10000				Maximum Detected	9.21
615						Mean of Detected	1189				Mean of Detected	6.425
616						SD of Detected	1719				SD of Detected	1.241
617						Minimum Non-Detect	9.3				Minimum Non-Detect	2.23
618						Maximum Non-Detect	1400				Maximum Non-Detect	7.244
619												
620	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	79
621	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	22
622	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	78.22%
623												
624	**UCL Statistics**											
625	**Normal Distribution Test with Detected Values Only**							**Lognormal Distribution Test with Detected Values Only**				
626						Lilliefors Test Statistic	0.246				Lilliefors Test Statistic	0.0808
627						5% Lilliefors Critical Value	0.0967				5% Lilliefors Critical Value	0.0967
628	**Data not Normal at 5% Significance Level**							**Data appear Lognormal at 5% Significance Level**				
629												
630	**Assuming Normal Distribution**							**Assuming Lognormal Distribution**				
631						DL/2 Substitution Method					DL/2 Substitution Method	
632						Mean	1058				Mean	6.309
633						SD	1595				SD	1.248
634						95% DL/2 (t) UCL	1321				95% H-Stat (DL/2) UCL	1625
635												
636						Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method	
637	**MLE yields a negative mean**										Mean in Log Scale	6.268
638											SD in Log Scale	1.21
639											Mean in Original Scale	1036
640											SD in Original Scale	1604
641											95% t UCL	1301
642											95% Percentile Bootstrap UCL	1321
643											95% BCA Bootstrap UCL	1398
644												
645	**Gamma Distribution Test with Detected Values Only**							**Data Distribution Test with Detected Values Only**				
646						k star (bias corrected)	0.869	**Data appear Lognormal at 5% Significance Level**				
647						Theta Star	1368					
648						nu star	146					
649												
650						A-D Test Statistic	1.301	**Nonparametric Statistics**				

651					5% A-D Critical Value	0.787				Kaplan-Meier (KM) Method		
652					K-S Test Statistic	0.787				Mean		1047
653					5% K-S Critical Value	0.101				SD		1594
654	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		159.9
655										95% KM (t) UCL		1312
656	**Assuming Gamma Distribution**									95% KM (z) UCL		1310
657	Gamma ROS Statistics using Extrapolated Data									95% KM (jackknife) UCL		1312
658					Minimum	1E-12				95% KM (bootstrap t) UCL		1423
659					Maximum	10000				95% KM (BCA) UCL		1324
660					Mean	1098				95% KM (Percentile Bootstrap) UCL		1326
661					Median	686.5				95% KM (Chebyshev) UCL		1743
662					SD	1591				97.5% KM (Chebyshev) UCL		2045
663					k star	0.639				99% KM (Chebyshev) UCL		2637
664					Theta star	1718						
665					Nu star	129.1				**Potential UCLs to Use**		
666					AppChi2	103.8				95% KM (Chebyshev) UCL		1743
667					95% Gamma Approximate UCL	1365						
668					95% Adjusted Gamma UCL	1369						
669	**Note: DL/2 is not a recommended method.**											
670												
671	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
672	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
673	**For additional insight, the user may want to consult a statistician.**											
674												
675												
676	**INDENO(1,2,3-CD)PYRENE**											
677												
678	**General Statistics**											
679					Number of Valid Data	101				Number of Detected Data		54
680					Number of Distinct Detected Data	48				Number of Non-Detect Data		47
681					Number of Missing Values	2				Percent Non-Detects		46.53%
682												
683	**Raw Statistics**						**Log-transformed Statistics**					
684					Minimum Detected	33				Minimum Detected		3.497
685					Maximum Detected	3400				Maximum Detected		8.132
686					Mean of Detected	566.3				Mean of Detected		5.913
687					SD of Detected	611				SD of Detected		0.948
688					Minimum Non-Detect	2.4				Minimum Non-Detect		0.875
689					Maximum Non-Detect	6400				Maximum Non-Detect		8.764
690												
691	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		101
692	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		0
693	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		100.00%
694												
695	**UCL Statistics**											
696	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
697					Lilliefors Test Statistic	0.217				Lilliefors Test Statistic		0.0789
698					5% Lilliefors Critical Value	0.121				5% Lilliefors Critical Value		0.121
699	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
700												

	A	B	C	D	E	F	G	H	I	J	K	L
701	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
702	DL/2 Substitution Method						DL/2 Substitution Method					
703	Mean					576.4	Mean					5.984
704	SD					535.4	SD					1.076
705	95% DL/2 (t) UCL					664.9	95% H-Stat (DL/2) UCL					904.3
706												
707	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
708	**MLE method failed to converge properly**						Mean in Log Scale					5.708
709							SD in Log Scale					0.832
710							Mean in Original Scale					432.4
711							SD in Original Scale					479.3
712							95% t UCL					511.6
713							95% Percentile Bootstrap UCL					514.4
714							95% BCA Bootstrap UCL					528
715												
716	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
717	k star (bias corrected)					1.255	**Data appear Gamma Distributed at 5% Significance Level**					
718	Theta Star					451.3						
719	nu star					135.5						
720												
721	A-D Test Statistic					0.686	**Nonparametric Statistics**					
722	5% A-D Critical Value					0.772	Kaplan-Meier (KM) Method					
723	K-S Test Statistic					0.772	Mean					453.6
724	5% K-S Critical Value					0.124	SD					488.2
725	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					53.07
726							95% KM (t) UCL					541.8
727	**Assuming Gamma Distribution**						95% KM (z) UCL					540.9
728	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					540.4
729	Minimum					1E-12	95% KM (bootstrap t) UCL					565.1
730	Maximum					3400	95% KM (BCA) UCL					540.4
731	Mean					566	95% KM (Percentile Bootstrap) UCL					543.3
732	Median					509.2	95% KM (Chebyshev) UCL					685
733	SD					478	97.5% KM (Chebyshev) UCL					785.1
734	k star					0.646	99% KM (Chebyshev) UCL					981.7
735	Theta star					875.6						
736	Nu star					130.6	**Potential UCLs to Use**					
737	AppChi2					105.2	95% KM (t) UCL					541.8
738	95% Gamma Approximate UCL					702.7						
739	95% Adjusted Gamma UCL					704.9						
740	**Note: DL/2 is not a recommended method.**											
741												
742	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
743	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
744	**For additional insight, the user may want to consult a statistician.**											
745												
746												
747	**PHENANTHRENE**											
748												
749	**General Statistics**											
750	Number of Valid Data					101	Number of Detected Data					62

751					Number of Distinct Detected Data	50					Number of Non-Detect Data	39
752					Number of Missing Values	2					Percent Non-Detects	38.61%
753												
754					**Raw Statistics**						**Log-transformed Statistics**	
755					Minimum Detected	7.2					Minimum Detected	1.974
756					Maximum Detected	12000					Maximum Detected	9.393
757					Mean of Detected	842.3					Mean of Detected	5.933
758					SD of Detected	1735					SD of Detected	1.267
759					Minimum Non-Detect	3.8					Minimum Non-Detect	1.335
760					Maximum Non-Detect	6400					Maximum Non-Detect	8.764
761												
762	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	99
763	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	2
764	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	98.02%
765												
766					**UCL Statistics**							
767					**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**	
768					Lilliefors Test Statistic	0.315					Lilliefors Test Statistic	0.118
769					5% Lilliefors Critical Value	0.113					5% Lilliefors Critical Value	0.113
770					**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**	
771												
772					**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
773					DL/2 Substitution Method						DL/2 Substitution Method	
774					Mean	748					Mean	5.918
775					SD	1407					SD	1.337
776					95% DL/2 (t) UCL	980.5					95% H-Stat (DL/2) UCL	1274
777												
778					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
779					**MLE method failed to converge properly**						Mean in Log Scale	5.652
780											SD in Log Scale	1.151
781											Mean in Original Scale	604.4
782											SD in Original Scale	1391
783											95% t UCL	834.2
784											95% Percentile Bootstrap UCL	858.1
785											95% BCA Bootstrap UCL	981.1
786												
787					**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**	
788					k star (bias corrected)	0.721					**Data do not follow a Discernable Distribution (0.05)**	
789					Theta Star	1168						
790					nu star	89.39						
791												
792					A-D Test Statistic	2.337					**Nonparametric Statistics**	
793					5% A-D Critical Value	0.793					Kaplan-Meier (KM) Method	
794					K-S Test Statistic	0.793					Mean	628.9
795					5% K-S Critical Value	0.118					SD	1384
796					**Data not Gamma Distributed at 5% Significance Level**						SE of Mean	140
797											95% KM (t) UCL	861.4
798					**Assuming Gamma Distribution**						95% KM (z) UCL	859.2
799					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	860.6
800					Minimum	1E-12					95% KM (bootstrap t) UCL	1193

801					Maximum	12000					95% KM (BCA) UCL	901
802					Mean	793.8					95% KM (Percentile Bootstrap) UCL	870.3
803					Median	460					95% KM (Chebyshev) UCL	1239
804					SD	1398					97.5% KM (Chebyshev) UCL	1503
805					k star	0.347					99% KM (Chebyshev) UCL	2022
806					Theta star	2288						
807					Nu star	70.1					**Potential UCLs to Use**	
808					AppChi2	51.82					95% KM (Chebyshev) UCL	1239
809					95% Gamma Approximate UCL	1074						
810					95% Adjusted Gamma UCL	1078						
811	**Note: DL/2 is not a recommended method.**											
812												
813	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
814	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
815	**For additional insight, the user may want to consult a statistician.**											
816												
817												
818	**PYRENE**											
819												
820	**General Statistics**											
821					Number of Valid Data	101					Number of Detected Data	82
822					Number of Distinct Detected Data	66					Number of Non-Detect Data	19
823					Number of Missing Values	2					Percent Non-Detects	18.81%
824												
825	**Raw Statistics**						**Log-transformed Statistics**					
826					Minimum Detected	6.2					Minimum Detected	1.825
827					Maximum Detected	13000					Maximum Detected	9.473
828					Mean of Detected	1503					Mean of Detected	6.644
829					SD of Detected	2113					SD of Detected	1.315
830					Minimum Non-Detect	8.8					Minimum Non-Detect	2.175
831					Maximum Non-Detect	6400					Maximum Non-Detect	8.764
832												
833	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	97
834	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	4
835	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	96.04%
836												
837	**UCL Statistics**											
838	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
839					Lilliefors Test Statistic	0.239					Lilliefors Test Statistic	0.113
840					5% Lilliefors Critical Value	0.0978					5% Lilliefors Critical Value	0.0978
841	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
842												
843	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
844					DL/2 Substitution Method						DL/2 Substitution Method	
845					Mean	1325					Mean	6.499
846					SD	1958					SD	1.328
847					95% DL/2 (t) UCL	1649					95% H-Stat (DL/2) UCL	2244
848												
849					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
850					Mean	10641					Mean in Log Scale	6.43

851					SD	2624				SD in Log Scale		1.294
852					95% MLE (t) UCL	11074				Mean in Original Scale		1274
853					95% MLE (Tiku) UCL	12769				SD in Original Scale		1962
854										95% t UCL		1598
855										95% Percentile Bootstrap UCL		1591
856										95% BCA Bootstrap UCL		1684
857												
858	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
859					k star (bias corrected)	0.85	**Data do not follow a Discernable Distribution (0.05)**					
860					Theta Star	1768						
861					nu star	139.4						
862												
863					A-D Test Statistic	1.035	**Nonparametric Statistics**					
864					5% A-D Critical Value	0.788				Kaplan-Meier (KM) Method		
865					K-S Test Statistic	0.788				Mean		1294
866					5% K-S Critical Value	0.102				SD		1948
867	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		195.6
868										95% KM (t) UCL		1619
869	**Assuming Gamma Distribution**									95% KM (z) UCL		1616
870					Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL		1618
871					Minimum	1E-12				95% KM (bootstrap t) UCL		1765
872					Maximum	13000				95% KM (BCA) UCL		1662
873					Mean	1350				95% KM (Percentile Bootstrap) UCL		1633
874					Median	809.1				95% KM (Chebyshev) UCL		2147
875					SD	1947				97.5% KM (Chebyshev) UCL		2516
876					k star	0.481				99% KM (Chebyshev) UCL		3241
877					Theta star	2807						
878					Nu star	97.14	**Potential UCLs to Use**					
879					AppChi2	75.41				95% KM (Chebyshev) UCL		2147
880					95% Gamma Approximate UCL	1739						
881					95% Adjusted Gamma UCL	1745						
882	**Note: DL/2 is not a recommended method.**											
883												
884	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
885	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
886	**For additional insight, the user may want to consult a statistician.**											
887												
888												
889	**AROCLOR-1248**											
890												
891	**General Statistics**											
892					Number of Valid Data	101				Number of Detected Data		0
893					Number of Distinct Detected Data	0				Number of Non-Detect Data		101
894					Number of Missing Values	2				Percent Non-Detects		100.00%
895												
896	**Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!**											
897	**Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!**											
898	**The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**											
899												
900	**The data set for variable AROCLOR-1248 was not processed!**											

	A	B	C	D	E	F	G	H	I	J	K	L
901												
902												
903												
904	**AROCLOR-1254**											
905												
906	**General Statistics**											
907	Number of Valid Data					101	Number of Detected Data					1
908	Number of Distinct Detected Data					1	Number of Non-Detect Data					100
909	Number of Missing Values					2	Percent Non-Detects					99.01%
910												
911	**Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!**											
912	**It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).**											
913												
914	**The data set for variable AROCLOR-1254 was not processed!**											
915												
916												
917												
918	**AROCLOR-1260**											
919												
920	**General Statistics**											
921	Number of Valid Data					101	Number of Detected Data					78
922	Number of Distinct Detected Data					55	Number of Non-Detect Data					23
923	Number of Missing Values					2	Percent Non-Detects					22.77%
924												
925	**Raw Statistics**						**Log-transformed Statistics**					
926	Minimum Detected					14	Minimum Detected					2.639
927	Maximum Detected					54000	Maximum Detected					10.9
928	Mean of Detected					1786	Mean of Detected					6.041
929	SD of Detected					6483	SD of Detected					1.555
930	Minimum Non-Detect					1.7	Minimum Non-Detect					0.531
931	Maximum Non-Detect					79	Maximum Non-Detect					4.369
932												
933	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					33
934	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					68
935	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					32.67%
936												
937	**UCL Statistics**											
938	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
939	Lilliefors Test Statistic					0.392	Lilliefors Test Statistic					0.0492
940	5% Lilliefors Critical Value					0.1	5% Lilliefors Critical Value					0.1
941	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
942												
943	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
944	DL/2 Substitution Method						DL/2 Substitution Method					
945	Mean					1384	Mean					5.241
946	SD					5737	SD					2.09
947	95% DL/2 (t) UCL					2331	95% H-Stat (DL/2) UCL					3415
948												
949	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
950	**MLE yields a negative mean**						Mean in Log Scale					5.306

951											SD in Log Scale	1.939
952											Mean in Original Scale	1384
953											SD in Original Scale	5737
954											95% t UCL	2331
955											95% Percentile Bootstrap UCL	2483
956											95% BCA Bootstrap UCL	2998
957												
958	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
959					k star (bias corrected)	0.438	**Data appear Lognormal at 5% Significance Level**					
960					Theta Star	4076						
961					nu star	68.37						
962												
963					A-D Test Statistic	4.545	**Nonparametric Statistics**					
964					5% A-D Critical Value	0.831					Kaplan-Meier (KM) Method	
965					K-S Test Statistic	0.831					Mean	1384
966					5% K-S Critical Value	0.108					SD	5709
967	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	571.7
968											95% KM (t) UCL	2333
969	**Assuming Gamma Distribution**										95% KM (z) UCL	2324
970					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	2330
971					Minimum	1E-12					95% KM (bootstrap t) UCL	5622
972					Maximum	54000					95% KM (BCA) UCL	2345
973					Mean	1379					95% KM (Percentile Bootstrap) UCL	2397
974					Median	200					95% KM (Chebyshev) UCL	3876
975					SD	5738					97.5% KM (Chebyshev) UCL	4954
976					k star	0.0964					99% KM (Chebyshev) UCL	7072
977					Theta star	14305						
978					Nu star	19.48	**Potential UCLs to Use**					
979					AppChi2	10.47					97.5% KM (Chebyshev) UCL	4954
980					95% Gamma Approximate UCL	2567						
981					95% Adjusted Gamma UCL	2591						
982	**Note: DL/2 is not a recommended method.**											
983												
984	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
985	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
986	**For additional insight, the user may want to consult a statistician.**											
987												
988												
989	**ANTIMONY**											
990												
991	**General Statistics**											
992					Number of Valid Data	103					Number of Detected Data	48
993					Number of Distinct Detected Data	36					Number of Non-Detect Data	55
994											Percent Non-Detects	53.40%
995												
996	**Raw Statistics**						**Log-transformed Statistics**					
997					Minimum Detected	0.11					Minimum Detected	-2.207
998					Maximum Detected	2320					Maximum Detected	7.749
999					Mean of Detected	49.39					Mean of Detected	0.00959
1000					SD of Detected	334.7					SD of Detected	1.354

	A	B	C	D	E	F	G	H	I	J	K	L
1001					Minimum Non-Detect	0.099					Minimum Non-Detect	-2.313
1002					Maximum Non-Detect	2.1					Maximum Non-Detect	0.742
1003												
1004	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	99
1005	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	4
1006	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	96.12%
1007												
1008	**UCL Statistics**											
1009	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1010					Shapiro Wilk Test Statistic	0.148					Shapiro Wilk Test Statistic	0.653
1011					5% Shapiro Wilk Critical Value	0.947					5% Shapiro Wilk Critical Value	0.947
1012	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1013												
1014	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1015					DL/2 Substitution Method						DL/2 Substitution Method	
1016					Mean	23.24					Mean	-0.607
1017					SD	228.5					SD	1.25
1018					95% DL/2 (t) UCL	60.62					95% H-Stat (DL/2) UCL	1.611
1019												
1020					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
1021	**MLE yields a negative mean**										Mean in Log Scale	-0.916
1022											SD in Log Scale	1.333
1023											Mean in Original Scale	23.13
1024											SD in Original Scale	228.5
1025											95% t UCL	60.51
1026											95% Percentile Bootstrap UCL	68.15
1027											95% BCA Bootstrap UCL	90.78
1028												
1029	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1030					k star (bias corrected)	0.193	**Data do not follow a Discernable Distribution (0.05)**					
1031					Theta Star	256.5						
1032					nu star	18.49						
1033												
1034					A-D Test Statistic	15.44	**Nonparametric Statistics**					
1035					5% A-D Critical Value	0.913					Kaplan-Meier (KM) Method	
1036					K-S Test Statistic	0.913					Mean	23.18
1037					5% K-S Critical Value	0.142					SD	227.4
1038	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	22.65
1039											95% KM (t) UCL	60.77
1040	**Assuming Gamma Distribution**										95% KM (z) UCL	60.43
1041					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	60.55
1042					Minimum	1E-12					95% KM (bootstrap t) UCL	8764
1043					Maximum	2320					95% KM (BCA) UCL	68.32
1044					Mean	52.9					95% KM (Percentile Bootstrap) UCL	68.22
1045					Median	42.25					95% KM (Chebyshev) UCL	121.9
1046					SD	227.4					97.5% KM (Chebyshev) UCL	164.6
1047					k star	0.285					99% KM (Chebyshev) UCL	248.5
1048					Theta star	185.4						
1049					Nu star	58.77	**Potential UCLs to Use**					
1050					AppChi2	42.14					95% KM (BCA) UCL	68.32

1051					95% Gamma Approximate UCL	73.77						
1052					95% Adjusted Gamma UCL	74.12						
1053	**Note: DL/2 is not a recommended method.**											
1054												
1055	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1056	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1057	**For additional insight, the user may want to consult a statistician.**											
1058												
1059												
1060	**CADMIUM**											
1061												
1062	**General Statistics**											
1063					Number of Valid Data	103				Number of Detected Data	100	
1064					Number of Distinct Detected Data	72				Number of Non-Detect Data	3	
1065										Percent Non-Detects	2.91%	
1066												
1067	**Raw Statistics**						**Log-transformed Statistics**					
1068					Minimum Detected	0.037				Minimum Detected	-3.298	
1069					Maximum Detected	296				Maximum Detected	5.69	
1070					Mean of Detected	11.25				Mean of Detected	1.52	
1071					SD of Detected	30.37				SD of Detected	1.401	
1072					Minimum Non-Detect	0.0079				Minimum Non-Detect	-4.841	
1073					Maximum Non-Detect	0.016				Maximum Non-Detect	-4.135	
1074												
1075	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect	3	
1076	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected	100	
1077	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage	2.91%	
1078												
1079	**UCL Statistics**											
1080	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1081					Lilliefors Test Statistic	0.356				Lilliefors Test Statistic	0.194	
1082					5% Lilliefors Critical Value	0.0886				5% Lilliefors Critical Value	0.0886	
1083	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1084												
1085	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1086					DL/2 Substitution Method					DL/2 Substitution Method		
1087					Mean	10.92				Mean	1.328	
1088					SD	29.98				SD	1.776	
1089					95% DL/2 (t) UCL	15.82				95% H-Stat (DL/2) UCL	31.15	
1090												
1091					Maximum Likelihood Estimate(MLE) Method					Log ROS Method		
1092					Mean	10.31				Mean in Log Scale	1.425	
1093					SD	30.4				SD in Log Scale	1.487	
1094					95% MLE (t) UCL	15.28				Mean in Original Scale	10.92	
1095					95% MLE (Tiku) UCL	14.74				SD in Original Scale	29.98	
1096										95% t UCL	15.83	
1097										95% Percentile Bootstrap UCL	16.53	
1098										95% BCA Bootstrap UCL	19.75	
1099												
1100	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					

1101					k star (bias corrected)	0.662	**Data do not follow a Discernable Distribution (0.05)**					
1102					Theta Star	17						
1103					nu star	132.3						
1104												
1105					A-D Test Statistic	4.085	**Nonparametric Statistics**					
1106					5% A-D Critical Value	0.802	Kaplan-Meier (KM) Method					
1107					K-S Test Statistic	0.802	Mean					10.92
1108					5% K-S Critical Value	0.0934	SD					29.84
1109	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					2.955
1110							95% KM (t) UCL					15.82
1111	**Assuming Gamma Distribution**						95% KM (z) UCL					15.78
1112				Gamma ROS Statistics using Extrapolated Data			95% KM (jackknife) UCL					15.82
1113					Minimum	1E-12	95% KM (bootstrap t) UCL					25.52
1114					Maximum	296	95% KM (BCA) UCL					16.96
1115					Mean	10.92	95% KM (Percentile Bootstrap) UCL					16.8
1116					Median	5.2	95% KM (Chebyshev) UCL					23.8
1117					SD	29.98	97.5% KM (Chebyshev) UCL					29.37
1118					k star	0.38	99% KM (Chebyshev) UCL					40.32
1119					Theta star	28.71						
1120					Nu star	78.36	**Potential UCLs to Use**					
1121					AppChi2	58.96	95% KM (Chebyshev) UCL					23.8
1122				95% Gamma Approximate UCL		14.51						
1123				95% Adjusted Gamma UCL		14.57						
1124	**Note: DL/2 is not a recommended method.**											
1125												
1126	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1127	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1128	**For additional insight, the user may want to consult a statistician.**											
1129												
1130												
1131	**HEXAVALENT CHROMIUM**											
1132												
1133	**General Statistics**											
1134					Number of Valid Data	41	Number of Detected Data					5
1135					Number of Distinct Detected Data	5	Number of Non-Detect Data					36
1136							Percent Non-Detects					87.80%
1137												
1138	**Raw Statistics**						**Log-transformed Statistics**					
1139					Minimum Detected	0.53	Minimum Detected					-0.635
1140					Maximum Detected	13	Maximum Detected					2.565
1141					Mean of Detected	4.734	Mean of Detected					0.783
1142					SD of Detected	5.623	SD of Detected					1.455
1143					Minimum Non-Detect	0.44	Minimum Non-Detect					-0.821
1144					Maximum Non-Detect	2.5	Maximum Non-Detect					0.916
1145												
1146	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					39
1147	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					2
1148	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					95.12%
1149												
1150	**Warning: There are only 5 Detected Values in this data**											

	A	B	C	D	E	F	G	H	I	J	K	L
1151	**Note: It should be noted that even though bootstrap may be performed on this data set**											
1152	**the resulting calculations may not be reliable enough to draw conclusions**											
1153												
1154	**It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.**											
1155												
1156												
1157	**UCL Statistics**											
1158	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1159	Shapiro Wilk Test Statistic					0.805	Shapiro Wilk Test Statistic					0.865
1160	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762
1161	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1162												
1163	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1164	DL/2 Substitution Method						DL/2 Substitution Method					
1165	Mean					1.274	Mean					-0.181
1166	SD					2.222	SD					0.719
1167	95% DL/2 (t) UCL					1.858	95% H-Stat (DL/2) UCL					1.369
1168												
1169	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1170	**MLE method failed to converge properly**						Mean in Log Scale					-1.62
1171							SD in Log Scale					1.291
1172							Mean in Original Scale					0.754
1173							SD in Original Scale					2.334
1174							95% t UCL					1.368
1175							95% Percentile Bootstrap UCL					1.424
1176							95% BCA Bootstrap UCL					1.719
1177												
1178	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1179	k star (bias corrected)					0.442	**Data appear Normal at 5% Significance Level**					
1180	Theta Star					10.7						
1181	nu star					4.424						
1182												
1183	A-D Test Statistic					0.508	**Nonparametric Statistics**					
1184	5% A-D Critical Value					0.698	Kaplan-Meier (KM) Method					
1185	K-S Test Statistic					0.698	Mean					1.097
1186	5% K-S Critical Value					0.366	SD					2.224
1187	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					0.391
1188							95% KM (t) UCL					1.755
1189	**Assuming Gamma Distribution**						95% KM (z) UCL					1.74
1190	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.609
1191	Minimum					1E-12	95% KM (bootstrap t) UCL					3.469
1192	Maximum					13	95% KM (BCA) UCL					8.668
1193	Mean					3.937	95% KM (Percentile Bootstrap) UCL					2.281
1194	Median					3.901	95% KM (Chebyshev) UCL					2.802
1195	SD					2.423	97.5% KM (Chebyshev) UCL					3.54
1196	k star					0.407	99% KM (Chebyshev) UCL					4.989
1197	Theta star					9.671						
1198	Nu star					33.39	**Potential UCLs to Use**					
1199	AppChi2					21.17	95% KM (t) UCL					1.755
1200	95% Gamma Approximate UCL					6.208	95% KM (Percentile Bootstrap) UCL					2.281

	A	B	C	D	E	F	G	H	I	J	K	L
1201					95% Adjusted Gamma UCL	6.314						
1202	**Note: DL/2 is not a recommended method.**											
1203												
1204	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1205	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1206	**For additional insight, the user may want to consult a statistician.**											
1207												
1208												
1209	**MERCURY**											
1210												
1211	**General Statistics**											
1212					Number of Valid Data	103				Number of Detected Data		97
1213					Number of Distinct Detected Data	60				Number of Non-Detect Data		6
1214										Percent Non-Detects		5.83%
1215												
1216	**Raw Statistics**						**Log-transformed Statistics**					
1217					Minimum Detected	0.00925				Minimum Detected		-4.683
1218					Maximum Detected	3.5				Maximum Detected		1.253
1219					Mean of Detected	0.383				Mean of Detected		-1.318
1220					SD of Detected	0.384				SD of Detected		0.976
1221					Minimum Non-Detect	0.0078				Minimum Non-Detect		-4.854
1222					Maximum Non-Detect	0.038				Maximum Non-Detect		-3.27
1223												
1224	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		12
1225	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		91
1226	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		11.65%
1227												
1228	**UCL Statistics**											
1229	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1230					Lilliefors Test Statistic	0.249				Lilliefors Test Statistic		0.196
1231					5% Lilliefors Critical Value	0.09				5% Lilliefors Critical Value		0.09
1232	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1233												
1234	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1235					DL/2 Substitution Method					DL/2 Substitution Method		
1236					Mean	0.362				Mean		-1.513
1237					SD	0.383				SD		1.241
1238					95% DL/2 (t) UCL	0.424				95% H-Stat (DL/2) UCL		0.642
1239												
1240					Maximum Likelihood Estimate(MLE) Method					Log ROS Method		
1241					Mean	0.336				Mean in Log Scale		-1.433
1242					SD	0.416				SD in Log Scale		1.055
1243					95% MLE (t) UCL	0.404				Mean in Original Scale		0.363
1244					95% MLE (Tiku) UCL	0.401				SD in Original Scale		0.382
1245										95% t UCL		0.426
1246										95% Percentile Bootstrap UCL		0.433
1247										95% BCA Bootstrap UCL		0.463
1248												
1249	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1250					k star (bias corrected)	1.497	**Data do not follow a Discernable Distribution (0.05)**					

1251					Theta Star	0.256						
1252					nu star	290.4						
1253												
1254					A-D Test Statistic	3.082	**Nonparametric Statistics**					
1255					5% A-D Critical Value	0.77					Kaplan-Meier (KM) Method	
1256					K-S Test Statistic	0.77					Mean	0.362
1257					5% K-S Critical Value	0.0925					SD	0.381
1258	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.0377
1259											95% KM (t) UCL	0.424
1260	**Assuming Gamma Distribution**										95% KM (z) UCL	0.424
1261	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	0.424
1262					Minimum	1E-12					95% KM (bootstrap t) UCL	0.465
1263					Maximum	3.5					95% KM (BCA) UCL	0.432
1264					Mean	0.361					95% KM (Percentile Bootstrap) UCL	0.426
1265					Median	0.35					95% KM (Chebyshev) UCL	0.526
1266					SD	0.384					97.5% KM (Chebyshev) UCL	0.597
1267					k star	0.36					99% KM (Chebyshev) UCL	0.737
1268					Theta star	1.002						
1269					Nu star	74.26	**Potential UCLs to Use**					
1270					AppChi2	55.41					95% KM (BCA) UCL	0.432
1271					95% Gamma Approximate UCL	0.484						
1272					95% Adjusted Gamma UCL	0.486						
1273	**Note: DL/2 is not a recommended method.**											
1274												
1275	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1276	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1277	**For additional insight, the user may want to consult a statistician.**											
1278												
1279												
1280	**SILVER**											
1281												
1282	**General Statistics**											
1283					Number of Valid Data	103					Number of Detected Data	81
1284					Number of Distinct Detected Data	52					Number of Non-Detect Data	22
1285											Percent Non-Detects	21.36%
1286												
1287	**Raw Statistics**						**Log-transformed Statistics**					
1288					Minimum Detected	0.029					Minimum Detected	-3.54
1289					Maximum Detected	28.6					Maximum Detected	3.353
1290					Mean of Detected	2.692					Mean of Detected	0.38
1291					SD of Detected	3.927					SD of Detected	1.261
1292					Minimum Non-Detect	0.082					Minimum Non-Detect	-2.501
1293					Maximum Non-Detect	3.4					Maximum Non-Detect	1.224
1294												
1295	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	91
1296	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	12
1297	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	88.35%
1298												
1299	**UCL Statistics**											
1300	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					

1301					Lilliefors Test Statistic	0.306					Lilliefors Test Statistic	0.191
1302					5% Lilliefors Critical Value	0.0984					5% Lilliefors Critical Value	0.0984
1303	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1304												
1305	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1306					DL/2 Substitution Method						DL/2 Substitution Method	
1307					Mean	2.195					Mean	-0.0919
1308					SD	3.614					SD	1.552
1309					95% DL/2 (t) UCL	2.786					95% H-Stat (DL/2) UCL	4.661
1310												
1311					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
1312	**MLE yields a negative mean**										Mean in Log Scale	-0.0149
1313											SD in Log Scale	1.37
1314											Mean in Original Scale	2.174
1315											SD in Original Scale	3.619
1316											95% t UCL	2.766
1317											95% Percentile Bootstrap UCL	2.834
1318											95% BCA Bootstrap UCL	3.007
1319												
1320	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1321					k star (bias corrected)	0.924	**Data do not follow a Discernable Distribution (0.05)**					
1322					Theta Star	2.915						
1323					nu star	149.6						
1324												
1325					A-D Test Statistic	2.787	**Nonparametric Statistics**					
1326					5% A-D Critical Value	0.784					Kaplan-Meier (KM) Method	
1327					K-S Test Statistic	0.784					Mean	2.175
1328					5% K-S Critical Value	0.102					SD	3.608
1329	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.358
1330											95% KM (t) UCL	2.769
1331	**Assuming Gamma Distribution**										95% KM (z) UCL	2.764
1332					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	2.768
1333					Minimum	1E-12					95% KM (bootstrap t) UCL	3.1
1334					Maximum	28.6					95% KM (BCA) UCL	2.777
1335					Mean	2.225					95% KM (Percentile Bootstrap) UCL	2.817
1336					Median	1.6					95% KM (Chebyshev) UCL	3.736
1337					SD	3.613					97.5% KM (Chebyshev) UCL	4.411
1338					k star	0.178					99% KM (Chebyshev) UCL	5.738
1339					Theta star	12.52						
1340					Nu star	36.62	**Potential UCLs to Use**					
1341					AppChi2	23.77					95% KM (Chebyshev) UCL	3.736
1342					95% Gamma Approximate UCL	3.428						
1343					95% Adjusted Gamma UCL	3.45						
1344	**Note: DL/2 is not a recommended method.**											
1345												
1346	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1347	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1348	**For additional insight, the user may want to consult a statistician.**											
1349												

1				**General UCL Statistics for Full Data Sets**								
2			**User Selected Options**									
3			From File	Converted_Data.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	**LEAD**											
10												
11						**General Statistics**							
12						Number of Valid Observations	72				Number of Distinct Observations	64	
13												
14						**Raw Statistics**					**Log-transformed Statistics**	
15						Minimum	2.9				Minimum of Log Data	1.065
16						Maximum	1370				Maximum of Log Data	7.223
17						Mean	131.3				Mean of log Data	4.161
18						Median	133				SD of log Data	1.42
19						SD	172.7					
20						Coefficient of Variation	1.316					
21						Skewness	5.323					
22												
23						**Relevant UCL Statistics**							
24						**Normal Distribution Test**					**Lognormal Distribution Test**	
25						Lilliefors Test Statistic	0.229				Lilliefors Test Statistic	0.216
26						Lilliefors Critical Value	0.104				Lilliefors Critical Value	0.104
27						**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**	
28												
29						**Assuming Normal Distribution**					**Assuming Lognormal Distribution**	
30						95% Student's-t UCL	165.2				95% H-UCL	277
31						**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL	337.6
32						95% Adjusted-CLT UCL (Chen-1995)	178.4				97.5% Chebyshev (MVUE) UCL	409.6
33						95% Modified-t UCL (Johnson-1978)	167.3				99% Chebyshev (MVUE) UCL	551.1
34												
35						**Gamma Distribution Test**					**Data Distribution**	
36						k star (bias corrected)	0.801				**Data do not follow a Discernable Distribution (0.05)**	
37						Theta Star	164					
38						MLE of Mean	131.3					
39						MLE of Standard Deviation	146.7					
40						nu star	115.3					
41						Approximate Chi Square Value (.05)	91.49				**Nonparametric Statistics**	
42						Adjusted Level of Significance	0.0467				95% CLT UCL	164.7
43						Adjusted Chi Square Value	91.06				95% Jackknife UCL	165.2
44											95% Standard Bootstrap UCL	164.5
45						Anderson-Darling Test Statistic	2.748				95% Bootstrap-t UCL	189.5
46						Anderson-Darling 5% Critical Value	0.789				95% Hall's Bootstrap UCL	319.5
47						Kolmogorov-Smirnov Test Statistic	0.167				95% Percentile Bootstrap UCL	165.8
48						Kolmogorov-Smirnov 5% Critical Value	0.109				95% BCA Bootstrap UCL	186.8
49						**Data not Gamma Distributed at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL	220
50											97.5% Chebyshev(Mean, Sd) UCL	258.4

51	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	333.8
52				95% Approximate Gamma UCL	165.4							
53				95% Adjusted Gamma UCL	166.2							
54												
55	**Potential UCL to Use**										Use 95% Chebyshev (Mean, Sd) UCL	220
56												
57	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
58	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
59	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
60												
61												
62	**ZINC**											
63												
64	**General Statistics**											
65				Number of Valid Observations	72						Number of Distinct Observations	69
66												
67	**Raw Statistics**										**Log-transformed Statistics**	
68				Minimum	10.8						Minimum of Log Data	2.38
69				Maximum	1300						Maximum of Log Data	7.17
70				Mean	292.7						Mean of log Data	5.271
71				Median	330.5						SD of log Data	1.051
72				SD	230.9							
73				Coefficient of Variation	0.789							
74				Skewness	1.631							
75												
76	**Relevant UCL Statistics**											
77	**Normal Distribution Test**										**Lognormal Distribution Test**	
78				Lilliefors Test Statistic	0.146						Lilliefors Test Statistic	0.225
79				Lilliefors Critical Value	0.104						Lilliefors Critical Value	0.104
80	**Data not Normal at 5% Significance Level**										**Data not Lognormal at 5% Significance Level**	
81												
82	**Assuming Normal Distribution**										**Assuming Lognormal Distribution**	
83				95% Student's-t UCL	338						95% H-UCL	450.2
84	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	551.5
85				95% Adjusted-CLT UCL (Chen-1995)	343						97.5% Chebyshev (MVUE) UCL	645.6
86				95% Modified-t UCL (Johnson-1978)	338.9						99% Chebyshev (MVUE) UCL	830.5
87												
88	**Gamma Distribution Test**										**Data Distribution**	
89				k star (bias corrected)	1.319						**Data do not follow a Discernable Distribution (0.05)**	
90				Theta Star	221.9							
91				MLE of Mean	292.7							
92				MLE of Standard Deviation	254.8							
93				nu star	190							
94				Approximate Chi Square Value (.05)	159.1						**Nonparametric Statistics**	
95				Adjusted Level of Significance	0.0467						95% CLT UCL	337.4
96				Adjusted Chi Square Value	158.5						95% Jackknife UCL	338
97											95% Standard Bootstrap UCL	337
98				Anderson-Darling Test Statistic	3.13						95% Bootstrap-t UCL	344.5
99				Anderson-Darling 5% Critical Value	0.772						95% Hall's Bootstrap UCL	351.5
100				Kolmogorov-Smirnov Test Statistic	0.191						95% Percentile Bootstrap UCL	337.2

	A	B	C	D	E	F	G	H	I	J	K	L
101	Kolmogorov-Smirnov 5% Critical Value					0.107	95% BCA Bootstrap UCL					343.4
102	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					411.3
103							97.5% Chebyshev(Mean, Sd) UCL					462.6
104	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					563.4
105	95% Approximate Gamma UCL					349.5						
106	95% Adjusted Gamma UCL					350.7						
107												
108	**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL					411.3
109												
110	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
111	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
112	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
113												

	General UCL Statistics for Full Data Sets	
User Selected Options		
From File	Converted_Data.wst	
Full Precision	OFF	
Confidence Coefficient	95%	
Number of Bootstrap Operations	2000	

TOTAL AROCLOR

General Statistics

Number of Valid Observations	42	Number of Distinct Observations	40
Number of Missing Values	29		

Raw Statistics		**Log-transformed Statistics**	
Minimum	17	Minimum of Log Data	2.833
Maximum	14000	Maximum of Log Data	9.547
Mean	1036	Mean of log Data	5.995
Median	375	SD of log Data	1.397
SD	2225		
Coefficient of Variation	2.148		
Skewness	5.145		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.417	Shapiro Wilk Test Statistic	0.935
Shapiro Wilk Critical Value	0.942	Shapiro Wilk Critical Value	0.942
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	1614	95% H-UCL	1977
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2248
95% Adjusted-CLT UCL (Chen-1995)	1892	97.5% Chebyshev (MVUE) UCL	2779
95% Modified-t UCL (Johnson-1978)	1659	99% Chebyshev (MVUE) UCL	3822
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.615	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	1685		
MLE of Mean	1036		
MLE of Standard Deviation	1321		
nu star	51.65		
Approximate Chi Square Value (.05)	36.14	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0443	95% CLT UCL	1601
Adjusted Chi Square Value	35.68	95% Jackknife UCL	1614
		95% Standard Bootstrap UCL	1596
Anderson-Darling Test Statistic	1.331	95% Bootstrap-t UCL	2604
Anderson-Darling 5% Critical Value	0.799	95% Hall's Bootstrap UCL	3850
Kolmogorov-Smirnov Test Statistic	0.161	95% Percentile Bootstrap UCL	1635
Kolmogorov-Smirnov 5% Critical Value	0.143	95% BCA Bootstrap UCL	1951
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2533

51											97.5% Chebyshev(Mean, Sd) UCL	3180
52	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	4453
53					95% Approximate Gamma UCL	1480						
54					95% Adjusted Gamma UCL	1500						
55												
56	**Potential UCL to Use**										Use 95% Chebyshev (Mean, Sd) UCL	2533
57												
58	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
59	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
60	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
61												
62												
63	**BERYLLIUM**											
64												
65	**General Statistics**											
66					Number of Valid Observations	72					Number of Distinct Observations	27
67												
68	**Raw Statistics**						**Log-transformed Statistics**					
69					Minimum	0.34					Minimum of Log Data	-1.079
70					Maximum	6.9					Maximum of Log Data	1.932
71					Mean	1.841					Mean of log Data	0.535
72					Median	1.8					SD of log Data	0.404
73					SD	0.797						
74					Coefficient of Variation	0.433						
75					Skewness	3.556						
76												
77	**Relevant UCL Statistics**											
78	**Normal Distribution Test**						**Lognormal Distribution Test**					
79					Lilliefors Test Statistic	0.229					Lilliefors Test Statistic	0.177
80					Lilliefors Critical Value	0.104					Lilliefors Critical Value	0.104
81	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
82												
83	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
84					95% Student's-t UCL	1.998					95% H-UCL	2.019
85	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	2.247
86					95% Adjusted-CLT UCL (Chen-1995)	2.038					97.5% Chebyshev (MVUE) UCL	2.419
87					95% Modified-t UCL (Johnson-1978)	2.004					99% Chebyshev (MVUE) UCL	2.757
88												
89	**Gamma Distribution Test**						**Data Distribution**					
90					k star (bias corrected)	6.492	**Data do not follow a Discernable Distribution (0.05)**					
91					Theta Star	0.284						
92					MLE of Mean	1.841						
93					MLE of Standard Deviation	0.723						
94					nu star	934.8						
95					Approximate Chi Square Value (.05)	864.9	**Nonparametric Statistics**					
96					Adjusted Level of Significance	0.0467					95% CLT UCL	1.996
97					Adjusted Chi Square Value	863.5					95% Jackknife UCL	1.998
98											95% Standard Bootstrap UCL	1.999
99					Anderson-Darling Test Statistic	2.762					95% Bootstrap-t UCL	2.057
100					Anderson-Darling 5% Critical Value	0.753					95% Hall's Bootstrap UCL	2.762

101				Kolmogorov-Smirnov Test Statistic	0.176					95% Percentile Bootstrap UCL	2.01	
102				Kolmogorov-Smirnov 5% Critical Value	0.105					95% BCA Bootstrap UCL	2.051	
103				**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	2.251	
104										97.5% Chebyshev(Mean, Sd) UCL	2.428	
105				**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	2.776	
106				95% Approximate Gamma UCL	1.99							
107				95% Adjusted Gamma UCL	1.993							
108												
109				**Potential UCL to Use**						Use 95% Student's-t UCL	1.998	
110										or 95% Modified-t UCL	2.004	
111												
112	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
113	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
114	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
115												
116												
117	**COBALT**											
118												
119					**General Statistics**							
120				Number of Valid Observations	48					Number of Distinct Observations	46	
121												
122				**Raw Statistics**						**Log-transformed Statistics**		
123				Minimum	1.6					Minimum of Log Data	0.47	
124				Maximum	33					Maximum of Log Data	3.497	
125				Mean	15.85					Mean of log Data	2.663	
126				Median	16.15					SD of log Data	0.541	
127				SD	5.744							
128				Coefficient of Variation	0.362							
129				Skewness	0.0788							
130												
131					**Relevant UCL Statistics**							
132				**Normal Distribution Test**						**Lognormal Distribution Test**		
133				Shapiro Wilk Test Statistic	0.96					Shapiro Wilk Test Statistic	0.754	
134				Shapiro Wilk Critical Value	0.947					Shapiro Wilk Critical Value	0.947	
135				**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**		
136												
137				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**		
138				95% Student's-t UCL	17.24					95% H-UCL	19.3	
139				**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	22.49	
140				95% Adjusted-CLT UCL (Chen-1995)	17.23					97.5% Chebyshev (MVUE) UCL	25.06	
141				95% Modified-t UCL (Johnson-1978)	17.25					99% Chebyshev (MVUE) UCL	30.12	
142												
143				**Gamma Distribution Test**						**Data Distribution**		
144				k star (bias corrected)	4.824					**Data appear Normal at 5% Significance Level**		
145				Theta Star	3.286							
146				MLE of Mean	15.85							
147				MLE of Standard Deviation	7.218							
148				nu star	463.1							
149				Approximate Chi Square Value (.05)	414.2					**Nonparametric Statistics**		
150				Adjusted Level of Significance	0.045					95% CLT UCL	17.22	

151				Adjusted Chi Square Value	412.8					95% Jackknife UCL	17.24
152										95% Standard Bootstrap UCL	17.21
153				Anderson-Darling Test Statistic	2.18					95% Bootstrap-t UCL	17.25
154				Anderson-Darling 5% Critical Value	0.753					95% Hall's Bootstrap UCL	17.29
155				Kolmogorov-Smirnov Test Statistic	0.161					95% Percentile Bootstrap UCL	17.2
156				Kolmogorov-Smirnov 5% Critical Value	0.128					95% BCA Bootstrap UCL	17.15
157				**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	19.47
158										97.5% Chebyshev(Mean, Sd) UCL	21.03
159				**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	24.1
160				95% Approximate Gamma UCL	17.72						
161				95% Adjusted Gamma UCL	17.79						
162											
163				**Potential UCL to Use**						Use 95% Student's-t UCL	17.24
164											
165	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**										
166	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**										
167	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**										
168											
169											
170	**COPPER**										
171											
172	**General Statistics**										
173				Number of Valid Observations	72					Number of Distinct Observations	66
174											
175	**Raw Statistics**					**Log-transformed Statistics**					
176				Minimum	5.1					Minimum of Log Data	1.629
177				Maximum	178					Maximum of Log Data	5.182
178				Mean	70.12					Mean of log Data	3.923
179				Median	85.35					SD of log Data	0.923
180				SD	45.76						
181				Coefficient of Variation	0.653						
182				Skewness	0.108						
183											
184	**Relevant UCL Statistics**										
185	**Normal Distribution Test**					**Lognormal Distribution Test**					
186				Lilliefors Test Statistic	0.177					Lilliefors Test Statistic	0.232
187				Lilliefors Critical Value	0.104					Lilliefors Critical Value	0.104
188	**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**					
189											
190	**Assuming Normal Distribution**					**Assuming Lognormal Distribution**					
191				95% Student's-t UCL	79.11					95% H-UCL	98.21
192	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	119.1
193				95% Adjusted-CLT UCL (Chen-1995)	79.06					97.5% Chebyshev (MVUE) UCL	137.4
194				95% Modified-t UCL (Johnson-1978)	79.12					99% Chebyshev (MVUE) UCL	173.5
195											
196	**Gamma Distribution Test**					**Data Distribution**					
197				k star (bias corrected)	1.613	**Data do not follow a Discernable Distribution (0.05)**					
198				Theta Star	43.47						
199				MLE of Mean	70.12						
200				MLE of Standard Deviation	55.21						

201					nu star	232.3						
202					Approximate Chi Square Value (.05)	198				**Nonparametric Statistics**		
203					Adjusted Level of Significance	0.0467					95% CLT UCL	78.99
204					Adjusted Chi Square Value	197.4					95% Jackknife UCL	79.11
205											95% Standard Bootstrap UCL	79.07
206					Anderson-Darling Test Statistic	3.66					95% Bootstrap-t UCL	79.11
207					Anderson-Darling 5% Critical Value	0.767					95% Hall's Bootstrap UCL	79.29
208					Kolmogorov-Smirnov Test Statistic	0.208					95% Percentile Bootstrap UCL	78.87
209					Kolmogorov-Smirnov 5% Critical Value	0.107					95% BCA Bootstrap UCL	80.24
210					**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	93.62
211											97.5% Chebyshev(Mean, Sd) UCL	103.8
212					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	123.8
213					95% Approximate Gamma UCL	82.26						
214					95% Adjusted Gamma UCL	82.53						
215												
216					**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL	93.62
217												
218	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
219	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
220	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
221												
222												
223	**NICKEL**											
224												
225	**General Statistics**											
226					Number of Valid Observations	72					Number of Distinct Observations	69
227												
228					**Raw Statistics**					**Log-transformed Statistics**		
229					Minimum	4.1					Minimum of Log Data	1.411
230					Maximum	69.8					Maximum of Log Data	4.246
231					Mean	34.22					Mean of log Data	3.403
232					Median	36.85					SD of log Data	0.569
233					SD	15.18						
234					Coefficient of Variation	0.444						
235					Skewness	0.0845						
236												
237	**Relevant UCL Statistics**											
238					**Normal Distribution Test**					**Lognormal Distribution Test**		
239					Lilliefors Test Statistic	0.103					Lilliefors Test Statistic	0.16
240					Lilliefors Critical Value	0.104					Lilliefors Critical Value	0.104
241					**Data appear Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**		
242												
243					**Assuming Normal Distribution**					**Assuming Lognormal Distribution**		
244					95% Student's-t UCL	37.2					95% H-UCL	40.17
245					**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	46.26
246					95% Adjusted-CLT UCL (Chen-1995)	37.18					97.5% Chebyshev (MVUE) UCL	51.03
247					95% Modified-t UCL (Johnson-1978)	37.21					99% Chebyshev (MVUE) UCL	60.39
248												
249					**Gamma Distribution Test**					**Data Distribution**		
250					k star (bias corrected)	3.855				**Data appear Normal at 5% Significance Level**		

251					Theta Star	8.876						
252					MLE of Mean	34.22						
253					MLE of Standard Deviation	17.43						
254					nu star	555.2						
255					Approximate Chi Square Value (.05)	501.5	**Nonparametric Statistics**					
256					Adjusted Level of Significance	0.0467					95% CLT UCL	37.16
257					Adjusted Chi Square Value	500.5					95% Jackknife UCL	37.2
258											95% Standard Bootstrap UCL	37.17
259					Anderson-Darling Test Statistic	1.555					95% Bootstrap-t UCL	37.16
260					Anderson-Darling 5% Critical Value	0.756					95% Hall's Bootstrap UCL	37.29
261					Kolmogorov-Smirnov Test Statistic	0.148					95% Percentile Bootstrap UCL	37.21
262					Kolmogorov-Smirnov 5% Critical Value	0.106					95% BCA Bootstrap UCL	36.99
263	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	42.02
264											97.5% Chebyshev(Mean, Sd) UCL	45.39
265	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	52.02
266					95% Approximate Gamma UCL	37.88						
267					95% Adjusted Gamma UCL	37.96						
268												
269	**Potential UCL to Use**										Use 95% Student's-t UCL	37.2
270												
271	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
272	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
273	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
274												
275												
276	**VANADIUM**											
277												
278	**General Statistics**											
279					Number of Valid Observations	48					Number of Distinct Observations	47
280												
281	**Raw Statistics**						**Log-transformed Statistics**					
282					Minimum	11					Minimum of Log Data	2.398
283					Maximum	110					Maximum of Log Data	4.7
284					Mean	54.35					Mean of log Data	3.889
285					Median	52.4					SD of log Data	0.5
286					SD	23.25						
287					Coefficient of Variation	0.428						
288					Skewness	0.315						
289												
290	**Relevant UCL Statistics**											
291	**Normal Distribution Test**						**Lognormal Distribution Test**					
292					Shapiro Wilk Test Statistic	0.976					Shapiro Wilk Test Statistic	0.944
293					Shapiro Wilk Critical Value	0.947					Shapiro Wilk Critical Value	0.947
294	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
295												
296	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
297					95% Student's-t UCL	59.98					95% H-UCL	63.51
298	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	73.41
299					95% Adjusted-CLT UCL (Chen-1995)	60.03					97.5% Chebyshev (MVUE) UCL	81.29
300					95% Modified-t UCL (Johnson-1978)	60					99% Chebyshev (MVUE) UCL	96.77

Gamma Distribution Test		
k star (bias corrected)	4.565	
Theta Star	11.91	
MLE of Mean	54.35	
MLE of Standard Deviation	25.44	
nu star	438.2	
Approximate Chi Square Value (.05)	390.7	
Adjusted Level of Significance	0.045	
Adjusted Chi Square Value	389.3	
Anderson-Darling Test Statistic	0.229	
Anderson-Darling 5% Critical Value	0.753	
Kolmogorov-Smirnov Test Statistic	0.0564	
Kolmogorov-Smirnov 5% Critical Value	0.128	
Data appear Gamma Distributed at 5% Significance Level		
Assuming Gamma Distribution		
95% Approximate Gamma UCL	60.96	
95% Adjusted Gamma UCL	61.18	
Potential UCL to Use		

Data Distribution	
Data appear Normal at 5% Significance Level	
Nonparametric Statistics	
95% CLT UCL	59.87
95% Jackknife UCL	59.98
95% Standard Bootstrap UCL	59.64
95% Bootstrap-t UCL	60.26
95% Hall's Bootstrap UCL	60.17
95% Percentile Bootstrap UCL	59.79
95% BCA Bootstrap UCL	60.1
95% Chebyshev(Mean, Sd) UCL	68.97
97.5% Chebyshev(Mean, Sd) UCL	75.3
99% Chebyshev(Mean, Sd) UCL	87.73
Use 95% Student's-t UCL	59.98

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

1				General UCL Statistics for Data Sets with Non-Detects								
2			User Selected Options									
3			From File	Converted_Data.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8	1-METHYLNAPHTHALENE											
9												
10						General Statistics						
11						Number of Valid Data	47			Number of Detected Data	1	
12						Number of Distinct Detected Data	1			Number of Non-Detect Data	46	
13						Number of Missing Values	1			Percent Non-Detects	97.87%	
14												
15	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
16	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
17												
18	The data set for variable 1-METHYLNAPHTHALENE was not processed!											
19												
20												
21												
22	BAP EQUIVALENT-1/2 NON-DETECTS											
23												
24						General Statistics						
25						Number of Valid Data	71			Number of Detected Data	44	
26						Number of Distinct Detected Data	44			Number of Non-Detect Data	27	
27						Number of Missing Values	1			Percent Non-Detects	38.03%	
28												
29						Raw Statistics				Log-transformed Statistics		
30						Minimum Detected	238.3			Minimum Detected	5.473	
31						Maximum Detected	12075			Maximum Detected	9.399	
32						Mean of Detected	1907			Mean of Detected	7.088	
33						SD of Detected	2450			SD of Detected	0.894	
34						Minimum Non-Detect	0.99			Minimum Non-Detect	-0.0101	
35						Maximum Non-Detect	1100			Maximum Non-Detect	7.003	
36												
37	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect	53	
38	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected	18	
39	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage	74.65%	
40												
41						UCL Statistics						
42						Normal Distribution Test with Detected Values Only				Lognormal Distribution Test with Detected Values Only		
43						Shapiro Wilk Test Statistic	0.607			Shapiro Wilk Test Statistic	0.936	
44						5% Shapiro Wilk Critical Value	0.944			5% Shapiro Wilk Critical Value	0.944	
45						Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level		
46												
47						Assuming Normal Distribution				Assuming Lognormal Distribution		
48						DL/2 Substitution Method				DL/2 Substitution Method		
49						Mean	1280			Mean	5.933	
50						SD	2087			SD	2.333	

51					95% DL/2 (t) UCL	1693					95% H-Stat (DL/2) UCL	16693
52												
53					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
54					**MLE yields a negative mean**						Mean in Log Scale	6.44
55											SD in Log Scale	1.122
56											Mean in Original Scale	1274
57											SD in Original Scale	2087
58											95% t UCL	1687
59											95% Percentile Bootstrap UCL	1703
60											95% BCA Bootstrap UCL	1835
61												
62					**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**	
63					k star (bias corrected)	1.147					**Data do not follow a Discernable Distribution (0.05)**	
64					Theta Star	1662						
65					nu star	101						
66												
67					A-D Test Statistic	2.543					**Nonparametric Statistics**	
68					5% A-D Critical Value	0.773					Kaplan-Meier (KM) Method	
69					K-S Test Statistic	0.773					Mean	1308
70					5% K-S Critical Value	0.137					SD	2058
71					**Data not Gamma Distributed at 5% Significance Level**						SE of Mean	247.4
72											95% KM (t) UCL	1720
73					**Assuming Gamma Distribution**						95% KM (z) UCL	1715
74					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	1706
75					Minimum	238.3					95% KM (bootstrap t) UCL	1934
76					Maximum	12075					95% KM (BCA) UCL	1761
77					Mean	1636					95% KM (Percentile Bootstrap) UCL	1741
78					Median	1001					95% KM (Chebyshev) UCL	2386
79					SD	2007					97.5% KM (Chebyshev) UCL	2853
80					k star	1.404					99% KM (Chebyshev) UCL	3769
81					Theta star	1165						
82					Nu star	199.4					**Potential UCLs to Use**	
83					AppChi2	167.7					95% KM (BCA) UCL	1761
84					95% Gamma Approximate UCL	1944						
85					95% Adjusted Gamma UCL	1951						
86	**Note: DL/2 is not a recommended method.**											
87												
88	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
89	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
90	**For additional insight, the user may want to consult a statistician.**											
91												
92												
93	**BAP EQUIVALENT-POSITIVE RESULTS**											
94												
95	**General Statistics**											
96					Number of Valid Data	71					Number of Detected Data	44
97					Number of Distinct Detected Data	44					Number of Non-Detect Data	27
98					Number of Missing Values	1					Percent Non-Detects	38.03%
99												
100	**Raw Statistics**										**Log-transformed Statistics**	

101					Minimum Detected	0.093					Minimum Detected	-2.375
102					Maximum Detected	12075					Maximum Detected	9.399
103					Mean of Detected	1436					Mean of Detected	5.828
104					SD of Detected	2564					SD of Detected	2.17
105					Minimum Non-Detect	0.99					Minimum Non-Detect	-0.0101
106					Maximum Non-Detect	1100					Maximum Non-Detect	7.003
107												
108	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	60
109	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	11
110	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	84.51%
111												
112	**UCL Statistics**											
113	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
114					Shapiro Wilk Test Statistic	0.582					Shapiro Wilk Test Statistic	0.926
115					5% Shapiro Wilk Critical Value	0.944					5% Shapiro Wilk Critical Value	0.944
116	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
117												
118	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
119					DL/2 Substitution Method						DL/2 Substitution Method	
120					Mean	988.3					Mean	5.151
121					SD	2095					SD	2.528
122					95% DL/2 (t) UCL	1403					95% H-Stat (DL/2) UCL	14541
123												
124					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
125	**MLE yields a negative mean**										Mean in Log Scale	4.775
126											SD in Log Scale	2.311
127											Mean in Original Scale	907
128											SD in Original Scale	2122
129											95% t UCL	1327
130											95% Percentile Bootstrap UCL	1358
131											95% BCA Bootstrap UCL	1454
132												
133	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
134					k star (bias corrected)	0.433	**Data appear Gamma Distributed at 5% Significance Level**					
135					Theta Star	3320						
136					nu star	38.08						
137												
138					A-D Test Statistic	0.731	**Nonparametric Statistics**					
139					5% A-D Critical Value	0.826					Kaplan-Meier (KM) Method	
140					K-S Test Statistic	0.826					Mean	935.4
141					5% K-S Critical Value	0.142					SD	2100
142	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	252.6
143											95% KM (t) UCL	1356
144	**Assuming Gamma Distribution**										95% KM (z) UCL	1351
145					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	1352
146					Minimum	0.093					95% KM (bootstrap t) UCL	1585
147					Maximum	12075					95% KM (BCA) UCL	1366
148					Mean	1237					95% KM (Percentile Bootstrap) UCL	1377
149					Median	641.7					95% KM (Chebyshev) UCL	2037
150					SD	2059					97.5% KM (Chebyshev) UCL	2513

151					k star	0.607					99% KM (Chebyshev) UCL	3449
152					Theta star	2037						
153					Nu star	86.24					**Potential UCLs to Use**	
154					AppChi2	65.83					95% KM (BCA) UCL	1366
155					95% Gamma Approximate UCL	1621						
156					95% Adjusted Gamma UCL	1630						
157	**Note: DL/2 is not a recommended method.**											
158												
159	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
160	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
161	**For additional insight, the user may want to consult a statistician.**											
162												
163												
164	**BENZO(A)ANTHRACENE**											
165												
166	**General Statistics**											
167					Number of Valid Data	71					Number of Detected Data	26
168					Number of Distinct Detected Data	23					Number of Non-Detect Data	45
169					Number of Missing Values	1					Percent Non-Detects	63.38%
170												
171	**Raw Statistics**						**Log-transformed Statistics**					
172					Minimum Detected	150					Minimum Detected	5.011
173					Maximum Detected	12000					Maximum Detected	9.393
174					Mean of Detected	1715					Mean of Detected	6.643
175					SD of Detected	2711					SD of Detected	1.231
176					Minimum Non-Detect	1.2					Minimum Non-Detect	0.182
177					Maximum Non-Detect	3900					Maximum Non-Detect	8.269
178												
179	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	68
180	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	3
181	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	95.77%
182												
183	**UCL Statistics**											
184	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
185					Shapiro Wilk Test Statistic	0.603					Shapiro Wilk Test Statistic	0.93
186					5% Shapiro Wilk Critical Value	0.92					5% Shapiro Wilk Critical Value	0.92
187	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
188												
189	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
190					DL/2 Substitution Method						DL/2 Substitution Method	
191					Mean	850.1					Mean	5.53
192					SD	1768					SD	2.105
193					95% DL/2 (t) UCL	1200					95% H-Stat (DL/2) UCL	5627
194												
195					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
196	**MLE yields a negative mean**										Mean in Log Scale	5.378
197											SD in Log Scale	1.337
198											Mean in Original Scale	712.5
199											SD in Original Scale	1794
200											95% t UCL	1068

201											95% Percentile Bootstrap UCL	1126
202											95% BCA Bootstrap UCL	1297
203												
204	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
205					k star (bias corrected)	0.685	**Data appear Lognormal at 5% Significance Level**					
206					Theta Star	2505						
207					nu star	35.61						
208												
209					A-D Test Statistic	1.375	**Nonparametric Statistics**					
210					5% A-D Critical Value	0.785					Kaplan-Meier (KM) Method	
211					K-S Test Statistic	0.785					Mean	781
212					5% K-S Critical Value	0.178					SD	1764
213	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	214.6
214											95% KM (t) UCL	1139
215	**Assuming Gamma Distribution**										95% KM (z) UCL	1134
216					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	1128
217					Minimum	150					95% KM (bootstrap t) UCL	1492
218					Maximum	12000					95% KM (BCA) UCL	1195
219					Mean	1733					95% KM (Percentile Bootstrap) UCL	1164
220					Median	1512					95% KM (Chebyshev) UCL	1716
221					SD	1707					97.5% KM (Chebyshev) UCL	2121
222					k star	1.557					99% KM (Chebyshev) UCL	2916
223					Theta star	1113						
224					Nu star	221.1	**Potential UCLs to Use**					
225					AppChi2	187.7					95% KM (BCA) UCL	1195
226					95% Gamma Approximate UCL	2041						
227					95% Adjusted Gamma UCL	2048						
228	**Note: DL/2 is not a recommended method.**											
229												
230	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
231	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
232	**For additional insight, the user may want to consult a statistician.**											
233												
234												
235	**BENZO(A)PYRENE**											
236												
237	**General Statistics**											
238					Number of Valid Data	71					Number of Detected Data	28
239					Number of Distinct Detected Data	26					Number of Non-Detect Data	43
240					Number of Missing Values	1					Percent Non-Detects	60.56%
241												
242	**Raw Statistics**						**Log-transformed Statistics**					
243					Minimum Detected	150					Minimum Detected	5.011
244					Maximum Detected	9000					Maximum Detected	9.105
245					Mean of Detected	1504					Mean of Detected	6.634
246					SD of Detected	2137					SD of Detected	1.136
247					Minimum Non-Detect	0.99					Minimum Non-Detect	-0.0101
248					Maximum Non-Detect	3900					Maximum Non-Detect	8.269
249												
250	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	68

251	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		3
252	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		95.77%
253												
254	**UCL Statistics**											
255	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
256	Shapiro Wilk Test Statistic					0.638	Shapiro Wilk Test Statistic					0.938
257	5% Shapiro Wilk Critical Value					0.924	5% Shapiro Wilk Critical Value					0.924
258	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
259												
260	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
261	DL/2 Substitution Method						DL/2 Substitution Method					
262	Mean					807	Mean					5.526
263	SD					1464	SD					2.169
264	95% DL/2 (t) UCL					1097	95% H-Stat (DL/2) UCL					6741
265												
266	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
267	**MLE yields a negative mean**						Mean in Log Scale					5.545
268							SD in Log Scale					1.246
269							Mean in Original Scale					688.9
270							SD in Original Scale					1486
271							95% t UCL					982.9
272							95% Percentile Bootstrap UCL					996
273							95% BCA Bootstrap UCL					1088
274												
275	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
276	k star (bias corrected)					0.793	**Data appear Lognormal at 5% Significance Level**					
277	Theta Star					1896						
278	nu star					44.42						
279												
280	A-D Test Statistic					1.381	**Nonparametric Statistics**					
281	5% A-D Critical Value					0.78	Kaplan-Meier (KM) Method					
282	K-S Test Statistic					0.78	Mean					747.7
283	5% K-S Critical Value					0.171	SD					1460
284	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					177.7
285							95% KM (t) UCL					1044
286	**Assuming Gamma Distribution**						95% KM (z) UCL					1040
287	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1038
288	Minimum					58.23	95% KM (bootstrap t) UCL					1284
289	Maximum					9000	95% KM (BCA) UCL					1101
290	Mean					1482	95% KM (Percentile Bootstrap) UCL					1058
291	Median					892.4	95% KM (Chebyshev) UCL					1522
292	SD					1628	97.5% KM (Chebyshev) UCL					1858
293	k star					0.847	99% KM (Chebyshev) UCL					2516
294	Theta star					1750						
295	Nu star					120.2	**Potential UCLs to Use**					
296	AppChi2					95.89	95% KM (BCA) UCL					1101
297	95% Gamma Approximate UCL					1857						
298	95% Adjusted Gamma UCL					1866						
299	**Note: DL/2 is not a recommended method.**											
300												

	A	B	C	D	E	F	G	H	I	J	K	L
301	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
302	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
303	**For additional insight, the user may want to consult a statistician.**											
304												
305												
306	**BENZO(B)FLUORANTHENE**											
307												
308	**General Statistics**											
309	Number of Valid Data					71	Number of Detected Data					43
310	Number of Distinct Detected Data					40	Number of Non-Detect Data					28
311	Number of Missing Values					1	Percent Non-Detects					39.44%
312												
313	**Raw Statistics**						**Log-transformed Statistics**					
314	Minimum Detected					120	Minimum Detected					4.787
315	Maximum Detected					10000	Maximum Detected					9.21
316	Mean of Detected					1510	Mean of Detected					6.661
317	SD of Detected					2215	SD of Detected					1.079
318	Minimum Non-Detect					1.6	Minimum Non-Detect					0.47
319	Maximum Non-Detect					1100	Maximum Non-Detect					7.003
320												
321	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					59
322	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					12
323	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					83.10%
324												
325	**UCL Statistics**											
326	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
327	Shapiro Wilk Test Statistic					0.606	Shapiro Wilk Test Statistic					0.939
328	5% Shapiro Wilk Critical Value					0.943	5% Shapiro Wilk Critical Value					0.943
329	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
330												
331	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
332	DL/2 Substitution Method						DL/2 Substitution Method					
333	Mean					1016	Mean					5.706
334	SD					1828	SD					2.112
335	95% DL/2 (t) UCL					1377	95% H-Stat (DL/2) UCL					6859
336												
337	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
338	**MLE yields a negative mean**						Mean in Log Scale					6.009
339							SD in Log Scale					1.242
340							Mean in Original Scale					988.6
341							SD in Original Scale					1837
342							95% t UCL					1352
343							95% Percentile Bootstrap UCL					1377
344							95% BCA Bootstrap UCL					1477
345												
346	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
347	k star (bias corrected)					0.842	**Data do not follow a Discernable Distribution (0.05)**					
348	Theta Star					1794						
349	nu star					72.41						
350												

351					A-D Test Statistic	2.542	**Nonparametric Statistics**					
352					5% A-D Critical Value	0.783					Kaplan-Meier (KM) Method	
353					K-S Test Statistic	0.783					Mean	1013
354					5% K-S Critical Value	0.139					SD	1816
355	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	218.5
356											95% KM (t) UCL	1377
357	**Assuming Gamma Distribution**										95% KM (z) UCL	1372
358	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	1373
359					Minimum	120					95% KM (bootstrap t) UCL	1591
360					Maximum	10000					95% KM (BCA) UCL	1368
361					Mean	1384					95% KM (Percentile Bootstrap) UCL	1380
362					Median	800					95% KM (Chebyshev) UCL	1965
363					SD	1754					97.5% KM (Chebyshev) UCL	2377
364					k star	1.228					99% KM (Chebyshev) UCL	3187
365					Theta star	1127						
366					Nu star	174.3	**Potential UCLs to Use**					
367					AppChi2	144.8					95% KM (Chebyshev) UCL	1965
368					95% Gamma Approximate UCL	1666						
369					95% Adjusted Gamma UCL	1673						
370	**Note: DL/2 is not a recommended method.**											
371												
372	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
373	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
374	**For additional insight, the user may want to consult a statistician.**											
375												
376												
377	**BENZO(K)FLUORANTHENE**											
378												
379	**General Statistics**											
380					Number of Valid Data	71					Number of Detected Data	27
381					Number of Distinct Detected Data	25					Number of Non-Detect Data	44
382					Number of Missing Values	1					Percent Non-Detects	61.97%
383												
384	**Raw Statistics**						**Log-transformed Statistics**					
385					Minimum Detected	100					Minimum Detected	4.605
386					Maximum Detected	7300					Maximum Detected	8.896
387					Mean of Detected	1074					Mean of Detected	6.385
388					SD of Detected	1565					SD of Detected	1.026
389					Minimum Non-Detect	2					Minimum Non-Detect	0.693
390					Maximum Non-Detect	1100					Maximum Non-Detect	7.003
391												
392	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	64
393	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	7
394	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	90.14%
395												
396	**UCL Statistics**											
397	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
398					Shapiro Wilk Test Statistic	0.594					Shapiro Wilk Test Statistic	0.96
399					5% Shapiro Wilk Critical Value	0.923					5% Shapiro Wilk Critical Value	0.923
400	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					

401												
402	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
403				DL/2 Substitution Method						DL/2 Substitution Method		
404				Mean		517.4				Mean		4.643
405				SD		1062				SD		2.307
406				95% DL/2 (t) UCL		727.6				95% H-Stat (DL/2) UCL		4240
407												
408				Maximum Likelihood Estimate(MLE) Method		N/A				Log ROS Method		
409	**MLE yields a negative mean**									Mean in Log Scale		4.985
410										SD in Log Scale		1.352
411										Mean in Original Scale		454.6
412										SD in Original Scale		1072
413										95% t UCL		666.8
414										95% Percentile Bootstrap UCL		681.1
415										95% BCA Bootstrap UCL		747.8
416												
417	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
418				k star (bias corrected)		0.891	**Data appear Lognormal at 5% Significance Level**					
419				Theta Star		1205						
420				nu star		48.11						
421												
422				A-D Test Statistic		1.376	**Nonparametric Statistics**					
423				5% A-D Critical Value		0.774				Kaplan-Meier (KM) Method		
424				K-S Test Statistic		0.774				Mean		499
425				5% K-S Critical Value		0.173				SD		1053
426	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		127.9
427										95% KM (t) UCL		712.3
428	**Assuming Gamma Distribution**									95% KM (z) UCL		709.4
429				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL		693.7
430				Minimum		1E-12				95% KM (bootstrap t) UCL		884.1
431				Maximum		7300				95% KM (BCA) UCL		794
432				Mean		1374				95% KM (Percentile Bootstrap) UCL		720.7
433				Median		720.2				95% KM (Chebyshev) UCL		1057
434				SD		1402				97.5% KM (Chebyshev) UCL		1298
435				k star		0.254				99% KM (Chebyshev) UCL		1772
436				Theta star		5403						
437				Nu star		36.11	**Potential UCLs to Use**					
438				AppChi2		23.36				95% KM (BCA) UCL		794
439				95% Gamma Approximate UCL		2124						
440				95% Adjusted Gamma UCL		2143						
441	**Note: DL/2 is not a recommended method.**											
442												
443	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
444	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
445	**For additional insight, the user may want to consult a statistician.**											
446												
447												
448	**BIS(2-ETHYLHEXYL)PHTHALATE**											
449												
450	**General Statistics**											

451					Number of Valid Data	9					Number of Detected Data	6
452					Number of Distinct Detected Data	6					Number of Non-Detect Data	3
453											Percent Non-Detects	33.33%
454												
455					**Raw Statistics**						**Log-transformed Statistics**	
456					Minimum Detected	340					Minimum Detected	5.829
457					Maximum Detected	3400					Maximum Detected	8.132
458					Mean of Detected	1080					Mean of Detected	6.623
459					SD of Detected	1172					SD of Detected	0.864
460					Minimum Non-Detect	710					Minimum Non-Detect	6.565
461					Maximum Non-Detect	850					Maximum Non-Detect	6.745
462												
463	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	7
464	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	2
465	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	77.78%
466												
467	**Warning: There are only 6 Detected Values in this data**											
468	**Note: It should be noted that even though bootstrap may be performed on this data set**											
469	**the resulting calculations may not be reliable enough to draw conclusions**											
470												
471	**It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.**											
472												
473												
474	**UCL Statistics**											
475	**Normal Distribution Test with Detected Values Only**										**Lognormal Distribution Test with Detected Values Only**	
476					Shapiro Wilk Test Statistic	0.703					Shapiro Wilk Test Statistic	0.895
477					5% Shapiro Wilk Critical Value	0.788					5% Shapiro Wilk Critical Value	0.788
478	**Data not Normal at 5% Significance Level**										**Data appear Lognormal at 5% Significance Level**	
479												
480	**Assuming Normal Distribution**										**Assuming Lognormal Distribution**	
481					DL/2 Substitution Method						DL/2 Substitution Method	
482					Mean	847.8					Mean	6.397
483					SD	989.8					SD	0.764
484					95% DL/2 (t) UCL	1461					95% H-Stat (DL/2) UCL	1683
485												
486					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
487	**MLE method failed to converge properly**										Mean in Log Scale	6.431
488											SD in Log Scale	0.742
489											Mean in Original Scale	861.3
490											SD in Original Scale	982.9
491											95% t UCL	1471
492											95% Percentile Bootstrap UCL	1456
493											95% BCA Bootstrap UCL	1746
494												
495	**Gamma Distribution Test with Detected Values Only**										**Data Distribution Test with Detected Values Only**	
496					k star (bias corrected)	0.875					**Data appear Gamma Distributed at 5% Significance Level**	
497					Theta Star	1235						
498					nu star	10.49						
499												
500					A-D Test Statistic	0.52					**Nonparametric Statistics**	

501					5% A-D Critical Value	0.708					Kaplan-Meier (KM) Method	
502					K-S Test Statistic	0.708					Mean	862.1
503					5% K-S Critical Value	0.337					SD	928.4
504	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	340.2
505											95% KM (t) UCL	1495
506	**Assuming Gamma Distribution**										95% KM (z) UCL	1422
507	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	1477
508					Minimum	340					95% KM (bootstrap t) UCL	2908
509					Maximum	3400					95% KM (BCA) UCL	1518
510					Mean	994.9					95% KM (Percentile Bootstrap) UCL	1464
511					Median	714.2					95% KM (Chebyshev) UCL	2345
512					SD	940					97.5% KM (Chebyshev) UCL	2987
513					k star	1.484					99% KM (Chebyshev) UCL	4247
514					Theta star	670.5						
515					Nu star	26.71	**Potential UCLs to Use**					
516					AppChi2	15.93					95% KM (BCA) UCL	1518
517					95% Gamma Approximate UCL	1668						
518					95% Adjusted Gamma UCL	1871						
519	**Note: DL/2 is not a recommended method.**											
520												
521	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
522	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
523	**For additional insight, the user may want to consult a statistician.**											
524												
525												
526	**CHRYSENE**											
527												
528	**General Statistics**											
529					Number of Valid Data	71					Number of Detected Data	44
530					Number of Distinct Detected Data	40					Number of Non-Detect Data	27
531					Number of Missing Values	1					Percent Non-Detects	38.03%
532												
533	**Raw Statistics**						**Log-transformed Statistics**					
534					Minimum Detected	93					Minimum Detected	4.533
535					Maximum Detected	12000					Maximum Detected	9.393
536					Mean of Detected	1339					Mean of Detected	6.449
537					SD of Detected	2315					SD of Detected	1.124
538					Minimum Non-Detect	1.2					Minimum Non-Detect	0.182
539					Maximum Non-Detect	1100					Maximum Non-Detect	7.003
540												
541	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	61
542	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	10
543	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	85.92%
544												
545	**UCL Statistics**											
546	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
547					Shapiro Wilk Test Statistic	0.531					Shapiro Wilk Test Statistic	0.945
548					5% Shapiro Wilk Critical Value	0.944					5% Shapiro Wilk Critical Value	0.944
549	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
550												

	A	B	C	D	E	F	G	H	I	J	K	L
551	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
552					DL/2 Substitution Method						DL/2 Substitution Method	
553					Mean	927.8					Mean	5.559
554					SD	1895					SD	2.16
555					95% DL/2 (t) UCL	1303					95% H-Stat (DL/2) UCL	6784
556												
557					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
558	**MLE yields a negative mean**										Mean in Log Scale	5.841
559											SD in Log Scale	1.266
560											Mean in Original Scale	893.7
561											SD in Original Scale	1904
562											95% t UCL	1270
563											95% Percentile Bootstrap UCL	1277
564											95% BCA Bootstrap UCL	1468
565												
566	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
567					k star (bias corrected)	0.753	**Data appear Lognormal at 5% Significance Level**					
568					Theta Star	1778						
569					nu star	66.27						
570												
571					A-D Test Statistic	2.574	**Nonparametric Statistics**					
572					5% A-D Critical Value	0.788					Kaplan-Meier (KM) Method	
573					K-S Test Statistic	0.788					Mean	914.3
574					5% K-S Critical Value	0.138					SD	1886
575	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	226.8
576											95% KM (t) UCL	1292
577	**Assuming Gamma Distribution**										95% KM (z) UCL	1287
578					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	1283
579					Minimum	1E-12					95% KM (bootstrap t) UCL	1707
580					Maximum	12000					95% KM (BCA) UCL	1373
581					Mean	1140					95% KM (Percentile Bootstrap) UCL	1320
582					Median	583.3					95% KM (Chebyshev) UCL	1903
583					SD	1896					97.5% KM (Chebyshev) UCL	2331
584					k star	0.176					99% KM (Chebyshev) UCL	3171
585					Theta star	6483						
586					Nu star	24.97	**Potential UCLs to Use**					
587					AppChi2	14.59					95% KM (Chebyshev) UCL	1903
588					95% Gamma Approximate UCL	1951						
589					95% Adjusted Gamma UCL	1973						
590	**Note: DL/2 is not a recommended method.**											
591												
592	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
593	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
594	**For additional insight, the user may want to consult a statistician.**											
595												
596												
597	**DIBENZO(A,H)ANTHRACENE**											
598												
599	**General Statistics**											
600					Number of Valid Data	71					Number of Detected Data	19

601					Number of Distinct Detected Data	18					Number of Non-Detect Data	52
602					Number of Missing Values	1					Percent Non-Detects	73.24%
603												
604	**Raw Statistics**						**Log-transformed Statistics**					
605					Minimum Detected	75					Minimum Detected	4.317
606					Maximum Detected	790					Maximum Detected	6.672
607					Mean of Detected	339.6					Mean of Detected	5.599
608					SD of Detected	223.6					SD of Detected	0.724
609					Minimum Non-Detect	1.1					Minimum Non-Detect	0.0953
610					Maximum Non-Detect	3900					Maximum Non-Detect	8.269
611												
612	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	71
613	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
614	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
615												
616	**UCL Statistics**											
617	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
618					Shapiro Wilk Test Statistic	0.909					Shapiro Wilk Test Statistic	0.956
619					5% Shapiro Wilk Critical Value	0.901					5% Shapiro Wilk Critical Value	0.901
620	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
621												
622	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
623					DL/2 Substitution Method						DL/2 Substitution Method	
624					Mean	349.7					Mean	5.118
625					SD	277.2					SD	1.942
626					95% DL/2 (t) UCL	404.5					95% H-Stat (DL/2) UCL	2387
627												
628					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
629	**MLE method failed to converge properly**										Mean in Log Scale	4.957
630											SD in Log Scale	0.668
631											Mean in Original Scale	182.4
632											SD in Original Scale	157
633											95% t UCL	213.5
634											95% Percentile Bootstrap UCL	212.9
635											95% BCA Bootstrap UCL	218.5
636												
637	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
638					k star (bias corrected)	2.005	**Data appear Normal at 5% Significance Level**					
639					Theta Star	169.4						
640					nu star	76.21						
641												
642					A-D Test Statistic	0.303	**Nonparametric Statistics**					
643					5% A-D Critical Value	0.751					Kaplan-Meier (KM) Method	
644					K-S Test Statistic	0.751					Mean	221.8
645					5% K-S Critical Value	0.201					SD	194.9
646	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	33.26
647											95% KM (t) UCL	277.3
648	**Assuming Gamma Distribution**										95% KM (z) UCL	276.5
649					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	273.9
650					Minimum	68.19					95% KM (bootstrap t) UCL	285.9

651					Maximum	790				95% KM (BCA) UCL		285.6
652					Mean	399				95% KM (Percentile Bootstrap) UCL		284.3
653					Median	436.1				95% KM (Chebyshev) UCL		366.8
654					SD	189.7				97.5% KM (Chebyshev) UCL		429.5
655					k star	3.265				99% KM (Chebyshev) UCL		552.7
656					Theta star	122.2						
657					Nu star	463.7				**Potential UCLs to Use**		
658					AppChi2	414.7				95% KM (t) UCL		277.3
659				95% Gamma Approximate UCL		446.1				95% KM (Percentile Bootstrap) UCL		284.3
660				95% Adjusted Gamma UCL		447.1						
661	**Note: DL/2 is not a recommended method.**											
662												
663	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
664	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
665	**For additional insight, the user may want to consult a statistician.**											
666												
667												
668	**DIBENZOFURAN**											
669												
670	**General Statistics**											
671					Number of Valid Data	9				Number of Detected Data		2
672					Number of Distinct Detected Data	2				Number of Non-Detect Data		7
673										Percent Non-Detects		77.78%
674												
675	**Raw Statistics**						**Log-transformed Statistics**					
676					Minimum Detected	270				Minimum Detected		5.598
677					Maximum Detected	400				Maximum Detected		5.991
678					Mean of Detected	335				Mean of Detected		5.795
679					SD of Detected	91.92				SD of Detected		0.278
680					Minimum Non-Detect	710				Minimum Non-Detect		6.565
681					Maximum Non-Detect	1000				Maximum Non-Detect		6.908
682												
683	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		9
684	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		0
685	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		100.00%
686												
687	**Warning: Data set has only 2 Distinct Detected Values.**											
688	**This may not be adequate enough to compute meaningful and reliable test statistics and estimates.**											
689	**The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**											
690												
691	**Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.**											
692												
693	**The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.**											
694	**Those methods will return a 'N/A' value on your output display!**											
695												
696	**It is necessary to have 4 or more Distinct Values for bootstrap methods.**											
697	**However, results obtained using 4 to 9 distinct values may not be reliable.**											
698	**It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.**											
699												
700												

	A	B	C	D	E	F	G	H	I	J	K	L
701	**UCL Statistics**											
702	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
703					Shapiro Wilk Test Statistic	N/A					Shapiro Wilk Test Statistic	N/A
704					5% Shapiro Wilk Critical Value	N/A					5% Shapiro Wilk Critical Value	N/A
705	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
706												
707	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
708					DL/2 Substitution Method						DL/2 Substitution Method	
709					Mean	416.1					Mean	6.014
710					SD	75.65					SD	0.198
711					95% DL/2 (t) UCL	463					95% H-Stat (DL/2) UCL	477.2
712												
713					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
714	**MLE method failed to converge properly**										Mean in Log Scale	N/A
715											SD in Log Scale	N/A
716											Mean in Original Scale	N/A
717											SD in Original Scale	N/A
718											95% t UCL	N/A
719											95% Percentile Bootstrap UCL	N/A
720											95% BCA Bootstrap UCL	N/A
721												
722	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
723					k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**					
724					Theta Star	N/A						
725					nu star	N/A						
726												
727					A-D Test Statistic	N/A	**Nonparametric Statistics**					
728					5% A-D Critical Value	N/A					Kaplan-Meier (KM) Method	
729					K-S Test Statistic	N/A					Mean	335
730					5% K-S Critical Value	N/A					SD	65
731	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	65
732											95% KM (t) UCL	455.9
733	**Assuming Gamma Distribution**										95% KM (z) UCL	441.9
734					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	496.2
735					Minimum	N/A					95% KM (bootstrap t) UCL	432.5
736					Maximum	N/A					95% KM (BCA) UCL	400
737					Mean	N/A					95% KM (Percentile Bootstrap) UCL	N/A
738					Median	N/A					95% KM (Chebyshev) UCL	618.3
739					SD	N/A					97.5% KM (Chebyshev) UCL	740.9
740					k star	N/A					99% KM (Chebyshev) UCL	981.7
741					Theta star	N/A						
742					Nu star	N/A	**Potential UCLs to Use**					
743					AppChi2	N/A					95% KM (t) UCL	455.9
744					95% Gamma Approximate UCL	N/A					95% KM (% Bootstrap) UCL	N/A
745					95% Adjusted Gamma UCL	N/A						
746	**Warning: Recommended UCL exceeds the maximum observation**											
747	**Note: DL/2 is not a recommended method.**											
748												
749	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
750	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											

	A	B	C	D	E	F	G	H	I	J	K	L
751	**For additional insight, the user may want to consult a statistician.**											
752												
753												
754	**FLUORANTHENE**											
755												
756	**General Statistics**											
757	Number of Valid Data					71	Number of Detected Data					51
758	Number of Distinct Detected Data					43	Number of Non-Detect Data					20
759	Number of Missing Values					1	Percent Non-Detects					28.17%
760												
761	**Raw Statistics**						**Log-transformed Statistics**					
762	Minimum Detected					1.8	Minimum Detected					0.588
763	Maximum Detected					20000	Maximum Detected					9.903
764	Mean of Detected					1791	Mean of Detected					6.336
765	SD of Detected					3412	SD of Detected					1.839
766	Minimum Non-Detect					1.1	Minimum Non-Detect					0.0953
767	Maximum Non-Detect					1100	Maximum Non-Detect					7.003
768												
769	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					55
770	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					16
771	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					77.46%
772												
773	**UCL Statistics**											
774	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
775	Lilliefors Test Statistic					0.334	Lilliefors Test Statistic					0.18
776	5% Lilliefors Critical Value					0.124	5% Lilliefors Critical Value					0.124
777	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
778												
779	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
780	DL/2 Substitution Method						DL/2 Substitution Method					
781	Mean					1362	Mean					5.829
782	SD					2966	SD					2.138
783	95% DL/2 (t) UCL					1949	95% H-Stat (DL/2) UCL					8341
784												
785	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
786	**MLE yields a negative mean**						Mean in Log Scale					5.734
787							SD in Log Scale					1.914
788							Mean in Original Scale					1315
789							SD in Original Scale					2984
790							95% t UCL					1905
791							95% Percentile Bootstrap UCL					1923
792							95% BCA Bootstrap UCL					2133
793												
794	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
795	k star (bias corrected)					0.524	**Data do not follow a Discernable Distribution (0.05)**					
796	Theta Star					3414						
797	nu star					53.5						
798												
799	A-D Test Statistic					1.88	**Nonparametric Statistics**					
800	5% A-D Critical Value					0.811	Kaplan-Meier (KM) Method					

801					K-S Test Statistic	0.811					Mean	1340
802					5% K-S Critical Value	0.131					SD	2955
803	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	354.4
804											95% KM (t) UCL	1931
805	**Assuming Gamma Distribution**										95% KM (z) UCL	1923
806				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	1929
807					Minimum	1.8					95% KM (bootstrap t) UCL	2422
808					Maximum	20000					95% KM (BCA) UCL	2022
809					Mean	1628					95% KM (Percentile Bootstrap) UCL	1968
810					Median	830					95% KM (Chebyshev) UCL	2885
811					SD	2907					97.5% KM (Chebyshev) UCL	3553
812					k star	0.679					99% KM (Chebyshev) UCL	4866
813					Theta star	2397						
814					Nu star	96.44	**Potential UCLs to Use**					
815					AppChi2	74.78					97.5% KM (Chebyshev) UCL	3553
816					95% Gamma Approximate UCL	2099						
817					95% Adjusted Gamma UCL	2110						
818	**Note: DL/2 is not a recommended method.**											
819												
820	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
821	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
822	**For additional insight, the user may want to consult a statistician.**											
823												
824												
825	**INDENO(1,2,3-CD)PYRENE**											
826												
827	**General Statistics**											
828					Number of Valid Data	71					Number of Detected Data	39
829					Number of Distinct Detected Data	34					Number of Non-Detect Data	32
830					Number of Missing Values	1					Percent Non-Detects	45.07%
831												
832	**Raw Statistics**						**Log-transformed Statistics**					
833					Minimum Detected	63					Minimum Detected	4.143
834					Maximum Detected	5600					Maximum Detected	8.631
835					Mean of Detected	855.2					Mean of Detected	6.181
836					SD of Detected	1190					SD of Detected	1.003
837					Minimum Non-Detect	1					Minimum Non-Detect	0
838					Maximum Non-Detect	1100					Maximum Non-Detect	7.003
839												
840	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	62
841	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	9
842	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	87.32%
843												
844	**UCL Statistics**											
845	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
846					Shapiro Wilk Test Statistic	0.612					Shapiro Wilk Test Statistic	0.951
847					5% Shapiro Wilk Critical Value	0.939					5% Shapiro Wilk Critical Value	0.939
848	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
849												
850	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					

	A	B	C	D	E	F	G	H	I	J	K	L
851					DL/2 Substitution Method						DL/2 Substitution Method	
852					Mean	591.8					Mean	5.345
853					SD	933.8					SD	2.079
854					95% DL/2 (t) UCL	776.5					95% H-Stat (DL/2) UCL	4350
855												
856					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
857					**MLE yields a negative mean**						Mean in Log Scale	5.6
858											SD in Log Scale	1.08
859											Mean in Original Scale	543.5
860											SD in Original Scale	945.2
861											95% t UCL	730.5
862											95% Percentile Bootstrap UCL	741.8
863											95% BCA Bootstrap UCL	779.7
864												
865					**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**	
866					k star (bias corrected)	0.951					**Data appear Lognormal at 5% Significance Level**	
867					Theta Star	899.6						
868					nu star	74.15						
869												
870					A-D Test Statistic	2.026					**Nonparametric Statistics**	
871					5% A-D Critical Value	0.778					Kaplan-Meier (KM) Method	
872					K-S Test Statistic	0.778					Mean	556.8
873					5% K-S Critical Value	0.146					SD	937.4
874					**Data not Gamma Distributed at 5% Significance Level**						SE of Mean	113.5
875											95% KM (t) UCL	746.1
876					**Assuming Gamma Distribution**						95% KM (z) UCL	743.6
877					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	732.6
878					Minimum	6.499					95% KM (bootstrap t) UCL	850.2
879					Maximum	5600					95% KM (BCA) UCL	773.6
880					Mean	780.3					95% KM (Percentile Bootstrap) UCL	760.4
881					Median	550					95% KM (Chebyshev) UCL	1052
882					SD	936.7					97.5% KM (Chebyshev) UCL	1266
883					k star	1.054					99% KM (Chebyshev) UCL	1687
884					Theta star	740.2						
885					Nu star	149.7					**Potential UCLs to Use**	
886					AppChi2	122.4					95% KM (Chebyshev) UCL	1052
887					95% Gamma Approximate UCL	954.2						
888					95% Adjusted Gamma UCL	958.1						
889	**Note: DL/2 is not a recommended method.**											
890												
891	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
892	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
893	**For additional insight, the user may want to consult a statistician.**											
894												
895												
896	**PHENANTHRENE**											
897												
898					**General Statistics**							
899					Number of Valid Data	71					Number of Detected Data	46
900					Number of Distinct Detected Data	41					Number of Non-Detect Data	25

901	Number of Missing Values					1	Percent Non-Detects					35.21%
902												
903	**Raw Statistics**						**Log-transformed Statistics**					
904	Minimum Detected					2.4	Minimum Detected					0.875
905	Maximum Detected					15000	Maximum Detected					9.616
906	Mean of Detected					1160	Mean of Detected					5.774
907	SD of Detected					2542	SD of Detected					1.798
908	Minimum Non-Detect					3.5	Minimum Non-Detect					1.253
909	Maximum Non-Detect					1100	Maximum Non-Detect					7.003
910												
911	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					62
912	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					9
913	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					87.32%
914												
915	**UCL Statistics**											
916	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
917	Shapiro Wilk Test Statistic					0.468	Shapiro Wilk Test Statistic					0.908
918	5% Shapiro Wilk Critical Value					0.945	5% Shapiro Wilk Critical Value					0.945
919	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
920												
921	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
922	DL/2 Substitution Method						DL/2 Substitution Method					
923	Mean					859.8	Mean					5.498
924	SD					2082	SD					1.856
925	95% DL/2 (t) UCL					1272	95% H-Stat (DL/2) UCL					2791
926												
927	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
928	**MLE yields a negative mean**						Mean in Log Scale					5.269
929							SD in Log Scale					1.7
930							Mean in Original Scale					790.6
931							SD in Original Scale					2100
932							95% t UCL					1206
933							95% Percentile Bootstrap UCL					1240
934							95% BCA Bootstrap UCL					1426
935												
936	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
937	k star (bias corrected)					0.478	**Data do not follow a Discernable Distribution (0.05)**					
938	Theta Star					2425						
939	nu star					43.99						
940												
941	A-D Test Statistic					2.299	**Nonparametric Statistics**					
942	5% A-D Critical Value					0.815	Kaplan-Meier (KM) Method					
943	K-S Test Statistic					0.815	Mean					812
944	5% K-S Critical Value					0.138	SD					2081
945	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					250
946							95% KM (t) UCL					1229
947	**Assuming Gamma Distribution**						95% KM (z) UCL					1223
948	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1227
949	Minimum					2.4	95% KM (bootstrap t) UCL					1781
950	Maximum					15000	95% KM (BCA) UCL					1300

951					Mean	1047					95% KM (Percentile Bootstrap) UCL	1263
952					Median	490					95% KM (Chebyshev) UCL	1902
953					SD	2058					97.5% KM (Chebyshev) UCL	2373
954					k star	0.667					99% KM (Chebyshev) UCL	3299
955					Theta star	1570						
956					Nu star	94.66					**Potential UCLs to Use**	
957					AppChi2	73.22					97.5% KM (Chebyshev) UCL	2373
958					95% Gamma Approximate UCL	1354						
959					95% Adjusted Gamma UCL	1361						
960	**Note: DL/2 is not a recommended method.**											
961												
962	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
963	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
964	**For additional insight, the user may want to consult a statistician.**											
965												
966												
967	**PYRENE**											
968												
969	**General Statistics**											
970					Number of Valid Data	71					Number of Detected Data	50
971					Number of Distinct Detected Data	46					Number of Non-Detect Data	21
972					Number of Missing Values	1					Percent Non-Detects	29.58%
973												
974	**Raw Statistics**						**Log-transformed Statistics**					
975					Minimum Detected	1.5					Minimum Detected	0.405
976					Maximum Detected	24000					Maximum Detected	10.09
977					Mean of Detected	2391					Mean of Detected	6.723
978					SD of Detected	4321					SD of Detected	1.739
979					Minimum Non-Detect	1					Minimum Non-Detect	0
980					Maximum Non-Detect	1100					Maximum Non-Detect	7.003
981												
982	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	48
983	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	23
984	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	67.61%
985												
986	**UCL Statistics**											
987	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
988					Shapiro Wilk Test Statistic	0.545					Shapiro Wilk Test Statistic	0.883
989					5% Shapiro Wilk Critical Value	0.947					5% Shapiro Wilk Critical Value	0.947
990	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
991												
992	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
993					DL/2 Substitution Method						DL/2 Substitution Method	
994					Mean	1760					Mean	5.999
995					SD	3747					SD	2.295
996					95% DL/2 (t) UCL	2502					95% H-Stat (DL/2) UCL	15852
997												
998					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
999	**MLE yields a negative mean**										Mean in Log Scale	5.985
1000											SD in Log Scale	1.914

1001											Mean in Original Scale	1713
1002											SD in Original Scale	3766
1003											95% t UCL	2458
1004											95% Percentile Bootstrap UCL	2507
1005											95% BCA Bootstrap UCL	2718
1006												
1007	**Gamma Distribution Test with Detected Values Only**										**Data Distribution Test with Detected Values Only**	
1008					k star (bias corrected)	0.565					**Data do not follow a Discernable Distribution (0.05)**	
1009					Theta Star	4234						
1010					nu star	56.48						
1011												
1012					A-D Test Statistic	1.925					**Nonparametric Statistics**	
1013					5% A-D Critical Value	0.807					Kaplan-Meier (KM) Method	
1014					K-S Test Statistic	0.807					Mean	1737
1015					5% K-S Critical Value	0.132					SD	3731
1016	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	447.5
1017											95% KM (t) UCL	2483
1018	**Assuming Gamma Distribution**										95% KM (z) UCL	2473
1019					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	2480
1020					Minimum	1E-12					95% KM (bootstrap t) UCL	2958
1021					Maximum	24000					95% KM (BCA) UCL	2600
1022					Mean	1934					95% KM (Percentile Bootstrap) UCL	2505
1023					Median	800					95% KM (Chebyshev) UCL	3688
1024					SD	3719					97.5% KM (Chebyshev) UCL	4532
1025					k star	0.198					99% KM (Chebyshev) UCL	6190
1026					Theta star	9761						
1027					Nu star	28.14					**Potential UCLs to Use**	
1028					AppChi2	17.04					97.5% KM (Chebyshev) UCL	4532
1029					95% Gamma Approximate UCL	3195						
1030					95% Adjusted Gamma UCL	3229						
1031	**Note: DL/2 is not a recommended method.**											
1032												
1033	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1034	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1035	**For additional insight, the user may want to consult a statistician.**											
1036												
1037												
1038	**AROCLOR-1248**											
1039												
1040	**General Statistics**											
1041					Number of Valid Data	71					Number of Detected Data	2
1042					Number of Distinct Detected Data	2					Number of Non-Detect Data	69
1043					Number of Missing Values	1					Percent Non-Detects	97.18%
1044												
1045	**Raw Statistics**										**Log-transformed Statistics**	
1046					Minimum Detected	550					Minimum Detected	6.31
1047					Maximum Detected	2300					Maximum Detected	7.741
1048					Mean of Detected	1425					Mean of Detected	7.025
1049					SD of Detected	1237					SD of Detected	1.012
1050					Minimum Non-Detect	1					Minimum Non-Detect	0

1051					Maximum Non-Detect	1645					Maximum Non-Detect	7.405
1052												
1053	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	70
1054	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	1
1055	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	98.59%
1056												
1057	**Warning: Data set has only 2 Distinct Detected Values.**											
1058	**This may not be adequate enough to compute meaningful and reliable test statistics and estimates.**											
1059	**The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**											
1060												
1061	**Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.**											
1062												
1063	**The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.**											
1064	**Those methods will return a 'N/A' value on your output display!**											
1065												
1066	**It is necessary to have 4 or more Distinct Values for bootstrap methods.**											
1067	**However, results obtained using 4 to 9 distinct values may not be reliable.**											
1068	**It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.**											
1069												
1070												
1071	**UCL Statistics**											
1072	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1073	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
1074	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
1075	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1076												
1077	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1078	DL/2 Substitution Method						DL/2 Substitution Method					
1079	Mean					74.77	Mean					2.294
1080	SD					296.9	SD					1.854
1081	95% DL/2 (t) UCL					133.5	95% H-Stat (DL/2) UCL					112.9
1082												
1083	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1084	**MLE method failed to converge properly**						Mean in Log Scale					N/A
1085							SD in Log Scale					N/A
1086							Mean in Original Scale					N/A
1087							SD in Original Scale					N/A
1088							95% t UCL					N/A
1089							95% Percentile Bootstrap UCL					N/A
1090							95% BCA Bootstrap UCL					N/A
1091												
1092	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1093	k star (bias corrected)					N/A	**Data do not follow a Discernable Distribution (0.05)**					
1094	Theta Star					N/A						
1095	nu star					N/A						
1096												
1097	A-D Test Statistic					N/A	**Nonparametric Statistics**					
1098	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
1099	K-S Test Statistic					N/A	Mean					574.6
1100	5% K-S Critical Value					N/A	SD					206.2

1101	Data not Gamma Distributed at 5% Significance Level										SE of Mean	34.61
1102											95% KM (t) UCL	632.3
1103	Assuming Gamma Distribution										95% KM (z) UCL	631.6
1104	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	1710
1105	Minimum	N/A									95% KM (bootstrap t) UCL	574.6
1106	Maximum	N/A									95% KM (BCA) UCL	2300
1107	Mean	N/A									95% KM (Percentile Bootstrap) UCL	2300
1108	Median	N/A									95% KM (Chebyshev) UCL	725.5
1109	SD	N/A									97.5% KM (Chebyshev) UCL	790.8
1110	k star	N/A									99% KM (Chebyshev) UCL	919
1111	Theta star	N/A										
1112	Nu star	N/A									Potential UCLs to Use	
1113	AppChi2	N/A									95% KM (BCA) UCL	2300
1114	95% Gamma Approximate UCL	N/A										
1115	95% Adjusted Gamma UCL	N/A										
1116	Note: DL/2 is not a recommended method.											
1117												
1118	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1119	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1120	For additional insight, the user may want to consult a statistician.											
1121												
1122												
1123	AROCLOR-1254											
1124												
1125	General Statistics											
1126	Number of Valid Data	71	Number of Detected Data	0								
1127	Number of Distinct Detected Data	0	Number of Non-Detect Data	71								
1128	Number of Missing Values	1	Percent Non-Detects	100.00%								
1129												
1130	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
1131	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
1132	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1133												
1134	The data set for variable AROCLOR-1254 was not processed!											
1135												
1136												
1137												
1138	AROCLOR-1260											
1139												
1140	General Statistics											
1141	Number of Valid Data	71	Number of Detected Data	42								
1142	Number of Distinct Detected Data	40	Number of Non-Detect Data	29								
1143	Number of Missing Values	1	Percent Non-Detects	40.85%								
1144												
1145	Raw Statistics		Log-transformed Statistics									
1146	Minimum Detected	17	Minimum Detected	2.833								
1147	Maximum Detected	14000	Maximum Detected	9.547								
1148	Mean of Detected	968.1	Mean of Detected	5.966								
1149	SD of Detected	2162	SD of Detected	1.362								
1150	Minimum Non-Detect	1.6	Minimum Non-Detect	0.47								

1151					Maximum Non-Detect	56.5					Maximum Non-Detect	4.034
1152												
1153	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	32
1154	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	39
1155	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	45.07%
1156												
1157	**UCL Statistics**											
1158	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1159					Shapiro Wilk Test Statistic	0.38					Shapiro Wilk Test Statistic	0.932
1160					5% Shapiro Wilk Critical Value	0.942					5% Shapiro Wilk Critical Value	0.942
1161	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1162												
1163	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1164					DL/2 Substitution Method						DL/2 Substitution Method	
1165					Mean	578					Mean	4.328
1166					SD	1721					SD	2.403
1167					95% DL/2 (t) UCL	918.5					95% H-Stat (DL/2) UCL	4198
1168												
1169					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
1170	**MLE yields a negative mean**										Mean in Log Scale	4.7
1171											SD in Log Scale	1.871
1172											Mean in Original Scale	580.4
1173											SD in Original Scale	1720
1174											95% t UCL	920.7
1175											95% Percentile Bootstrap UCL	968.2
1176											95% BCA Bootstrap UCL	1235
1177												
1178	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1179					k star (bias corrected)	0.637	**Data do not follow a Discernable Distribution (0.05)**					
1180					Theta Star	1519						
1181					nu star	53.52						
1182												
1183					A-D Test Statistic	1.258	**Nonparametric Statistics**					
1184					5% A-D Critical Value	0.797					Kaplan-Meier (KM) Method	
1185					K-S Test Statistic	0.797					Mean	579.7
1186					5% K-S Critical Value	0.143					SD	1708
1187	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	205.2
1188											95% KM (t) UCL	921.8
1189	**Assuming Gamma Distribution**										95% KM (z) UCL	917.3
1190					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	919.8
1191					Minimum	1E-12					95% KM (bootstrap t) UCL	1482
1192					Maximum	14000					95% KM (BCA) UCL	1009
1193					Mean	676.6					95% KM (Percentile Bootstrap) UCL	959
1194					Median	310.8					95% KM (Chebyshev) UCL	1474
1195					SD	1700					97.5% KM (Chebyshev) UCL	1861
1196					k star	0.201					99% KM (Chebyshev) UCL	2622
1197					Theta star	3359						
1198					Nu star	28.6	**Potential UCLs to Use**					
1199					AppChi2	17.39					95% KM (Chebyshev) UCL	1474
1200					95% Gamma Approximate UCL	1112						

1201					95% Adjusted Gamma UCL	1124						
1202	**Note: DL/2 is not a recommended method.**											
1203												
1204	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1205	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1206	**For additional insight, the user may want to consult a statistician.**											
1207												
1208												
1209	**HEXAVALENT CHROMIUM**											
1210												
1211	**General Statistics**											
1212					Number of Valid Data	10			Number of Detected Data	1		
1213					Number of Distinct Detected Data	1			Number of Non-Detect Data	9		
1214									Percent Non-Detects	90.00%		
1215												
1216	**Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!**											
1217	**It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).**											
1218												
1219	**The data set for variable HEXAVALENT CHROMIUM was not processed!**											
1220												
1221												
1222												
1223	**ZINC**											
1224												
1225	**General Statistics**											
1226					Number of Valid Observations	72			Number of Distinct Observations	69		
1227												
1228	**Raw Statistics**								**Log-transformed Statistics**			
1229					Minimum	10.8			Minimum of Log Data	2.38		
1230					Maximum	1300			Maximum of Log Data	7.17		
1231					Mean	292.7			Mean of log Data	5.271		
1232					Median	330.5			SD of log Data	1.051		
1233					SD	230.9						
1234					Coefficient of Variation	0.789						
1235					Skewness	1.631						
1236												
1237	**Relevant UCL Statistics**											
1238	**Normal Distribution Test**								**Lognormal Distribution Test**			
1239					Lilliefors Test Statistic	0.146			Lilliefors Test Statistic	0.225		
1240					Lilliefors Critical Value	0.104			Lilliefors Critical Value	0.104		
1241	**Data not Normal at 5% Significance Level**								**Data not Lognormal at 5% Significance Level**			
1242												
1243	**Assuming Normal Distribution**								**Assuming Lognormal Distribution**			
1244					95% Student's-t UCL	338			95% H-UCL	450.2		
1245	**95% UCLs (Adjusted for Skewness)**								95% Chebyshev (MVUE) UCL	551.5		
1246					95% Adjusted-CLT UCL (Chen-1995)	343			97.5% Chebyshev (MVUE) UCL	645.6		
1247					95% Modified-t UCL (Johnson-1978)	338.9			99% Chebyshev (MVUE) UCL	830.5		
1248												
1249	**Gamma Distribution Test**								**Data Distribution**			
1250					k star (bias corrected)	1.319			**Data do not follow a Discernable Distribution (0.05)**			

1251					Theta Star	221.9						
1252					MLE of Mean	292.7						
1253					MLE of Standard Deviation	254.8						
1254					nu star	190						
1255					Approximate Chi Square Value (.05)	159.1	**Nonparametric Statistics**					
1256					Adjusted Level of Significance	0.0467					95% CLT UCL	337.4
1257					Adjusted Chi Square Value	158.5					95% Jackknife UCL	338
1258											95% Standard Bootstrap UCL	337.9
1259					Anderson-Darling Test Statistic	3.13					95% Bootstrap-t UCL	346.1
1260					Anderson-Darling 5% Critical Value	0.772					95% Hall's Bootstrap UCL	350.7
1261					Kolmogorov-Smirnov Test Statistic	0.191					95% Percentile Bootstrap UCL	339.1
1262					Kolmogorov-Smirnov 5% Critical Value	0.107					95% BCA Bootstrap UCL	340.6
1263	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	411.3
1264											97.5% Chebyshev(Mean, Sd) UCL	462.6
1265	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	563.4
1266					95% Approximate Gamma UCL	349.5						
1267					95% Adjusted Gamma UCL	350.7						
1268												
1269	**Potential UCL to Use**										Use 95% Chebyshev (Mean, Sd) UCL	411.3
1270												
1271	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1272	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
1273	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
1274												
1275												
1276	**ARSENIC**											
1277												
1278	**General Statistics**											
1279					Number of Valid Data	72					Number of Detected Data	71
1280					Number of Distinct Detected Data	54					Number of Non-Detect Data	1
1281											Percent Non-Detects	1.39%
1282												
1283	**Raw Statistics**						**Log-transformed Statistics**					
1284					Minimum Detected	1.4					Minimum Detected	0.336
1285					Maximum Detected	12.6					Maximum Detected	2.534
1286					Mean of Detected	7.134					Mean of Detected	1.861
1287					SD of Detected	2.929					SD of Detected	0.493
1288					Minimum Non-Detect	1.46					Minimum Non-Detect	0.378
1289					Maximum Non-Detect	1.46					Maximum Non-Detect	0.378
1290												
1291												
1292	**UCL Statistics**											
1293	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1294					Lilliefors Test Statistic	0.0892					Lilliefors Test Statistic	0.14
1295					5% Lilliefors Critical Value	0.105					5% Lilliefors Critical Value	0.105
1296	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1297												
1298	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1299					DL/2 Substitution Method						DL/2 Substitution Method	
1300					Mean	7.045					Mean	1.831

1301					SD	3.005					SD	0.553
1302					95% DL/2 (t) UCL	7.635					95% H-Stat (DL/2) UCL	8.225
1303												
1304				Maximum Likelihood Estimate(MLE) Method							Log ROS Method	
1305					Mean	7.023					Mean in Log Scale	1.845
1306					SD	3.036					SD in Log Scale	0.507
1307					95% MLE (t) UCL	7.619					Mean in Original Scale	7.063
1308					95% MLE (Tiku) UCL	7.618					SD in Original Scale	2.969
1309											95% t UCL	7.647
1310											95% Percentile Bootstrap UCL	7.655
1311											95% BCA Bootstrap UCL	7.623
1312												
1313	**Gamma Distribution Test with Detected Values Only**										**Data Distribution Test with Detected Values Only**	
1314					k star (bias corrected)	4.774					**Data appear Normal at 5% Significance Level**	
1315					Theta Star	1.494						
1316					nu star	677.8						
1317												
1318					A-D Test Statistic	1.004					**Nonparametric Statistics**	
1319					5% A-D Critical Value	0.754					Kaplan-Meier (KM) Method	
1320					K-S Test Statistic	0.754					Mean	7.054
1321					5% K-S Critical Value	0.106					SD	2.965
1322	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.352
1323											95% KM (t) UCL	7.641
1324	**Assuming Gamma Distribution**										95% KM (z) UCL	7.633
1325				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	7.636
1326					Minimum	1E-12					95% KM (bootstrap t) UCL	7.647
1327					Maximum	12.6					95% KM (BCA) UCL	7.636
1328					Mean	7.035					95% KM (Percentile Bootstrap) UCL	7.623
1329					Median	7.45					95% KM (Chebyshev) UCL	8.588
1330					SD	3.028					97.5% KM (Chebyshev) UCL	9.252
1331					k star	1.101					99% KM (Chebyshev) UCL	10.56
1332					Theta star	6.392						
1333					Nu star	158.5					**Potential UCLs to Use**	
1334					AppChi2	130.4					95% KM (t) UCL	7.641
1335					95% Gamma Approximate UCL	8.551					95% KM (Percentile Bootstrap) UCL	7.623
1336					95% Adjusted Gamma UCL	8.585						
1337	**Note: DL/2 is not a recommended method.**											
1338												
1339	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1340	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1341	**For additional insight, the user may want to consult a statistician.**											
1342												

1				General UCL Statistics for Data Sets with Non-Detects								
2		User Selected Options										
3		From File		Converted_Data.wst								
4		Full Precision		OFF								
5		Confidence Coefficient		95%								
6		Number of Bootstrap Operations		2000								
7												
8												
9	ANTIMONY											
10												
11				General Statistics								
12				Number of Valid Data		72			Number of Detected Data			38
13				Number of Distinct Detected Data		33			Number of Non-Detect Data			34
14									Percent Non-Detects			47.22%
15												
16				Raw Statistics					Log-transformed Statistics			
17				Minimum Detected		0.076			Minimum Detected			-2.577
18				Maximum Detected		55.1			Maximum Detected			4.009
19				Mean of Detected		2.664			Mean of Detected			-0.0146
20				SD of Detected		8.808			SD of Detected			1.11
21				Minimum Non-Detect		0.057			Minimum Non-Detect			-2.865
22				Maximum Non-Detect		1.64			Maximum Non-Detect			0.495
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended								Number treated as Non-Detect			63
25	For all methods (except KM, DL/2, and ROS Methods),								Number treated as Detected			9
26	Observations < Largest ND are treated as NDs								Single DL Non-Detect Percentage			87.50%
27												
28				UCL Statistics								
29				Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only			
30				Shapiro Wilk Test Statistic		0.249			Shapiro Wilk Test Statistic			0.928
31				5% Shapiro Wilk Critical Value		0.938			5% Shapiro Wilk Critical Value			0.938
32				Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level			
33												
34				Assuming Normal Distribution					Assuming Lognormal Distribution			
35				DL/2 Substitution Method					DL/2 Substitution Method			
36				Mean		1.481			Mean			-1.002
37				SD		6.483			SD			1.409
38				95% DL/2 (t) UCL		2.754			95% H-Stat (DL/2) UCL			1.552
39												
40				Maximum Likelihood Estimate(MLE) Method		N/A			Log ROS Method			
41				MLE yields a negative mean					Mean in Log Scale			-1.14
42									SD in Log Scale			1.468
43									Mean in Original Scale			1.452
44									SD in Original Scale			6.488
45									95% t UCL			2.727
46									95% Percentile Bootstrap UCL			2.925
47									95% BCA Bootstrap UCL			3.917
48												
49				Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only			
50				k star (bias corrected)		0.587			Data do not follow a Discernable Distribution (0.05)			

51					Theta Star	4.535						
52					nu star	44.64						
53												
54					A-D Test Statistic	4.062	**Nonparametric Statistics**					
55					5% A-D Critical Value	0.801					Kaplan-Meier (KM) Method	
56					K-S Test Statistic	0.801					Mean	1.457
57					5% K-S Critical Value	0.15					SD	6.442
58	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.769
59											95% KM (t) UCL	2.739
60	**Assuming Gamma Distribution**										95% KM (z) UCL	2.722
61			Gamma ROS Statistics using Extrapolated Data								95% KM (jackknife) UCL	2.711
62					Minimum	0.076					95% KM (bootstrap t) UCL	9.673
63					Maximum	55.1					95% KM (BCA) UCL	3.064
64					Mean	2.653					95% KM (Percentile Bootstrap) UCL	2.944
65					Median	2.591					95% KM (Chebyshev) UCL	4.811
66					SD	6.358					97.5% KM (Chebyshev) UCL	6.262
67					k star	1.053					99% KM (Chebyshev) UCL	9.113
68					Theta star	2.52						
69					Nu star	151.6	**Potential UCLs to Use**					
70					AppChi2	124.2					95% KM (Chebyshev) UCL	4.811
71					95% Gamma Approximate UCL	3.24						
72					95% Adjusted Gamma UCL	3.253						
73	**Note: DL/2 is not a recommended method.**											
74												
75	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
76	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
77	**For additional insight, the user may want to consult a statistician.**											
78												
79												
80	**CADMIUM**											
81												
82	**General Statistics**											
83					Number of Valid Data	72	Number of Detected Data					66
84					Number of Distinct Detected Data	61	Number of Non-Detect Data					6
85							Percent Non-Detects					8.33%
86												
87	**Raw Statistics**						**Log-transformed Statistics**					
88					Minimum Detected	0.026	Minimum Detected					-3.65
89					Maximum Detected	303	Maximum Detected					5.714
90					Mean of Detected	22.03	Mean of Detected					1.6
91					SD of Detected	45.2	SD of Detected					2.201
92					Minimum Non-Detect	0.0069	Minimum Non-Detect					-4.976
93					Maximum Non-Detect	0.037	Maximum Non-Detect					-3.297
94												
95	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					7
96	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					65
97	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					9.72%
98												
99	**UCL Statistics**											
100	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					

101				Lilliefors Test Statistic	0.328					Lilliefors Test Statistic	0.231	
102				5% Lilliefors Critical Value	0.109					5% Lilliefors Critical Value	0.109	
103	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
104												
105	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
106				DL/2 Substitution Method						DL/2 Substitution Method		
107				Mean	20.19					Mean	1.052	
108				SD	43.68					SD	2.796	
109				95% DL/2 (t) UCL	28.77					95% H-Stat (DL/2) UCL	628	
110												
111				Maximum Likelihood Estimate(MLE) Method						Log ROS Method		
112				Mean	17.14					Mean in Log Scale	1.212	
113				SD	46.39					SD in Log Scale	2.474	
114				95% MLE (t) UCL	26.25					Mean in Original Scale	20.2	
115				95% MLE (Tiku) UCL	25.58					SD in Original Scale	43.68	
116										95% t UCL	28.77	
117										95% Percentile Bootstrap UCL	29.04	
118										95% BCA Bootstrap UCL	32.62	
119												
120	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
121				k star (bias corrected)	0.426		**Data do not follow a Discernable Distribution (0.05)**					
122				Theta Star	51.77							
123				nu star	56.17							
124												
125				A-D Test Statistic	1.645		**Nonparametric Statistics**					
126				5% A-D Critical Value	0.832					Kaplan-Meier (KM) Method		
127				K-S Test Statistic	0.832					Mean	20.19	
128				5% K-S Critical Value	0.117					SD	43.37	
129	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean	5.151	
130										95% KM (t) UCL	28.78	
131	**Assuming Gamma Distribution**									95% KM (z) UCL	28.67	
132				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	28.77	
133				Minimum	1E-12					95% KM (bootstrap t) UCL	36.01	
134				Maximum	303					95% KM (BCA) UCL	29.65	
135				Mean	20.19					95% KM (Percentile Bootstrap) UCL	29.6	
136				Median	9.7					95% KM (Chebyshev) UCL	42.65	
137				SD	43.68					97.5% KM (Chebyshev) UCL	52.36	
138				k star	0.194					99% KM (Chebyshev) UCL	71.44	
139				Theta star	104.1							
140				Nu star	27.93		**Potential UCLs to Use**					
141				AppChi2	16.87					97.5% KM (Chebyshev) UCL	52.36	
142				95% Gamma Approximate UCL	33.42							
143				95% Adjusted Gamma UCL	33.77							
144	**Note: DL/2 is not a recommended method.**											
145												
146	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
147	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
148	**For additional insight, the user may want to consult a statistician.**											
149												
150												

151	**MERCURY**											
152												
153	**General Statistics**											
154					Number of Valid Data	72				Number of Detected Data		62
155					Number of Distinct Detected Data	51				Number of Non-Detect Data		10
156										Percent Non-Detects		13.89%
157												
158	**Raw Statistics**						**Log-transformed Statistics**					
159					Minimum Detected	0.015				Minimum Detected		-4.2
160					Maximum Detected	3.5				Maximum Detected		1.253
161					Mean of Detected	0.596				Mean of Detected		-1.134
162					SD of Detected	0.599				SD of Detected		1.356
163					Minimum Non-Detect	0.0072				Minimum Non-Detect		-4.934
164					Maximum Non-Detect	0.1				Maximum Non-Detect		-2.303
165												
166	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		23
167	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		49
168	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		31.94%
169												
170	**UCL Statistics**											
171	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
172					Lilliefors Test Statistic	0.166				Lilliefors Test Statistic		0.184
173					5% Lilliefors Critical Value	0.113				5% Lilliefors Critical Value		0.113
174	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
175												
176	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
177					DL/2 Substitution Method					DL/2 Substitution Method		
178					Mean	0.516				Mean		-1.602
179					SD	0.59				SD		1.754
180					95% DL/2 (t) UCL	0.632				95% H-Stat (DL/2) UCL		1.789
181												
182					Maximum Likelihood Estimate(MLE) Method					Log ROS Method		
183					Mean	0.373				Mean in Log Scale		-1.487
184					SD	0.762				SD in Log Scale		1.548
185					95% MLE (t) UCL	0.523				Mean in Original Scale		0.517
186					95% MLE (Tiku) UCL	0.533				SD in Original Scale		0.589
187										95% t UCL		0.633
188										95% Percentile Bootstrap UCL		0.627
189										95% BCA Bootstrap UCL		0.65
190												
191	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
192					k star (bias corrected)	0.908	**Data do not follow a Discernable Distribution (0.05)**					
193					Theta Star	0.657						
194					nu star	112.5						
195												
196					A-D Test Statistic	1.056	**Nonparametric Statistics**					
197					5% A-D Critical Value	0.782				Kaplan-Meier (KM) Method		
198					K-S Test Statistic	0.782				Mean		0.516
199					5% K-S Critical Value	0.117				SD		0.586
200	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		0.0696

201											95% KM (t) UCL	0.632
202	**Assuming Gamma Distribution**										95% KM (z) UCL	0.631
203	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	0.632
204					Minimum	1E-12					95% KM (bootstrap t) UCL	0.659
205					Maximum	3.5					95% KM (BCA) UCL	0.632
206					Mean	0.515					95% KM (Percentile Bootstrap) UCL	0.634
207					Median	0.425					95% KM (Chebyshev) UCL	0.82
208					SD	0.591					97.5% KM (Chebyshev) UCL	0.951
209					k star	0.211					99% KM (Chebyshev) UCL	1.209
210					Theta star	2.44						
211					Nu star	30.39	**Potential UCLs to Use**					
212					AppChi2	18.8					95% KM (Chebyshev) UCL	0.82
213					95% Gamma Approximate UCL	0.832						
214					95% Adjusted Gamma UCL	0.841						
215	**Note: DL/2 is not a recommended method.**											
216												
217	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
218	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
219	**For additional insight, the user may want to consult a statistician.**											
220												
221												
222	**SILVER**											
223												
224	**General Statistics**											
225					Number of Valid Data	72					Number of Detected Data	61
226					Number of Distinct Detected Data	52					Number of Non-Detect Data	11
227											Percent Non-Detects	15.28%
228												
229	**Raw Statistics**						**Log-transformed Statistics**					
230					Minimum Detected	0.02					Minimum Detected	-3.912
231					Maximum Detected	37.2					Maximum Detected	3.616
232					Mean of Detected	5.692					Mean of Detected	0.679
233					SD of Detected	6.843					SD of Detected	1.994
234					Minimum Non-Detect	0.074					Minimum Non-Detect	-2.604
235					Maximum Non-Detect	0.42					Maximum Non-Detect	-0.868
236												
237	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	24
238	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	48
239	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	33.33%
240												
241	**UCL Statistics**											
242	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
243					Lilliefors Test Statistic	0.204					Lilliefors Test Statistic	0.21
244					5% Lilliefors Critical Value	0.113					5% Lilliefors Critical Value	0.113
245	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
246												
247	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
248					DL/2 Substitution Method						DL/2 Substitution Method	
249					Mean	4.835					Mean	0.169
250					SD	6.611					SD	2.203

251					95% DL/2 (t) UCL	6.133				95% H-Stat (DL/2) UCL		35
252												
253					Maximum Likelihood Estimate(MLE) Method					Log ROS Method		
254					Mean	2.887				Mean in Log Scale		0.258
255					SD	8.779				SD in Log Scale		2.089
256					95% MLE (t) UCL	4.611				Mean in Original Scale		4.843
257					95% MLE (Tiku) UCL	4.735				SD in Original Scale		6.605
258										95% t UCL		6.14
259										95% Percentile Bootstrap UCL		6.134
260										95% BCA Bootstrap UCL		6.445
261												
262				**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**		
263					k star (bias corrected)	0.567				**Data do not follow a Discernable Distribution (0.05)**		
264					Theta Star	10.04						
265					nu star	69.18						
266												
267					A-D Test Statistic	1.152				**Nonparametric Statistics**		
268					5% A-D Critical Value	0.808				Kaplan-Meier (KM) Method		
269					K-S Test Statistic	0.808				Mean		4.83
270					5% K-S Critical Value	0.12				SD		6.568
271				**Data not Gamma Distributed at 5% Significance Level**						SE of Mean		0.78
272										95% KM (t) UCL		6.131
273				**Assuming Gamma Distribution**						95% KM (z) UCL		6.114
274					Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL		6.129
275					Minimum	1E-12				95% KM (bootstrap t) UCL		6.578
276					Maximum	37.2				95% KM (BCA) UCL		6.047
277					Mean	4.824				95% KM (Percentile Bootstrap) UCL		6.225
278					Median	2.95				95% KM (Chebyshev) UCL		8.232
279					SD	6.619				97.5% KM (Chebyshev) UCL		9.704
280					k star	0.169				99% KM (Chebyshev) UCL		12.6
281					Theta star	28.54						
282					Nu star	24.34				**Potential UCLs to Use**		
283					AppChi2	14.1				97.5% KM (Chebyshev) UCL		9.704
284					95% Gamma Approximate UCL	8.323						
285					95% Adjusted Gamma UCL	8.418						
286	**Note: DL/2 is not a recommended method.**											
287												
288	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
289	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
290	**For additional insight, the user may want to consult a statistician.**											
291												

	General UCL Statistics for Full Data Sets	
User Selected Options		
From File	Converted_Data.wst	
Full Precision	OFF	
Confidence Coefficient	95%	
Number of Bootstrap Operations	2000	

TOTAL AROCLOR

General Statistics

Number of Valid Observations	26	Number of Distinct Observations	25
Number of Missing Values	42		

Raw Statistics		**Log-transformed Statistics**	
Minimum	28	Minimum of Log Data	3.332
Maximum	1300	Maximum of Log Data	7.17
Mean	389	Mean of log Data	5.464
Median	225	SD of log Data	1.1
SD	355.6		
Coefficient of Variation	0.914		
Skewness	0.932		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.857	Shapiro Wilk Test Statistic	0.94
Shapiro Wilk Critical Value	0.92	Shapiro Wilk Critical Value	0.92
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	508.1	95% H-UCL	773.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	873.6
95% Adjusted-CLT UCL (Chen-1995)	517.3	97.5% Chebyshev (MVUE) UCL	1071
95% Modified-t UCL (Johnson-1978)	510.2	99% Chebyshev (MVUE) UCL	1458
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.034	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	376.3		
MLE of Mean	389		
MLE of Standard Deviation	382.6		
nu star	53.75		
Approximate Chi Square Value (.05)	37.91	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0398	95% CLT UCL	503.7
Adjusted Chi Square Value	37.03	95% Jackknife UCL	508.1
		95% Standard Bootstrap UCL	500.3
Anderson-Darling Test Statistic	0.666	95% Bootstrap-t UCL	522.9
Anderson-Darling 5% Critical Value	0.77	95% Hall's Bootstrap UCL	517.5
Kolmogorov-Smirnov Test Statistic	0.141	95% Percentile Bootstrap UCL	503.3
Kolmogorov-Smirnov 5% Critical Value	0.176	95% BCA Bootstrap UCL	518.1
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	693

51											97.5% Chebyshev(Mean, Sd) UCL	824.5
52	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	1083
53					95% Approximate Gamma UCL	551.5						
54					95% Adjusted Gamma UCL	564.6						
55												
56	**Potential UCL to Use**										Use 95% Approximate Gamma UCL	551.5
57												
58	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
59	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
60	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
61												
62												
63	ARSENIC											
64												
65	**General Statistics**											
66					Number of Valid Observations	69					Number of Distinct Observations	53
67												
68	**Raw Statistics**						**Log-transformed Statistics**					
69					Minimum	0.77					Minimum of Log Data	-0.261
70					Maximum	12.3					Maximum of Log Data	2.51
71					Mean	6.232					Mean of log Data	1.712
72					Median	6.2					SD of log Data	0.544
73					SD	2.638						
74					Coefficient of Variation	0.423						
75					Skewness	0.0567						
76												
77	**Relevant UCL Statistics**											
78	**Normal Distribution Test**						**Lognormal Distribution Test**					
79					Lilliefors Test Statistic	0.0431					Lilliefors Test Statistic	0.149
80					Lilliefors Critical Value	0.107					Lilliefors Critical Value	0.107
81	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
82												
83	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
84					95% Student's-t UCL	6.762					95% H-UCL	7.276
85	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	8.344
86					95% Adjusted-CLT UCL (Chen-1995)	6.757					97.5% Chebyshev (MVUE) UCL	9.184
87					95% Modified-t UCL (Johnson-1978)	6.762					99% Chebyshev (MVUE) UCL	10.83
88												
89	**Gamma Distribution Test**						**Data Distribution**					
90					k star (bias corrected)	4.213	**Data appear Normal at 5% Significance Level**					
91					Theta Star	1.479						
92					MLE of Mean	6.232						
93					MLE of Standard Deviation	3.036						
94					nu star	581.4						
95					Approximate Chi Square Value (.05)	526.5	**Nonparametric Statistics**					
96					Adjusted Level of Significance	0.0465					95% CLT UCL	6.755
97					Adjusted Chi Square Value	525.4					95% Jackknife UCL	6.762
98											95% Standard Bootstrap UCL	6.745
99					Anderson-Darling Test Statistic	0.849					95% Bootstrap-t UCL	6.746
100					Anderson-Darling 5% Critical Value	0.755					95% Hall's Bootstrap UCL	6.755

101				Kolmogorov-Smirnov Test Statistic	0.114				95% Percentile Bootstrap UCL	6.758		
102				Kolmogorov-Smirnov 5% Critical Value	0.108				95% BCA Bootstrap UCL	6.758		
103				**Data not Gamma Distributed at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL	7.617		
104									97.5% Chebyshev(Mean, Sd) UCL	8.216		
105				**Assuming Gamma Distribution**					99% Chebyshev(Mean, Sd) UCL	9.393		
106				95% Approximate Gamma UCL	6.882							
107				95% Adjusted Gamma UCL	6.897							
108												
109				**Potential UCL to Use**					Use 95% Student's-t UCL	6.762		
110												
111	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
112	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
113	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
114												
115												
116	**BERYLLIUM**											
117												
118	**General Statistics**											
119				Number of Valid Observations	69				Number of Distinct Observations	23		
120												
121				**Raw Statistics**					**Log-transformed Statistics**			
122				Minimum	0.22				Minimum of Log Data	-1.514		
123				Maximum	2.9				Maximum of Log Data	1.065		
124				Mean	1.78				Mean of log Data	0.521		
125				Median	1.8				SD of log Data	0.386		
126				SD	0.495							
127				Coefficient of Variation	0.278							
128				Skewness	-0.626							
129												
130	**Relevant UCL Statistics**											
131				**Normal Distribution Test**					**Lognormal Distribution Test**			
132				Lilliefors Test Statistic	0.139				Lilliefors Test Statistic	0.206		
133				Lilliefors Critical Value	0.107				Lilliefors Critical Value	0.107		
134				**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**			
135												
136				**Assuming Normal Distribution**					**Assuming Lognormal Distribution**			
137				95% Student's-t UCL	1.879				95% H-UCL	1.973		
138				**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL	2.19		
139				95% Adjusted-CLT UCL (Chen-1995)	1.873				97.5% Chebyshev (MVUE) UCL	2.354		
140				95% Modified-t UCL (Johnson-1978)	1.878				99% Chebyshev (MVUE) UCL	2.676		
141												
142				**Gamma Distribution Test**					**Data Distribution**			
143				k star (bias corrected)	8.728				**Data do not follow a Discernable Distribution (0.05)**			
144				Theta Star	0.204							
145				MLE of Mean	1.78							
146				MLE of Standard Deviation	0.602							
147				nu star	1204							
148				Approximate Chi Square Value (.05)	1125				**Nonparametric Statistics**			
149				Adjusted Level of Significance	0.0465				95% CLT UCL	1.878		
150				Adjusted Chi Square Value	1123				95% Jackknife UCL	1.879		

151											95% Standard Bootstrap UCL	1.877
152					Anderson-Darling Test Statistic	2.494					95% Bootstrap-t UCL	1.87
153					Anderson-Darling 5% Critical Value	0.751					95% Hall's Bootstrap UCL	1.874
154					Kolmogorov-Smirnov Test Statistic	0.185					95% Percentile Bootstrap UCL	1.873
155					Kolmogorov-Smirnov 5% Critical Value	0.107					95% BCA Bootstrap UCL	1.87
156					**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	2.039
157											97.5% Chebyshev(Mean, Sd) UCL	2.152
158					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	2.373
159					95% Approximate Gamma UCL	1.906						
160					95% Adjusted Gamma UCL	1.908						
161												
162					**Potential UCL to Use**						Use 95% Student's-t UCL	1.879
163											or 95% Modified-t UCL	1.878
164												
165	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
166	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
167	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
168												
169												
170	**COBALT**											
171												
172	**General Statistics**											
173					Number of Valid Observations	47					Number of Distinct Observations	43
174												
175	**Raw Statistics**						**Log-transformed Statistics**					
176					Minimum	1.1					Minimum of Log Data	0.0953
177					Maximum	37.9					Maximum of Log Data	3.635
178					Mean	14.03					Mean of log Data	2.517
179					Median	13.8					SD of log Data	0.569
180					SD	6.478						
181					Coefficient of Variation	0.462						
182					Skewness	1.192						
183												
184	**Relevant UCL Statistics**											
185	**Normal Distribution Test**						**Lognormal Distribution Test**					
186					Shapiro Wilk Test Statistic	0.926					Shapiro Wilk Test Statistic	0.873
187					Shapiro Wilk Critical Value	0.946					Shapiro Wilk Critical Value	0.946
188	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
189												
190	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
191					95% Student's-t UCL	15.61					95% H-UCL	17.14
192	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	20.09
193					95% Adjusted-CLT UCL (Chen-1995)	15.76					97.5% Chebyshev (MVUE) UCL	22.51
194					95% Modified-t UCL (Johnson-1978)	15.64					99% Chebyshev (MVUE) UCL	27.25
195												
196	**Gamma Distribution Test**						**Data Distribution**					
197					k star (bias corrected)	3.938	**Data do not follow a Discernable Distribution (0.05)**					
198					Theta Star	3.561						
199					MLE of Mean	14.03						
200					MLE of Standard Deviation	7.067						

201					nu star	370.2						
202					Approximate Chi Square Value (.05)	326.6				Nonparametric Statistics		
203					Adjusted Level of Significance	0.0449					95% CLT UCL	15.58
204					Adjusted Chi Square Value	325.3					95% Jackknife UCL	15.61
205											95% Standard Bootstrap UCL	15.58
206					Anderson-Darling Test Statistic	0.961					95% Bootstrap-t UCL	15.91
207					Anderson-Darling 5% Critical Value	0.753					95% Hall's Bootstrap UCL	16.01
208					Kolmogorov-Smirnov Test Statistic	0.131					95% Percentile Bootstrap UCL	15.62
209					Kolmogorov-Smirnov 5% Critical Value	0.13					95% BCA Bootstrap UCL	15.72
210					**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	18.14
211											97.5% Chebyshev(Mean, Sd) UCL	19.93
212					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	23.43
213					95% Approximate Gamma UCL	15.9						
214					95% Adjusted Gamma UCL	15.96						
215												
216					**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL	18.14
217												
218	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
219	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
220	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
221												
222												
223	COPPER											
224												
225	**General Statistics**											
226					Number of Valid Observations	69					Number of Distinct Observations	66
227												
228					**Raw Statistics**					**Log-transformed Statistics**		
229					Minimum	7.4					Minimum of Log Data	2.001
230					Maximum	147					Maximum of Log Data	4.99
231					Mean	47.55					Mean of log Data	3.531
232					Median	31.7					SD of log Data	0.841
233					SD	37.54						
234					Coefficient of Variation	0.79						
235					Skewness	0.843						
236												
237	**Relevant UCL Statistics**											
238					**Normal Distribution Test**					**Lognormal Distribution Test**		
239					Lilliefors Test Statistic	0.184					Lilliefors Test Statistic	0.118
240					Lilliefors Critical Value	0.107					Lilliefors Critical Value	0.107
241					**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**		
242												
243					**Assuming Normal Distribution**					**Assuming Lognormal Distribution**		
244					95% Student's-t UCL	55.08					95% H-UCL	60.57
245					**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	72.69
246					95% Adjusted-CLT UCL (Chen-1995)	55.47					97.5% Chebyshev (MVUE) UCL	83.22
247					95% Modified-t UCL (Johnson-1978)	55.16					99% Chebyshev (MVUE) UCL	103.9
248												
249					**Gamma Distribution Test**					**Data Distribution**		
250					k star (bias corrected)	1.599				**Data do not follow a Discernable Distribution (0.05)**		

251					Theta Star	29.74						
252					MLE of Mean	47.55						
253					MLE of Standard Deviation	37.61						
254					nu star	220.6						
255					Approximate Chi Square Value (.05)	187.2	**Nonparametric Statistics**					
256					Adjusted Level of Significance	0.0465					95% CLT UCL	54.98
257					Adjusted Chi Square Value	186.6					95% Jackknife UCL	55.08
258											95% Standard Bootstrap UCL	54.97
259					Anderson-Darling Test Statistic	1.843					95% Bootstrap-t UCL	55.19
260					Anderson-Darling 5% Critical Value	0.767					95% Hall's Bootstrap UCL	55.6
261					Kolmogorov-Smirnov Test Statistic	0.147					95% Percentile Bootstrap UCL	55.42
262					Kolmogorov-Smirnov 5% Critical Value	0.109					95% BCA Bootstrap UCL	55.13
263	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	67.25
264											97.5% Chebyshev(Mean, Sd) UCL	75.77
265	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	92.52
266					95% Approximate Gamma UCL	56.02						
267					95% Adjusted Gamma UCL	56.22						
268												
269	**Potential UCL to Use**										Use 95% Chebyshev (Mean, Sd) UCL	67.25
270												
271	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
272	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
273	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
274												
275												
276	**NICKEL**											
277												
278	**General Statistics**											
279					Number of Valid Observations	69					Number of Distinct Observations	67
280												
281	**Raw Statistics**						**Log-transformed Statistics**					
282					Minimum	0.67					Minimum of Log Data	-0.4
283					Maximum	66.2					Maximum of Log Data	4.193
284					Mean	30.49					Mean of log Data	3.249
285					Median	27.6					SD of log Data	0.7
286					SD	15.13						
287					Coefficient of Variation	0.496						
288					Skewness	0.386						
289												
290	**Relevant UCL Statistics**											
291	**Normal Distribution Test**						**Lognormal Distribution Test**					
292					Lilliefors Test Statistic	0.11					Lilliefors Test Statistic	0.125
293					Lilliefors Critical Value	0.107					Lilliefors Critical Value	0.107
294	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
295												
296	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
297					95% Student's-t UCL	33.53					95% H-UCL	39.07
298	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	46.01
299					95% Adjusted-CLT UCL (Chen-1995)	33.58					97.5% Chebyshev (MVUE) UCL	51.74
300					95% Modified-t UCL (Johnson-1978)	33.54					99% Chebyshev (MVUE) UCL	62.99

Gamma Distribution Test		**Data Distribution**
k star (bias corrected)	3.002	**Data appear Gamma Distributed at 5% Significance Level**
Theta Star	10.16	
MLE of Mean	30.49	
MLE of Standard Deviation	17.6	
nu star	414.3	
Approximate Chi Square Value (.05)	368.1	**Nonparametric Statistics**
Adjusted Level of Significance	0.0465	95% CLT UCL 33.49
Adjusted Chi Square Value	367.2	95% Jackknife UCL 33.53
		95% Standard Bootstrap UCL 33.49
Anderson-Darling Test Statistic	0.661	95% Bootstrap-t UCL 33.85
Anderson-Darling 5% Critical Value	0.757	95% Hall's Bootstrap UCL 33.55
Kolmogorov-Smirnov Test Statistic	0.0862	95% Percentile Bootstrap UCL 33.56
Kolmogorov-Smirnov 5% Critical Value	0.108	95% BCA Bootstrap UCL 33.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 38.43
		97.5% Chebyshev(Mean, Sd) UCL 41.87
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 48.62
95% Approximate Gamma UCL	34.32	
95% Adjusted Gamma UCL	34.4	
Potential UCL to Use		Use 95% Approximate Gamma UCL 34.32

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

LEAD

General Statistics

Number of Valid Observations	69	Number of Distinct Observations	65

Raw Statistics		**Log-transformed Statistics**	
Minimum	4.1	Minimum of Log Data	1.411
Maximum	316	Maximum of Log Data	5.756
Mean	89.42	Mean of log Data	3.762
Median	39.2	SD of log Data	1.356
SD	90.75		
Coefficient of Variation	1.015		
Skewness	0.855		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.217	Lilliefors Test Statistic	0.136
Lilliefors Critical Value	0.107	Lilliefors Critical Value	0.107
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	107.6	95% H-UCL	153.4

351	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					203.2
352	95% Adjusted-CLT UCL (Chen-1995)					108.6	97.5% Chebyshev (MVUE) UCL					245.5
353	95% Modified-t UCL (Johnson-1978)					107.8	99% Chebyshev (MVUE) UCL					328.8
354												
355	**Gamma Distribution Test**						**Data Distribution**					
356	k star (bias corrected)					0.784	**Data do not follow a Discernable Distribution (0.05)**					
357	Theta Star					114						
358	MLE of Mean					89.42						
359	MLE of Standard Deviation					101						
360	nu star					108.2						
361	Approximate Chi Square Value (.05)					85.21	**Nonparametric Statistics**					
362	Adjusted Level of Significance					0.0465	95% CLT UCL					107.4
363	Adjusted Chi Square Value					84.77	95% Jackknife UCL					107.6
364							95% Standard Bootstrap UCL					107.5
365	Anderson-Darling Test Statistic					2.141	95% Bootstrap-t UCL					109.2
366	Anderson-Darling 5% Critical Value					0.79	95% Hall's Bootstrap UCL					108.3
367	Kolmogorov-Smirnov Test Statistic					0.138	95% Percentile Bootstrap UCL					107.9
368	Kolmogorov-Smirnov 5% Critical Value					0.111	95% BCA Bootstrap UCL					108.4
369	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					137
370							97.5% Chebyshev(Mean, Sd) UCL					157.6
371	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					198.1
372	95% Approximate Gamma UCL					113.6						
373	95% Adjusted Gamma UCL					114.1						
374												
375	**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL					137
376												
377	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
378	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
379	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
380												
381												
382	**VANADIUM**											
383												
384	**General Statistics**											
385	Number of Valid Observations					47	Number of Distinct Observations					44
386												
387	**Raw Statistics**						**Log-transformed Statistics**					
388	Minimum					15.8	Minimum of Log Data					2.76
389	Maximum					110	Maximum of Log Data					4.7
390	Mean					45.22	Mean of log Data					3.721
391	Median					40.4	SD of log Data					0.422
392	SD					20.73						
393	Coefficient of Variation					0.458						
394	Skewness					1.334						
395												
396	**Relevant UCL Statistics**											
397	**Normal Distribution Test**						**Lognormal Distribution Test**					
398	Shapiro Wilk Test Statistic					0.883	Shapiro Wilk Test Statistic					0.982
399	Shapiro Wilk Critical Value					0.946	Shapiro Wilk Critical Value					0.946
400	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					

401												
402	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
403					95% Student's-t UCL	50.3					95% H-UCL	50.64
404	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	57.62
405					95% Adjusted-CLT UCL (Chen-1995)	50.82					97.5% Chebyshev (MVUE) UCL	63.04
406					95% Modified-t UCL (Johnson-1978)	50.39					99% Chebyshev (MVUE) UCL	73.7
407												
408	**Gamma Distribution Test**						**Data Distribution**					
409					k star (bias corrected)	5.351	**Data appear Gamma Distributed at 5% Significance Level**					
410					Theta Star	8.451						
411					MLE of Mean	45.22						
412					MLE of Standard Deviation	19.55						
413					nu star	503						
414					Approximate Chi Square Value (.05)	452	**Nonparametric Statistics**					
415					Adjusted Level of Significance	0.0449					95% CLT UCL	50.19
416					Adjusted Chi Square Value	450.4					95% Jackknife UCL	50.3
417											95% Standard Bootstrap UCL	50.04
418					Anderson-Darling Test Statistic	0.625					95% Bootstrap-t UCL	50.97
419					Anderson-Darling 5% Critical Value	0.753					95% Hall's Bootstrap UCL	51.24
420					Kolmogorov-Smirnov Test Statistic	0.0976					95% Percentile Bootstrap UCL	50.46
421					Kolmogorov-Smirnov 5% Critical Value	0.129					95% BCA Bootstrap UCL	50.78
422	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	58.4
423											97.5% Chebyshev(Mean, Sd) UCL	64.1
424	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	75.31
425					95% Approximate Gamma UCL	50.32						
426					95% Adjusted Gamma UCL	50.49						
427												
428	**Potential UCL to Use**										Use 95% Approximate Gamma UCL	50.32
429												
430	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
431	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
432	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
433												
434												
435	**ZINC**											
436												
437	**General Statistics**											
438					Number of Valid Observations	69					Number of Distinct Observations	69
439												
440	**Raw Statistics**						**Log-transformed Statistics**					
441					Minimum	2					Minimum of Log Data	0.693
442					Maximum	2980					Maximum of Log Data	8
443					Mean	287.7					Mean of log Data	4.956
444					Median	133					SD of log Data	1.285
445					SD	419.3						
446					Coefficient of Variation	1.457						
447					Skewness	4.418						
448												
449	**Relevant UCL Statistics**											
450	**Normal Distribution Test**						**Lognormal Distribution Test**					

451				Lilliefors Test Statistic	0.248					Lilliefors Test Statistic	0.131	
452				Lilliefors Critical Value	0.107					Lilliefors Critical Value	0.107	
453	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
454												
455	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
456				95% Student's-t UCL	371.9					95% H-UCL	449.7	
457	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	592.4	
458				95% Adjusted-CLT UCL (Chen-1995)	399.4					97.5% Chebyshev (MVUE) UCL	711.3	
459				95% Modified-t UCL (Johnson-1978)	376.3					99% Chebyshev (MVUE) UCL	945	
460												
461	**Gamma Distribution Test**						**Data Distribution**					
462				k star (bias corrected)	0.809		**Data do not follow a Discernable Distribution (0.05)**					
463				Theta Star	355.5							
464				MLE of Mean	287.7							
465				MLE of Standard Deviation	319.8							
466				nu star	111.7							
467				Approximate Chi Square Value (.05)	88.29		**Nonparametric Statistics**					
468				Adjusted Level of Significance	0.0465					95% CLT UCL	370.7	
469				Adjusted Chi Square Value	87.85					95% Jackknife UCL	371.9	
470										95% Standard Bootstrap UCL	368.3	
471				Anderson-Darling Test Statistic	1.658					95% Bootstrap-t UCL	438.9	
472				Anderson-Darling 5% Critical Value	0.788					95% Hall's Bootstrap UCL	786	
473				Kolmogorov-Smirnov Test Statistic	0.136					95% Percentile Bootstrap UCL	374.7	
474				Kolmogorov-Smirnov 5% Critical Value	0.111					95% BCA Bootstrap UCL	411.7	
475	**Data not Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	507.7	
476										97.5% Chebyshev(Mean, Sd) UCL	602.9	
477	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	789.9	
478				95% Approximate Gamma UCL	363.9							
479				95% Adjusted Gamma UCL	365.8							
480												
481	**Potential UCL to Use**									Use 95% Chebyshev (Mean, Sd) UCL	507.7	
482												
483	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
484	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
485	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
486												

1				General UCL Statistics for Data Sets with Non-Detects								
2			User Selected Options									
3			From File	Converted_Data.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	1-METHYLNAPHTHALENE											
10												
11						General Statistics						
12						Number of Valid Data	46			Number of Detected Data	3	
13						Number of Distinct Detected Data	3			Number of Non-Detect Data	43	
14						Number of Missing Values	1			Percent Non-Detects	93.48%	
15												
16						Raw Statistics				Log-transformed Statistics		
17						Minimum Detected	88			Minimum Detected	4.477	
18						Maximum Detected	950			Maximum Detected	6.856	
19						Mean of Detected	392.7			Mean of Detected	5.425	
20						SD of Detected	483.4			SD of Detected	1.261	
21						Minimum Non-Detect	340			Minimum Non-Detect	5.829	
22						Maximum Non-Detect	1100			Maximum Non-Detect	7.003	
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect	46	
25	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected	0	
26	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage	100.00%	
27												
28	Warning: There are only 3 Distinct Detected Values in this data set											
29	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
30	Those methods will return a 'N/A' value on your output display!											
31												
32	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
33	However, results obtained using 4 to 9 distinct values may not be reliable.											
34	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
35												
36												
37						UCL Statistics						
38						Normal Distribution Test with Detected Values Only				Lognormal Distribution Test with Detected Values Only		
39						Shapiro Wilk Test Statistic	0.795			Shapiro Wilk Test Statistic	0.89	
40						5% Shapiro Wilk Critical Value	0.767			5% Shapiro Wilk Critical Value	0.767	
41						Data appear Normal at 5% Significance Level				Data appear Lognormal at 5% Significance Level		
42												
43						Assuming Normal Distribution				Assuming Lognormal Distribution		
44						DL/2 Substitution Method				DL/2 Substitution Method		
45						Mean	344.7			Mean	5.764	
46						SD	142.5			SD	0.41	
47						95% DL/2 (t) UCL	380			95% H-Stat (DL/2) UCL	387.4	
48												
49						Maximum Likelihood Estimate(MLE) Method	N/A			Log ROS Method		
50						MLE method failed to converge properly				Mean in Log Scale	4.787	

51											SD in Log Scale	0.44
52											Mean in Original Scale	138.2
53											SD in Original Scale	128.1
54											95% t UCL	169.9
55											95% Percentile Bootstrap UCL	173.1
56											95% BCA Bootstrap UCL	197.5
57												
58	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
59					k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**					
60					Theta Star	N/A						
61					nu star	N/A						
62												
63					A-D Test Statistic	N/A	**Nonparametric Statistics**					
64					5% A-D Critical Value	N/A					Kaplan-Meier (KM) Method	
65					K-S Test Statistic	N/A					Mean	134.9
66					5% K-S Critical Value	N/A					SD	133
67	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	33.48
68											95% KM (t) UCL	191.1
69	**Assuming Gamma Distribution**										95% KM (z) UCL	190
70					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	204
71					Minimum	N/A					95% KM (bootstrap t) UCL	195.1
72					Maximum	N/A					95% KM (BCA) UCL	950
73					Mean	N/A					95% KM (Percentile Bootstrap) UCL	950
74					Median	N/A					95% KM (Chebyshev) UCL	280.8
75					SD	N/A					97.5% KM (Chebyshev) UCL	344
76					k star	N/A					99% KM (Chebyshev) UCL	468
77					Theta star	N/A						
78					Nu star	N/A	**Potential UCLs to Use**					
79					AppChi2	N/A					95% KM (t) UCL	191.1
80					95% Gamma Approximate UCL	N/A					95% KM (Percentile Bootstrap) UCL	950
81					95% Adjusted Gamma UCL	N/A						
82	**Note: DL/2 is not a recommended method.**											
83												
84	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
85	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
86	**For additional insight, the user may want to consult a statistician.**											
87												
88												
89	**BAP EQUIVALENT-1/2 NON-DETECTS**											
90												
91	**General Statistics**											
92					Number of Valid Data	68					Number of Detected Data	32
93					Number of Distinct Detected Data	32					Number of Non-Detect Data	36
94					Number of Missing Values	1					Percent Non-Detects	52.94%
95												
96	**Raw Statistics**						**Log-transformed Statistics**					
97					Minimum Detected	58.53					Minimum Detected	4.07
98					Maximum Detected	38692					Maximum Detected	10.56
99					Mean of Detected	3359					Mean of Detected	7.218
100					SD of Detected	6933					SD of Detected	1.304

	A	B	C	D	E	F	G	H	I	J	K	L
101					Minimum Non-Detect	0.4					Minimum Non-Detect	-0.916
102					Maximum Non-Detect	1000					Maximum Non-Detect	6.908
103												
104	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	49
105	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	19
106	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	72.06%
107												
108	**UCL Statistics**											
109	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
110					Shapiro Wilk Test Statistic	0.445					Shapiro Wilk Test Statistic	0.966
111					5% Shapiro Wilk Critical Value	0.93					5% Shapiro Wilk Critical Value	0.93
112	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
113												
114	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
115					DL/2 Substitution Method						DL/2 Substitution Method	
116					Mean	1711					Mean	5.766
117					SD	4970					SD	2.404
118					95% DL/2 (t) UCL	2716					95% H-Stat (DL/2) UCL	14155
119												
120					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
121	**MLE yields a negative mean**										Mean in Log Scale	5.663
122											SD in Log Scale	1.769
123											Mean in Original Scale	1626
124											SD in Original Scale	4995
125											95% t UCL	2636
126											95% Percentile Bootstrap UCL	2785
127											95% BCA Bootstrap UCL	3400
128												
129	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
130					k star (bias corrected)	0.632	**Data appear Lognormal at 5% Significance Level**					
131					Theta Star	5317						
132					nu star	40.43						
133												
134					A-D Test Statistic	1.644	**Nonparametric Statistics**					
135					5% A-D Critical Value	0.795					Kaplan-Meier (KM) Method	
136					K-S Test Statistic	0.795					Mean	1651
137					5% K-S Critical Value	0.162					SD	4952
138	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	610.4
139											95% KM (t) UCL	2669
140	**Assuming Gamma Distribution**										95% KM (z) UCL	2655
141					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	2644
142					Minimum	58.53					95% KM (bootstrap t) UCL	4153
143					Maximum	38692					95% KM (BCA) UCL	3032
144					Mean	3132					95% KM (Percentile Bootstrap) UCL	2789
145					Median	2306					95% KM (Chebyshev) UCL	4312
146					SD	4755					97.5% KM (Chebyshev) UCL	5463
147					k star	1.222					99% KM (Chebyshev) UCL	7724
148					Theta star	2562						
149					Nu star	166.3	**Potential UCLs to Use**					
150					AppChi2	137.4					95% KM (BCA) UCL	3032

151					95% Gamma Approximate UCL	3789						
152					95% Adjusted Gamma UCL	3804						
153	**Note: DL/2 is not a recommended method.**											
154												
155	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
156	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
157	**For additional insight, the user may want to consult a statistician.**											
158												
159												
160	**BAP EQUIVALENT-POSITIVE RESULTS**											
161												
162	**General Statistics**											
163					Number of Valid Data	68				Number of Detected Data	32	
164					Number of Distinct Detected Data	32				Number of Non-Detect Data	36	
165					Number of Missing Values	1				Percent Non-Detects	52.94%	
166												
167	**Raw Statistics**						**Log-transformed Statistics**					
168					Minimum Detected	17.19				Minimum Detected	2.844	
169					Maximum Detected	38387				Maximum Detected	10.56	
170					Mean of Detected	3069				Mean of Detected	6.386	
171					SD of Detected	6988				SD of Detected	2.059	
172					Minimum Non-Detect	0.4				Minimum Non-Detect	-0.916	
173					Maximum Non-Detect	1000				Maximum Non-Detect	6.908	
174												
175	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect	54	
176	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected	14	
177	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage	79.41%	
178												
179	**UCL Statistics**											
180	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
181					Shapiro Wilk Test Statistic	0.457				Shapiro Wilk Test Statistic	0.962	
182					5% Shapiro Wilk Critical Value	0.93				5% Shapiro Wilk Critical Value	0.93	
183	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
184												
185	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
186					DL/2 Substitution Method					DL/2 Substitution Method		
187					Mean	1574				Mean	5.374	
188					SD	4962				SD	2.444	
189					95% DL/2 (t) UCL	2578				95% H-Stat (DL/2) UCL	10677	
190												
191					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
192	**MLE yields a negative mean**									Mean in Log Scale	4.565	
193										SD in Log Scale	2.364	
194										Mean in Original Scale	1461	
195										SD in Original Scale	4993	
196										95% t UCL	2471	
197										95% Percentile Bootstrap UCL	2649	
198										95% BCA Bootstrap UCL	3281	
199												
200	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					

201					k star (bias corrected)	0.384	**Data appear Gamma Distributed at 5% Significance Level**					
202					Theta Star	7998						
203					nu star	24.56						
204												
205					A-D Test Statistic	0.745	**Nonparametric Statistics**					
206					5% A-D Critical Value	0.833	Kaplan-Meier (KM) Method					
207					K-S Test Statistic	0.833	Mean					1488
208					5% K-S Critical Value	0.167	SD					4949
209	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					610
210							95% KM (t) UCL					2505
211	**Assuming Gamma Distribution**						95% KM (z) UCL					2491
212				Gamma ROS Statistics using Extrapolated Data			95% KM (jackknife) UCL					2495
213					Minimum	11.31	95% KM (bootstrap t) UCL					3924
214					Maximum	38387	95% KM (BCA) UCL					2670
215					Mean	2425	95% KM (Percentile Bootstrap) UCL					2552
216					Median	1396	95% KM (Chebyshev) UCL					4147
217					SD	4964	97.5% KM (Chebyshev) UCL					5297
218					k star	0.447	99% KM (Chebyshev) UCL					7557
219					Theta star	5429						
220					Nu star	60.74	**Potential UCLs to Use**					
221					AppChi2	43.81	95% KM (t) UCL					2505
222				95% Gamma Approximate UCL		3361						
223				95% Adjusted Gamma UCL		3385						
224	**Note: DL/2 is not a recommended method.**											
225												
226	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
227	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
228	**For additional insight, the user may want to consult a statistician.**											
229												
230												
231	**BENZO(A)ANTHRACENE**											
232												
233	**General Statistics**											
234					Number of Valid Data	68	Number of Detected Data					23
235					Number of Distinct Detected Data	23	Number of Non-Detect Data					45
236					Number of Missing Values	1	Percent Non-Detects					66.18%
237												
238	**Raw Statistics**						**Log-transformed Statistics**					
239					Minimum Detected	18	Minimum Detected					2.89
240					Maximum Detected	38000	Maximum Detected					10.55
241					Mean of Detected	3299	Mean of Detected					6.783
242					SD of Detected	7817	SD of Detected					1.726
243					Minimum Non-Detect	0.51	Minimum Non-Detect					-0.673
244					Maximum Non-Detect	1100	Maximum Non-Detect					7.003
245												
246	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					57
247	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					11
248	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					83.82%
249												
250	**UCL Statistics**											

	A	B	C	D	E	F	G	H	I	J	K	L
251	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
252					Shapiro Wilk Test Statistic	0.41					Shapiro Wilk Test Statistic	0.99
253					5% Shapiro Wilk Critical Value	0.914					5% Shapiro Wilk Critical Value	0.914
254	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
255												
256	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
257					DL/2 Substitution Method						DL/2 Substitution Method	
258					Mean	1300					Mean	5.482
259					SD	4707					SD	2.224
260					95% DL/2 (t) UCL	2252					95% H-Stat (DL/2) UCL	6567
261												
262					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
263	**MLE yields a negative mean**										Mean in Log Scale	4.593
264											SD in Log Scale	1.999
265											Mean in Original Scale	1147
266											SD in Original Scale	4740
267											95% t UCL	2106
268											95% Percentile Bootstrap UCL	2211
269											95% BCA Bootstrap UCL	3109
270												
271	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
272					k star (bias corrected)	0.45	**Data appear Gamma Distributed at 5% Significance Level**					
273					Theta Star	7331						
274					nu star	20.7						
275												
276					A-D Test Statistic	0.776	**Nonparametric Statistics**					
277					5% A-D Critical Value	0.809					Kaplan-Meier (KM) Method	
278					K-S Test Statistic	0.809					Mean	1190
279					5% K-S Critical Value	0.192					SD	4697
280	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	582.8
281											95% KM (t) UCL	2162
282	**Assuming Gamma Distribution**										95% KM (z) UCL	2149
283					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	2137
284					Minimum	18					95% KM (bootstrap t) UCL	4569
285					Maximum	38000					95% KM (BCA) UCL	2309
286					Mean	3297					95% KM (Percentile Bootstrap) UCL	2324
287					Median	3293					95% KM (Chebyshev) UCL	3731
288					SD	4480					97.5% KM (Chebyshev) UCL	4830
289					k star	1.216					99% KM (Chebyshev) UCL	6989
290					Theta star	2712						
291					Nu star	165.3	**Potential UCLs to Use**					
292					AppChi2	136.6					95% KM (t) UCL	2162
293					95% Gamma Approximate UCL	3990						
294					95% Adjusted Gamma UCL	4007						
295	**Note: DL/2 is not a recommended method.**											
296												
297	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
298	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
299	**For additional insight, the user may want to consult a statistician.**											
300												

	A	B	C	D	E	F	G	H	I	J	K	L
301												
302	**BENZO(A)PYRENE**											
303												
304	**General Statistics**											
305	Number of Valid Data					68	Number of Detected Data					24
306	Number of Distinct Detected Data					22	Number of Non-Detect Data					44
307	Number of Missing Values					1	Percent Non-Detects					64.71%
308												
309	**Raw Statistics**						**Log-transformed Statistics**					
310	Minimum Detected					14	Minimum Detected					2.639
311	Maximum Detected					30000	Maximum Detected					10.31
312	Mean of Detected					2864	Mean of Detected					6.771
313	SD of Detected					6076	SD of Detected					1.7
314	Minimum Non-Detect					0.4	Minimum Non-Detect					-0.916
315	Maximum Non-Detect					1100	Maximum Non-Detect					7.003
316												
317	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					57
318	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					11
319	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					83.82%
320												
321	**UCL Statistics**											
322	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
323	Shapiro Wilk Test Statistic					0.452	Shapiro Wilk Test Statistic					0.975
324	5% Shapiro Wilk Critical Value					0.916	5% Shapiro Wilk Critical Value					0.916
325	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
326												
327	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
328	DL/2 Substitution Method						DL/2 Substitution Method					
329	Mean					1190	Mean					5.465
330	SD					3774	SD					2.294
331	95% DL/2 (t) UCL					1954	95% H-Stat (DL/2) UCL					7795
332												
333	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
334	**MLE yields a negative mean**						Mean in Log Scale					4.674
335							SD in Log Scale					1.975
336							Mean in Original Scale					1042
337							SD in Original Scale					3810
338							95% t UCL					1813
339							95% Percentile Bootstrap UCL					1902
340							95% BCA Bootstrap UCL					2421
341												
342	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
343	k star (bias corrected)					0.491	**Data appear Gamma Distributed at 5% Significance Level**					
344	Theta Star					5830						
345	nu star					23.58						
346												
347	A-D Test Statistic					0.656	**Nonparametric Statistics**					
348	5% A-D Critical Value					0.804	Kaplan-Meier (KM) Method					
349	K-S Test Statistic					0.804	Mean					1087
350	5% K-S Critical Value					0.188	SD					3772

351	Data appear Gamma Distributed at 5% Significance Level										SE of Mean	467.9
352											95% KM (t) UCL	1867
353	Assuming Gamma Distribution										95% KM (z) UCL	1856
354	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	1849
355					Minimum	14					95% KM (bootstrap t) UCL	3298
356					Maximum	30000					95% KM (BCA) UCL	2067
357					Mean	2820					95% KM (Percentile Bootstrap) UCL	1957
358					Median	2730					95% KM (Chebyshev) UCL	3126
359					SD	3566					97.5% KM (Chebyshev) UCL	4009
360					k star	1.278					99% KM (Chebyshev) UCL	5742
361					Theta star	2207						
362					Nu star	173.7	Potential UCLs to Use					
363					AppChi2	144.3					95% KM (t) UCL	1867
364					95% Gamma Approximate UCL	3396						
365					95% Adjusted Gamma UCL	3410						
366	Note: DL/2 is not a recommended method.											
367												
368	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
369	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
370	For additional insight, the user may want to consult a statistician.											
371												
372												
373	BENZO(B)FLUORANTHENE											
374												
375	General Statistics											
376					Number of Valid Data	68					Number of Detected Data	32
377					Number of Distinct Detected Data	28					Number of Non-Detect Data	36
378					Number of Missing Values	1					Percent Non-Detects	52.94%
379												
380	Raw Statistics						Log-transformed Statistics					
381					Minimum Detected	46					Minimum Detected	3.829
382					Maximum Detected	31000					Maximum Detected	10.34
383					Mean of Detected	2890					Mean of Detected	6.842
384					SD of Detected	5762					SD of Detected	1.523
385					Minimum Non-Detect	0.64					Minimum Non-Detect	-0.446
386					Maximum Non-Detect	1000					Maximum Non-Detect	6.908
387												
388	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	52
389	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	16
390	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	76.47%
391												
392	UCL Statistics											
393	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
394					Shapiro Wilk Test Statistic	0.505					Shapiro Wilk Test Statistic	0.981
395					5% Shapiro Wilk Critical Value	0.93					5% Shapiro Wilk Critical Value	0.93
396	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
397												
398	Assuming Normal Distribution						Assuming Lognormal Distribution					
399					DL/2 Substitution Method						DL/2 Substitution Method	
400					Mean	1490					Mean	5.643

401					SD	4140					SD	2.236
402					95% DL/2 (t) UCL	2328					95% H-Stat (DL/2) UCL	7975
403												
404					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
405					**MLE yields a negative mean**						Mean in Log Scale	5.39
406											SD in Log Scale	1.816
407											Mean in Original Scale	1403
408											SD in Original Scale	4166
409											95% t UCL	2245
410											95% Percentile Bootstrap UCL	2325
411											95% BCA Bootstrap UCL	2878
412												
413					**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**	
414					k star (bias corrected)	0.524					**Data appear Lognormal at 5% Significance Level**	
415					Theta Star	5520						
416					nu star	33.51						
417												
418					A-D Test Statistic	1.278					**Nonparametric Statistics**	
419					5% A-D Critical Value	0.805					Kaplan-Meier (KM) Method	
420					K-S Test Statistic	0.805					Mean	1437
421					5% K-S Critical Value	0.164					SD	4126
422					**Data not Gamma Distributed at 5% Significance Level**						SE of Mean	508.7
423											95% KM (t) UCL	2285
424					**Assuming Gamma Distribution**						95% KM (z) UCL	2273
425					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	2272
426					Minimum	46					95% KM (bootstrap t) UCL	3265
427					Maximum	31000					95% KM (BCA) UCL	2473
428					Mean	2709					95% KM (Percentile Bootstrap) UCL	2345
429					Median	2006					95% KM (Chebyshev) UCL	3654
430					SD	3962					97.5% KM (Chebyshev) UCL	4613
431					k star	1.002					99% KM (Chebyshev) UCL	6498
432					Theta star	2705						
433					Nu star	136.2					**Potential UCLs to Use**	
434					AppChi2	110.3					95% KM (Chebyshev) UCL	3654
435					95% Gamma Approximate UCL	3347						
436					95% Adjusted Gamma UCL	3363						
437	**Note: DL/2 is not a recommended method.**											
438												
439	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
440	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
441	**For additional insight, the user may want to consult a statistician.**											
442												
443												
444	**BENZO(K)FLUORANTHENE**											
445												
446	**General Statistics**											
447					Number of Valid Data	68					Number of Detected Data	17
448					Number of Distinct Detected Data	17					Number of Non-Detect Data	51
449					Number of Missing Values	1					Percent Non-Detects	75.00%
450												

	A	B	C	D	E	F	G	H	I	J	K	L
451	**Raw Statistics**						**Log-transformed Statistics**					
452					Minimum Detected	8					Minimum Detected	2.079
453					Maximum Detected	25000					Maximum Detected	10.13
454					Mean of Detected	2398					Mean of Detected	6.404
455					SD of Detected	5906					SD of Detected	1.768
456					Minimum Non-Detect	0.82					Minimum Non-Detect	-0.198
457					Maximum Non-Detect	1000					Maximum Non-Detect	6.908
458												
459	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	61
460	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	7
461	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	89.71%
462												
463	**UCL Statistics**											
464	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
465					Shapiro Wilk Test Statistic	0.399					Shapiro Wilk Test Statistic	0.961
466					5% Shapiro Wilk Critical Value	0.892					5% Shapiro Wilk Critical Value	0.892
467	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
468												
469	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
470					DL/2 Substitution Method						DL/2 Substitution Method	
471					Mean	741.6					Mean	4.593
472					SD	3046					SD	2.346
473					95% DL/2 (t) UCL	1358					95% H-Stat (DL/2) UCL	3750
474												
475					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
476	**MLE yields a negative mean**										Mean in Log Scale	3.05
477											SD in Log Scale	2.285
478											Mean in Original Scale	607.5
479											SD in Original Scale	3068
480											95% t UCL	1228
481											95% Percentile Bootstrap UCL	1344
482											95% BCA Bootstrap UCL	1945
483												
484	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
485					k star (bias corrected)	0.423	**Data Follow Appr. Gamma Distribution at 5% Significance Level**					
486					Theta Star	5671						
487					nu star	14.38						
488												
489					A-D Test Statistic	0.924	**Nonparametric Statistics**					
490					5% A-D Critical Value	0.805					Kaplan-Meier (KM) Method	
491					K-S Test Statistic	0.805					Mean	632.2
492					5% K-S Critical Value	0.222					SD	3042
493	**Data follow Appr. Gamma Distribution at 5% Significance Level**										SE of Mean	380.5
494											95% KM (t) UCL	1267
495	**Assuming Gamma Distribution**										95% KM (z) UCL	1258
496					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	1204
497					Minimum	1E-12					95% KM (bootstrap t) UCL	3280
498					Maximum	25000					95% KM (BCA) UCL	1684
499					Mean	3216					95% KM (Percentile Bootstrap) UCL	1371
500					Median	1957					95% KM (Chebyshev) UCL	2291

501					SD	3715				97.5% KM (Chebyshev) UCL		3009
502					k star	0.556				99% KM (Chebyshev) UCL		4418
503					Theta star	5780						
504					Nu star	75.66				**Potential UCLs to Use**		
505					AppChi2	56.63				95% KM (t) UCL		1267
506					95% Gamma Approximate UCL	4297						
507					95% Adjusted Gamma UCL	4324						
508	**Note: DL/2 is not a recommended method.**											
509												
510	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
511	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
512	**For additional insight, the user may want to consult a statistician.**											
513												
514												
515	**BIS(2-ETHYLHEXYL)PHTHALATE**											
516												
517	**General Statistics**											
518					Number of Valid Data	9				Number of Detected Data		5
519					Number of Distinct Detected Data	4				Number of Non-Detect Data		4
520										Percent Non-Detects		44.44%
521												
522	**Raw Statistics**						**Log-transformed Statistics**					
523					Minimum Detected	140				Minimum Detected		4.942
524					Maximum Detected	1700				Maximum Detected		7.438
525					Mean of Detected	704				Mean of Detected		6.197
526					SD of Detected	639.7				SD of Detected		0.978
527					Minimum Non-Detect	460				Minimum Non-Detect		6.131
528					Maximum Non-Detect	740				Maximum Non-Detect		6.607
529												
530	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		7
531	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		2
532	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		77.78%
533												
534	**Warning: There are only 4 Distinct Detected Values in this data**											
535	**Note: It should be noted that even though bootstrap may be performed on this data set**											
536	**the resulting calculations may not be reliable enough to draw conclusions**											
537												
538	**It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.**											
539												
540												
541	**UCL Statistics**											
542	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
543					Shapiro Wilk Test Statistic	0.863				Shapiro Wilk Test Statistic		0.952
544					5% Shapiro Wilk Critical Value	0.762				5% Shapiro Wilk Critical Value		0.762
545	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
546												
547	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
548					DL/2 Substitution Method					DL/2 Substitution Method		
549					Mean	527.2				Mean		5.98
550					SD	500				SD		0.749

551					95% DL/2 (t) UCL	837.1					95% H-Stat (DL/2) UCL	1073
552												
553					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
554					**MLE method failed to converge properly**						Mean in Log Scale	5.928
555											SD in Log Scale	0.761
556											Mean in Original Scale	510.5
557											SD in Original Scale	507.2
558											95% t UCL	824.9
559											95% Percentile Bootstrap UCL	818.6
560											95% BCA Bootstrap UCL	912.9
561												
562					**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**	
563					k star (bias corrected)	0.747					**Data appear Normal at 5% Significance Level**	
564					Theta Star	942.5						
565					nu star	7.469						
566												
567					A-D Test Statistic	0.321					**Nonparametric Statistics**	
568					5% A-D Critical Value	0.686					Kaplan-Meier (KM) Method	
569					K-S Test Statistic	0.686					Mean	515.6
570					5% K-S Critical Value	0.362					SD	480.2
571					**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean	182.9
572											95% KM (t) UCL	855.6
573					**Assuming Gamma Distribution**						95% KM (z) UCL	816.4
574					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	845.9
575					Minimum	140					95% KM (bootstrap t) UCL	1332
576					Maximum	1700					95% KM (BCA) UCL	800
577					Mean	703					95% KM (Percentile Bootstrap) UCL	860
578					Median	701.7					95% KM (Chebyshev) UCL	1313
579					SD	452.3					97.5% KM (Chebyshev) UCL	1658
580					k star	1.844					99% KM (Chebyshev) UCL	2335
581					Theta star	381.3						
582					Nu star	33.18					**Potential UCLs to Use**	
583					AppChi2	21.01					95% KM (t) UCL	855.6
584					95% Gamma Approximate UCL	1110					95% KM (Percentile Bootstrap) UCL	860
585					95% Adjusted Gamma UCL	1228						
586	**Note: DL/2 is not a recommended method.**											
587												
588	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
589	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
590	**For additional insight, the user may want to consult a statistician.**											
591												
592												
593	**CHRYSENE**											
594												
595	**General Statistics**											
596					Number of Valid Data	68					Number of Detected Data	32
597					Number of Distinct Detected Data	29					Number of Non-Detect Data	36
598					Number of Missing Values	1					Percent Non-Detects	52.94%
599												
600	**Raw Statistics**						**Log-transformed Statistics**					

	A	B	C	D	E	F	G	H	I	J	K	L
601					Minimum Detected	20					Minimum Detected	2.996
602					Maximum Detected	37000					Maximum Detected	10.52
603					Mean of Detected	2727					Mean of Detected	6.686
604					SD of Detected	6632					SD of Detected	1.519
605					Minimum Non-Detect	0.48					Minimum Non-Detect	-0.734
606					Maximum Non-Detect	1000					Maximum Non-Detect	6.908
607												
608	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	55
609	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	13
610	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	80.88%
611												
612	**UCL Statistics**											
613	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
614					Shapiro Wilk Test Statistic	0.407					Shapiro Wilk Test Statistic	0.977
615					5% Shapiro Wilk Critical Value	0.93					5% Shapiro Wilk Critical Value	0.93
616	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
617												
618	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
619					DL/2 Substitution Method						DL/2 Substitution Method	
620					Mean	1414					Mean	5.536
621					SD	4682					SD	2.272
622					95% DL/2 (t) UCL	2361					95% H-Stat (DL/2) UCL	7891
623												
624					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
625	**MLE yields a negative mean**										Mean in Log Scale	5.405
626											SD in Log Scale	1.697
627											Mean in Original Scale	1333
628											SD in Original Scale	4702
629											95% t UCL	2284
630											95% Percentile Bootstrap UCL	2406
631											95% BCA Bootstrap UCL	3217
632												
633	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
634					k star (bias corrected)	0.488	**Data appear Lognormal at 5% Significance Level**					
635					Theta Star	5585						
636					nu star	31.25						
637												
638					A-D Test Statistic	1.776	**Nonparametric Statistics**					
639					5% A-D Critical Value	0.809					Kaplan-Meier (KM) Method	
640					K-S Test Statistic	0.809					Mean	1362
641					5% K-S Critical Value	0.164					SD	4661
642	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	574.6
643											95% KM (t) UCL	2320
644	**Assuming Gamma Distribution**										95% KM (z) UCL	2307
645					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	2295
646					Minimum	1E-12					95% KM (bootstrap t) UCL	4050
647					Maximum	37000					95% KM (BCA) UCL	2755
648					Mean	2172					95% KM (Percentile Bootstrap) UCL	2436
649					Median	965					95% KM (Chebyshev) UCL	3867
650					SD	4714					97.5% KM (Chebyshev) UCL	4950

651					k star	0.148					99% KM (Chebyshev) UCL	7079
652					Theta star	14649						
653					Nu star	20.16					**Potential UCLs to Use**	
654					AppChi2	10.97					95% KM (Chebyshev) UCL	3867
655					95% Gamma Approximate UCL	3991						
656					95% Adjusted Gamma UCL	4045						
657	**Note: DL/2 is not a recommended method.**											
658												
659	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
660	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
661	**For additional insight, the user may want to consult a statistician.**											
662												
663												
664	**DIBENZO(A,H)ANTHRACENE**											
665												
666	**General Statistics**											
667	Number of Valid Data					68	Number of Detected Data					17
668	Number of Distinct Detected Data					17	Number of Non-Detect Data					51
669	Number of Missing Values					1	Percent Non-Detects					75.00%
670												
671	**Raw Statistics**						**Log-transformed Statistics**					
672	Minimum Detected					4.7	Minimum Detected					1.548
673	Maximum Detected					1400	Maximum Detected					7.244
674	Mean of Detected					487.2	Mean of Detected					5.628
675	SD of Detected					422.1	SD of Detected					1.39
676	Minimum Non-Detect					0.45	Minimum Non-Detect					-0.799
677	Maximum Non-Detect					1100	Maximum Non-Detect					7.003
678												
679	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					66
680	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					2
681	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					97.06%
682												
683	**UCL Statistics**											
684	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
685	Shapiro Wilk Test Statistic					0.896	Shapiro Wilk Test Statistic					0.871
686	5% Shapiro Wilk Critical Value					0.892	5% Shapiro Wilk Critical Value					0.892
687	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
688												
689	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
690	DL/2 Substitution Method						DL/2 Substitution Method					
691	Mean					331.4	Mean					5.033
692	SD					264.6	SD					2.001
693	95% DL/2 (t) UCL					385	95% H-Stat (DL/2) UCL					2337
694												
695	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
696	**MLE method failed to converge properly**						Mean in Log Scale					4.185
697							SD in Log Scale					1.215
698							Mean in Original Scale					159.1
699							SD in Original Scale					282.5
700							95% t UCL					216.2

701											95% Percentile Bootstrap UCL	219.4
702											95% BCA Bootstrap UCL	228.1
703												
704	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
705					k star (bias corrected)	0.885	**Data appear Normal at 5% Significance Level**					
706					Theta Star	550.7						
707					nu star	30.08						
708												
709					A-D Test Statistic	0.238	**Nonparametric Statistics**					
710					5% A-D Critical Value	0.765					Kaplan-Meier (KM) Method	
711					K-S Test Statistic	0.765					Mean	194
712					5% K-S Critical Value	0.215					SD	295.7
713	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	43.66
714											95% KM (t) UCL	266.8
715	**Assuming Gamma Distribution**										95% KM (z) UCL	265.8
716					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	257.4
717					Minimum	4.7					95% KM (bootstrap t) UCL	270.8
718					Maximum	1400					95% KM (BCA) UCL	306.3
719					Mean	500.9					95% KM (Percentile Bootstrap) UCL	286.2
720					Median	530.1					95% KM (Chebyshev) UCL	384.3
721					SD	309.8					97.5% KM (Chebyshev) UCL	466.6
722					k star	1.898					99% KM (Chebyshev) UCL	628.4
723					Theta star	263.9						
724					Nu star	258.1	**Potential UCLs to Use**					
725					AppChi2	221.9					95% KM (t) UCL	266.8
726					95% Gamma Approximate UCL	582.6					95% KM (Percentile Bootstrap) UCL	286.2
727					95% Adjusted Gamma UCL	584.5						
728	**Note: DL/2 is not a recommended method.**											
729												
730	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
731	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
732	**For additional insight, the user may want to consult a statistician.**											
733												
734												
735	**DIBENZOFURAN**											
736												
737	**General Statistics**											
738					Number of Valid Data	9					Number of Detected Data	2
739					Number of Distinct Detected Data	2					Number of Non-Detect Data	7
740											Percent Non-Detects	77.78%
741												
742	**Raw Statistics**						**Log-transformed Statistics**					
743					Minimum Detected	240					Minimum Detected	5.481
744					Maximum Detected	330					Maximum Detected	5.799
745					Mean of Detected	285					Mean of Detected	5.64
746					SD of Detected	63.64					SD of Detected	0.225
747					Minimum Non-Detect	460					Minimum Non-Detect	6.131
748					Maximum Non-Detect	1000					Maximum Non-Detect	6.908
749												
750	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	9

	A	B	C	D	E	F	G	H	I	J	K	L
751	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
752	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
753												
754	**Warning: Data set has only 2 Distinct Detected Values.**											
755	**This may not be adequate enough to compute meaningful and reliable test statistics and estimates.**											
756	**The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**											
757												
758	**Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.**											
759												
760	**The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.**											
761	**Those methods will return a 'N/A' value on your output display!**											
762												
763	**It is necessary to have 4 or more Distinct Values for bootstrap methods.**											
764	**However, results obtained using 4 to 9 distinct values may not be reliable.**											
765	**It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.**											
766												
767												
768	**UCL Statistics**											
769	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
770	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
771	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
772	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
773												
774	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
775	DL/2 Substitution Method						DL/2 Substitution Method					
776	Mean					331.1	Mean					5.768
777	SD					93.57	SD					0.275
778	95% DL/2 (t) UCL					389.1	95% H-Stat (DL/2) UCL					402.8
779												
780	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
781	**MLE method failed to converge properly**						Mean in Log Scale					N/A
782							SD in Log Scale					N/A
783							Mean in Original Scale					N/A
784							SD in Original Scale					N/A
785							95% t UCL					N/A
786							95% Percentile Bootstrap UCL					N/A
787							95% BCA Bootstrap UCL					N/A
788												
789	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
790	k star (bias corrected)					N/A	**Data do not follow a Discernable Distribution (0.05)**					
791	Theta Star					N/A						
792	nu star					N/A						
793												
794	A-D Test Statistic					N/A	**Nonparametric Statistics**					
795	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
796	K-S Test Statistic					N/A	Mean					285
797	5% K-S Critical Value					N/A	SD					45
798	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					45
799							95% KM (t) UCL					368.7
800	**Assuming Gamma Distribution**						95% KM (z) UCL					359

801	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	396.6
802					Minimum	N/A					95% KM (bootstrap t) UCL	N/A
803					Maximum	N/A					95% KM (BCA) UCL	N/A
804					Mean	N/A					95% KM (Percentile Bootstrap) UCL	330
805					Median	N/A					95% KM (Chebyshev) UCL	481.2
806					SD	N/A					97.5% KM (Chebyshev) UCL	566
807					k star	N/A					99% KM (Chebyshev) UCL	732.7
808					Theta star	N/A						
809					Nu star	N/A	**Potential UCLs to Use**					
810					AppChi2	N/A					95% KM (t) UCL	368.7
811				95% Gamma Approximate UCL		N/A					95% KM (% Bootstrap) UCL	330
812				95% Adjusted Gamma UCL		N/A						
813	**Warning: Recommended UCL exceeds the maximum observation**											
814	**Note: DL/2 is not a recommended method.**											
815												
816	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
817	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
818	**For additional insight, the user may want to consult a statistician.**											
819												
820												
821	**FLUORANTHENE**											
822												
823	**General Statistics**											
824					Number of Valid Data	68					Number of Detected Data	36
825					Number of Distinct Detected Data	32					Number of Non-Detect Data	32
826					Number of Missing Values	1					Percent Non-Detects	47.06%
827												
828	**Raw Statistics**						**Log-transformed Statistics**					
829					Minimum Detected	3.6					Minimum Detected	1.281
830					Maximum Detected	78000					Maximum Detected	11.26
831					Mean of Detected	4494					Mean of Detected	6.808
832					SD of Detected	13119					SD of Detected	1.869
833					Minimum Non-Detect	0.43					Minimum Non-Detect	-0.844
834					Maximum Non-Detect	1000					Maximum Non-Detect	6.908
835												
836	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	54
837	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	14
838	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	79.41%
839												
840	**UCL Statistics**											
841	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
842					Shapiro Wilk Test Statistic	0.347					Shapiro Wilk Test Statistic	0.974
843					5% Shapiro Wilk Critical Value	0.935					5% Shapiro Wilk Critical Value	0.935
844	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
845												
846	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
847					DL/2 Substitution Method						DL/2 Substitution Method	
848					Mean	2496					Mean	5.752
849					SD	9720					SD	2.35
850					95% DL/2 (t) UCL	4462					95% H-Stat (DL/2) UCL	12059

851												
852				Maximum Likelihood Estimate(MLE) Method		N/A					Log ROS Method	
853				**MLE yields a negative mean**							Mean in Log Scale	5.393
854											SD in Log Scale	2.124
855											Mean in Original Scale	2409
856											SD in Original Scale	9740
857											95% t UCL	4379
858											95% Percentile Bootstrap UCL	4756
859											95% BCA Bootstrap UCL	6025
860												
861				**Gamma Distribution Test with Detected Values Only**							**Data Distribution Test with Detected Values Only**	
862						k star (bias corrected)	0.394				**Data appear Lognormal at 5% Significance Level**	
863						Theta Star	11420					
864						nu star	28.33					
865												
866						A-D Test Statistic	1.912				**Nonparametric Statistics**	
867						5% A-D Critical Value	0.833				Kaplan-Meier (KM) Method	
868						K-S Test Statistic	0.833				Mean	2446
869						5% K-S Critical Value	0.157				SD	9660
870				**Data not Gamma Distributed at 5% Significance Level**							SE of Mean	1188
871											95% KM (t) UCL	4428
872				**Assuming Gamma Distribution**							95% KM (z) UCL	4400
873				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	4408
874						Minimum	3.6				95% KM (bootstrap t) UCL	9155
875						Maximum	78000				95% KM (BCA) UCL	4752
876						Mean	4222				95% KM (Percentile Bootstrap) UCL	4597
877						Median	3144				95% KM (Chebyshev) UCL	7625
878						SD	9500				97.5% KM (Chebyshev) UCL	9866
879						k star	0.682				99% KM (Chebyshev) UCL	14269
880						Theta star	6189					
881						Nu star	92.77				**Potential UCLs to Use**	
882						AppChi2	71.55				97.5% KM (Chebyshev) UCL	9866
883						95% Gamma Approximate UCL	5473					
884						95% Adjusted Gamma UCL	5504					
885	**Note: DL/2 is not a recommended method.**											
886												
887	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
888	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
889	**For additional insight, the user may want to consult a statistician.**											
890												
891												
892	**INDENO(1,2,3-CD)PYRENE**											
893												
894	**General Statistics**											
895						Number of Valid Data	68				Number of Detected Data	28
896						Number of Distinct Detected Data	26				Number of Non-Detect Data	40
897						Number of Missing Values	1				Percent Non-Detects	58.82%
898												
899	**Raw Statistics**							**Log-transformed Statistics**				
900						Minimum Detected	70				Minimum Detected	4.248

	A	B	C	D	E	F	G	H	I	J	K	L
901					Maximum Detected	12000					Maximum Detected	9.393
902					Mean of Detected	1382					Mean of Detected	6.385
903					SD of Detected	2359					SD of Detected	1.299
904					Minimum Non-Detect	0.42					Minimum Non-Detect	-0.868
905					Maximum Non-Detect	1000					Maximum Non-Detect	6.908
906												
907	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	59
908	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	9
909	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	86.76%
910												
911	**UCL Statistics**											
912	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
913					Shapiro Wilk Test Statistic	0.552					Shapiro Wilk Test Statistic	0.971
914					5% Shapiro Wilk Critical Value	0.924					5% Shapiro Wilk Critical Value	0.924
915	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
916												
917	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
918					DL/2 Substitution Method						DL/2 Substitution Method	
919					Mean	718.5					Mean	5.343
920					SD	1603					SD	2.141
921					95% DL/2 (t) UCL	1043					95% H-Stat (DL/2) UCL	4591
922												
923					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
924	**MLE yields a negative mean**										Mean in Log Scale	5.22
925											SD in Log Scale	1.39
926											Mean in Original Scale	629.2
927											SD in Original Scale	1627
928											95% t UCL	958.3
929											95% Percentile Bootstrap UCL	1002
930											95% BCA Bootstrap UCL	1245
931												
932	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
933					k star (bias corrected)	0.66	**Data appear Lognormal at 5% Significance Level**					
934					Theta Star	2094						
935					nu star	36.95						
936												
937					A-D Test Statistic	1.004	**Nonparametric Statistics**					
938					5% A-D Critical Value	0.789					Kaplan-Meier (KM) Method	
939					K-S Test Statistic	0.789					Mean	670.7
940					5% K-S Critical Value	0.172					SD	1606
941	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	199.2
942											95% KM (t) UCL	1003
943	**Assuming Gamma Distribution**										95% KM (z) UCL	998.3
944	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	997.6
945					Minimum	70					95% KM (bootstrap t) UCL	1369
946					Maximum	12000					95% KM (BCA) UCL	1068
947					Mean	1369					95% KM (Percentile Bootstrap) UCL	1015
948					Median	1269					95% KM (Chebyshev) UCL	1539
949					SD	1504					97.5% KM (Chebyshev) UCL	1914
950					k star	1.503					99% KM (Chebyshev) UCL	2652

951					Theta star	911.1						
952					Nu star	204.4	**Potential UCLs to Use**					
953					AppChi2	172.3					95% KM (BCA) UCL	1068
954				95% Gamma Approximate UCL		1624						
955				95% Adjusted Gamma UCL		1630						
956	**Note: DL/2 is not a recommended method.**											
957												
958	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
959	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
960	**For additional insight, the user may want to consult a statistician.**											
961												
962												
963	**PHENANTHRENE**											
964												
965	**General Statistics**											
966					Number of Valid Data	68					Number of Detected Data	36
967					Number of Distinct Detected Data	34					Number of Non-Detect Data	32
968					Number of Missing Values	1					Percent Non-Detects	47.06%
969												
970	**Raw Statistics**						**Log-transformed Statistics**					
971					Minimum Detected	1.2					Minimum Detected	0.182
972					Maximum Detected	76000					Maximum Detected	11.24
973					Mean of Detected	3267					Mean of Detected	5.852
974					SD of Detected	12627					SD of Detected	2.317
975					Minimum Non-Detect	5.8					Minimum Non-Detect	1.758
976					Maximum Non-Detect	1100					Maximum Non-Detect	7.003
977												
978	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	57
979	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	11
980	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	83.82%
981												
982	**UCL Statistics**											
983	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
984					Shapiro Wilk Test Statistic	0.262					Shapiro Wilk Test Statistic	0.939
985					5% Shapiro Wilk Critical Value	0.935					5% Shapiro Wilk Critical Value	0.935
986	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
987												
988	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
989					DL/2 Substitution Method						DL/2 Substitution Method	
990					Mean	1862					Mean	5.555
991					SD	9250					SD	1.953
992					95% DL/2 (t) UCL	3733					95% H-Stat (DL/2) UCL	3468
993												
994					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
995	**MLE yields a negative mean**										Mean in Log Scale	4.944
996											SD in Log Scale	2.028
997											Mean in Original Scale	1762
998											SD in Original Scale	9267
999											95% t UCL	3636
1000											95% Percentile Bootstrap UCL	3910

1001											95% BCA Bootstrap UCL	5229
1002												
1003	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1004					k star (bias corrected)	0.3	**Data appear Lognormal at 5% Significance Level**					
1005					Theta Star	10898						
1006					nu star	21.58						
1007												
1008					A-D Test Statistic	2.363	**Nonparametric Statistics**					
1009					5% A-D Critical Value	0.855					Kaplan-Meier (KM) Method	
1010					K-S Test Statistic	0.855					Mean	1805
1011					5% K-S Critical Value	0.159					SD	9192
1012	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	1131
1013											95% KM (t) UCL	3691
1014	**Assuming Gamma Distribution**										95% KM (z) UCL	3665
1015				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	3678
1016					Minimum	1.2					95% KM (bootstrap t) UCL	13952
1017					Maximum	76000					95% KM (BCA) UCL	4092
1018					Mean	3347					95% KM (Percentile Bootstrap) UCL	4082
1019					Median	3117					95% KM (Chebyshev) UCL	6733
1020					SD	9128					97.5% KM (Chebyshev) UCL	8866
1021					k star	0.517					99% KM (Chebyshev) UCL	13054
1022					Theta star	6474						
1023					Nu star	70.3	**Potential UCLs to Use**					
1024					AppChi2	52					97.5% KM (Chebyshev) UCL	8866
1025					95% Gamma Approximate UCL	4524						
1026					95% Adjusted Gamma UCL	4554						
1027	**Note: DL/2 is not a recommended method.**											
1028												
1029	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1030	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1031	**For additional insight, the user may want to consult a statistician.**											
1032												
1033												
1034	**PYRENE**											
1035												
1036	**General Statistics**											
1037					Number of Valid Data	68					Number of Detected Data	35
1038					Number of Distinct Detected Data	34					Number of Non-Detect Data	33
1039					Number of Missing Values	1					Percent Non-Detects	48.53%
1040												
1041	**Raw Statistics**						**Log-transformed Statistics**					
1042					Minimum Detected	2.2					Minimum Detected	0.788
1043					Maximum Detected	76000					Maximum Detected	11.24
1044					Mean of Detected	5016					Mean of Detected	7.061
1045					SD of Detected	13194					SD of Detected	1.913
1046					Minimum Non-Detect	0.41					Minimum Non-Detect	-0.892
1047					Maximum Non-Detect	1000					Maximum Non-Detect	6.908
1048												
1049	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	49
1050	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	19

1051	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	72.06%
1052												
1053	**UCL Statistics**											
1054	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1055	Shapiro Wilk Test Statistic					0.383	Shapiro Wilk Test Statistic					0.941
1056	5% Shapiro Wilk Critical Value					0.934	5% Shapiro Wilk Critical Value					0.934
1057	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1058												
1059	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1060	DL/2 Substitution Method						DL/2 Substitution Method					
1061	Mean					2703	Mean					5.86
1062	SD					9701	SD					2.428
1063	95% DL/2 (t) UCL					4665	95% H-Stat (DL/2) UCL					16616
1064												
1065	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1066	**MLE yields a negative mean**						Mean in Log Scale					5.321
1067							SD in Log Scale					2.337
1068							Mean in Original Scale					2604
1069							SD in Original Scale					9727
1070							95% t UCL					4571
1071							95% Percentile Bootstrap UCL					4743
1072							95% BCA Bootstrap UCL					6359
1073												
1074	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1075	k star (bias corrected)					0.425	**Data appear Lognormal at 5% Significance Level**					
1076	Theta Star					11815						
1077	nu star					29.72						
1078												
1079	A-D Test Statistic					1.555	**Nonparametric Statistics**					
1080	5% A-D Critical Value					0.825	Kaplan-Meier (KM) Method					
1081	K-S Test Statistic					0.825	Mean					2636
1082	5% K-S Critical Value					0.158	SD					9647
1083	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					1187
1084							95% KM (t) UCL					4616
1085	**Assuming Gamma Distribution**						95% KM (z) UCL					4589
1086	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					4597
1087	Minimum					2.2	95% KM (bootstrap t) UCL					9501
1088	Maximum					76000	95% KM (BCA) UCL					5134
1089	Mean					4568	95% KM (Percentile Bootstrap) UCL					4977
1090	Median					3542	95% KM (Chebyshev) UCL					7811
1091	SD					9429	97.5% KM (Chebyshev) UCL					10050
1092	k star					0.754	99% KM (Chebyshev) UCL					14448
1093	Theta star					6062						
1094	Nu star					102.5	**Potential UCLs to Use**					
1095	AppChi2					80.13	97.5% KM (Chebyshev) UCL					10050
1096	95% Gamma Approximate UCL					5843						
1097	95% Adjusted Gamma UCL					5874						
1098	**Note: DL/2 is not a recommended method.**											
1099												
1100	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											

	A	B	C	D	E	F	G	H	I	J	K	L
1101	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1102	For additional insight, the user may want to consult a statistician.											
1103												
1104												
1105	AROCLOR-1248											
1106												
1107	General Statistics											
1108						Number of Valid Data	68			Number of Detected Data		1
1109						Number of Distinct Detected Data	1			Number of Non-Detect Data		67
1110						Number of Missing Values	1			Percent Non-Detects		98.53%
1111												
1112	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
1113	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
1114												
1115	The data set for variable AROCLOR-1248 was not processed!											
1116												
1117												
1118												
1119	AROCLOR-1254											
1120												
1121	General Statistics											
1122						Number of Valid Data	68			Number of Detected Data		0
1123						Number of Distinct Detected Data	0			Number of Non-Detect Data		68
1124						Number of Missing Values	1			Percent Non-Detects		100.00%
1125												
1126	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
1127	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
1128	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1129												
1130	The data set for variable AROCLOR-1254 was not processed!											
1131												
1132												
1133												
1134	AROCLOR-1260											
1135												
1136	General Statistics											
1137						Number of Valid Data	68			Number of Detected Data		26
1138						Number of Distinct Detected Data	25			Number of Non-Detect Data		42
1139						Number of Missing Values	1			Percent Non-Detects		61.76%
1140												
1141	Raw Statistics									Log-transformed Statistics		
1142						Minimum Detected	28			Minimum Detected		3.332
1143						Maximum Detected	1300			Maximum Detected		7.17
1144						Mean of Detected	372.4			Mean of Detected		5.426
1145						SD of Detected	351.5			SD of Detected		1.079
1146						Minimum Non-Detect	1.4			Minimum Non-Detect		0.336
1147						Maximum Non-Detect	56			Maximum Non-Detect		4.025
1148												
1149	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		44
1150	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		24

1151	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	64.71%
1152												
1153	**UCL Statistics**											
1154	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1155	Shapiro Wilk Test Statistic					0.842	Shapiro Wilk Test Statistic					0.952
1156	5% Shapiro Wilk Critical Value					0.92	5% Shapiro Wilk Critical Value					0.92
1157	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1158												
1159	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1160	DL/2 Substitution Method						DL/2 Substitution Method					
1161	Mean					150.7	Mean					3.424
1162	SD					277.5	SD					1.945
1163	95% DL/2 (t) UCL					206.9	95% H-Stat (DL/2) UCL					403.6
1164												
1165	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1166	**MLE yields a negative mean**						Mean in Log Scale					3.544
1167							SD in Log Scale					1.673
1168							Mean in Original Scale					149.8
1169							SD in Original Scale					278
1170							95% t UCL					206
1171							95% Percentile Bootstrap UCL					210.3
1172							95% BCA Bootstrap UCL					221.1
1173												
1174	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1175	k star (bias corrected)					1.043	**Data appear Gamma Distributed at 5% Significance Level**					
1176	Theta Star					357.1						
1177	nu star					54.23						
1178												
1179	A-D Test Statistic					0.597	**Nonparametric Statistics**					
1180	5% A-D Critical Value					0.77	Kaplan-Meier (KM) Method					
1181	K-S Test Statistic					0.77	Mean					159.7
1182	5% K-S Critical Value					0.176	SD					271
1183	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					33.51
1184							95% KM (t) UCL					215.6
1185	**Assuming Gamma Distribution**						95% KM (z) UCL					214.8
1186	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					207.2
1187	Minimum					28	95% KM (bootstrap t) UCL					224.7
1188	Maximum					1300	95% KM (BCA) UCL					244.1
1189	Mean					369	95% KM (Percentile Bootstrap) UCL					227.2
1190	Median					359.4	95% KM (Chebyshev) UCL					305.8
1191	SD					221.3	97.5% KM (Chebyshev) UCL					369
1192	k star					2.549	99% KM (Chebyshev) UCL					493.2
1193	Theta star					144.8						
1194	Nu star					346.7	**Potential UCLs to Use**					
1195	AppChi2					304.6	95% KM (t) UCL					215.6
1196	95% Gamma Approximate UCL					420.1						
1197	95% Adjusted Gamma UCL					421.3						
1198	**Note: DL/2 is not a recommended method.**											
1199												
1200	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											

	A	B	C	D	E	F	G	H	I	J	K	L
1201	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1202	For additional insight, the user may want to consult a statistician.											
1203												
1204												
1205	HEXAVALENT CHROMIUM											
1206												
1207	General Statistics											
1208					Number of Valid Data	10				Number of Detected Data		0
1209					Number of Distinct Detected Data	0				Number of Non-Detect Data		10
1210										Percent Non-Detects		100.00%
1211												
1212	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
1213	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
1214	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1215												
1216	The data set for variable HEXAVALENT CHROMIUM was not processed!											
1217												
1218												
1219												
1220												

1				General UCL Statistics for Data Sets with Non-Detects								
2		User Selected Options										
3		From File		Converted_Data.wst								
4		Full Precision		OFF								
5		Confidence Coefficient		95%								
6		Number of Bootstrap Operations		2000								
7												
8												
9	ANTIMONY											
10												
11				General Statistics								
12				Number of Valid Data		69			Number of Detected Data			33
13				Number of Distinct Detected Data		29			Number of Non-Detect Data			36
14									Percent Non-Detects			52.17%
15												
16				Raw Statistics					Log-transformed Statistics			
17				Minimum Detected		0.048			Minimum Detected			-3.037
18				Maximum Detected		132			Maximum Detected			4.883
19				Mean of Detected		5.488			Mean of Detected			0.128
20				SD of Detected		22.75			SD of Detected			1.346
21				Minimum Non-Detect		0.05			Minimum Non-Detect			-2.996
22				Maximum Non-Detect		0.97			Maximum Non-Detect			-0.0305
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended								Number treated as Non-Detect			53
25	For all methods (except KM, DL/2, and ROS Methods),								Number treated as Detected			16
26	Observations < Largest ND are treated as NDs								Single DL Non-Detect Percentage			76.81%
27												
28				UCL Statistics								
29				Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only			
30				Shapiro Wilk Test Statistic		0.221			Shapiro Wilk Test Statistic			0.925
31				5% Shapiro Wilk Critical Value		0.931			5% Shapiro Wilk Critical Value			0.931
32				Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level			
33												
34				Assuming Normal Distribution					Assuming Lognormal Distribution			
35				DL/2 Substitution Method					DL/2 Substitution Method			
36				Mean		2.698			Mean			-1.119
37				SD		15.84			SD			1.617
38				95% DL/2 (t) UCL		5.878			95% H-Stat (DL/2) UCL			1.957
39												
40				Maximum Likelihood Estimate(MLE) Method		N/A			Log ROS Method			
41				MLE yields a negative mean					Mean in Log Scale			-1.386
42									SD in Log Scale			1.75
43									Mean in Original Scale			2.659
44									SD in Original Scale			15.85
45									95% t UCL			5.84
46									95% Percentile Bootstrap UCL			6.441
47									95% BCA Bootstrap UCL			8.581
48												
49				Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only			
50				k star (bias corrected)		0.398			Data do not follow a Discernable Distribution (0.05)			

51					Theta Star	13.79						
52					nu star	26.26						
53												
54					A-D Test Statistic	4.558	**Nonparametric Statistics**					
55					5% A-D Critical Value	0.83				Kaplan-Meier (KM) Method		
56					K-S Test Statistic	0.83				Mean		2.663
57					5% K-S Critical Value	0.164				SD		15.73
58	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		1.923
59										95% KM (t) UCL		5.87
60	**Assuming Gamma Distribution**									95% KM (z) UCL		5.826
61			Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL		5.79
62					Minimum	1E-12				95% KM (bootstrap t) UCL		35.36
63					Maximum	132				95% KM (BCA) UCL		6.791
64					Mean	4.193				95% KM (Percentile Bootstrap) UCL		6.459
65					Median	0.93				95% KM (Chebyshev) UCL		11.05
66					SD	15.87				97.5% KM (Chebyshev) UCL		14.67
67					k star	0.132				99% KM (Chebyshev) UCL		21.8
68					Theta star	31.88						
69					Nu star	18.15	**Potential UCLs to Use**					
70					AppChi2	9.5				95% KM (BCA) UCL		6.791
71					95% Gamma Approximate UCL	8.011						
72					95% Adjusted Gamma UCL	8.126						
73	**Note: DL/2 is not a recommended method.**											
74												
75	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
76	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
77	**For additional insight, the user may want to consult a statistician.**											
78												
79												
80	**CADMIUM**											
81												
82	**General Statistics**											
83					Number of Valid Data	69				Number of Detected Data		63
84					Number of Distinct Detected Data	60				Number of Non-Detect Data		6
85										Percent Non-Detects		8.70%
86												
87	**Raw Statistics**						**Log-transformed Statistics**					
88					Minimum Detected	0.016				Minimum Detected		-4.135
89					Maximum Detected	296				Maximum Detected		5.69
90					Mean of Detected	21.73				Mean of Detected		1.246
91					SD of Detected	45.76				SD of Detected		2.434
92					Minimum Non-Detect	0.0074				Minimum Non-Detect		-4.906
93					Maximum Non-Detect	0.13				Maximum Non-Detect		-2.04
94												
95	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		13
96	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		56
97	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		18.84%
98												
99	**UCL Statistics**											
100	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					

101					Lilliefors Test Statistic	0.318					Lilliefors Test Statistic	0.158
102					5% Lilliefors Critical Value	0.112					5% Lilliefors Critical Value	0.112
103	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
104												
105	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
106					DL/2 Substitution Method						DL/2 Substitution Method	
107					Mean	19.84					Mean	0.722
108					SD	44.13					SD	2.902
109					95% DL/2 (t) UCL	28.7					95% H-Stat (DL/2) UCL	468.7
110												
111					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
112					Mean	13.12					Mean in Log Scale	0.796
113					SD	50.27					SD in Log Scale	2.754
114					95% MLE (t) UCL	23.22					Mean in Original Scale	19.84
115					95% MLE (Tiku) UCL	22.92					SD in Original Scale	44.13
116											95% t UCL	28.7
117											95% Percentile Bootstrap UCL	29.64
118											95% BCA Bootstrap UCL	33.65
119												
120	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
121					k star (bias corrected)	0.358	**Data do not follow a Discernable Distribution (0.05)**					
122					Theta Star	60.73						
123					nu star	45.08						
124												
125					A-D Test Statistic	1.264	**Nonparametric Statistics**					
126					5% A-D Critical Value	0.849	Kaplan-Meier (KM) Method					
127					K-S Test Statistic	0.849	Mean					19.84
128					5% K-S Critical Value	0.121	SD					43.81
129	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					5.316
130							95% KM (t) UCL					28.71
131	**Assuming Gamma Distribution**						95% KM (z) UCL					28.59
132					Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL					28.7
133					Minimum	1E-12	95% KM (bootstrap t) UCL					40.89
134					Maximum	296	95% KM (BCA) UCL					29.95
135					Mean	19.84	95% KM (Percentile Bootstrap) UCL					29.62
136					Median	2.6	95% KM (Chebyshev) UCL					43.01
137					SD	44.13	97.5% KM (Chebyshev) UCL					53.04
138					k star	0.178	99% KM (Chebyshev) UCL					72.73
139					Theta star	111.2						
140					Nu star	24.62	**Potential UCLs to Use**					
141					AppChi2	14.32	97.5% KM (Chebyshev) UCL					53.04
142					95% Gamma Approximate UCL	34.11						
143					95% Adjusted Gamma UCL	34.51						
144	**Note: DL/2 is not a recommended method.**											
145												
146	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
147	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
148	**For additional insight, the user may want to consult a statistician.**											
149												
150												

151	**MERCURY**											
152												
153	**General Statistics**											
154					Number of Valid Data	69				Number of Detected Data		60
155					Number of Distinct Detected Data	50				Number of Non-Detect Data		9
156										Percent Non-Detects		13.04%
157												
158	**Raw Statistics**						**Log-transformed Statistics**					
159					Minimum Detected	0.0079				Minimum Detected		-4.841
160					Maximum Detected	6.1				Maximum Detected		1.808
161					Mean of Detected	0.943				Mean of Detected		-1.162
162					SD of Detected	1.27				SD of Detected		1.758
163					Minimum Non-Detect	0.0066				Minimum Non-Detect		-5.021
164					Maximum Non-Detect	0.054				Maximum Non-Detect		-2.919
165												
166	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		24
167	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		45
168	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		34.78%
169												
170	**UCL Statistics**											
171	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
172					Lilliefors Test Statistic	0.231				Lilliefors Test Statistic		0.107
173					5% Lilliefors Critical Value	0.114				5% Lilliefors Critical Value		0.114
174	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
175												
176	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
177					DL/2 Substitution Method					DL/2 Substitution Method		
178					Mean	0.822				Mean		-1.602
179					SD	1.224				SD		2.012
180					95% DL/2 (t) UCL	1.068				95% H-Stat (DL/2) UCL		3.121
181												
182					Maximum Likelihood Estimate(MLE) Method					Log ROS Method		
183					Mean	0.417				Mean in Log Scale		-1.6
184					SD	1.654				SD in Log Scale		2.011
185					95% MLE (t) UCL	0.749				Mean in Original Scale		0.822
186					95% MLE (Tiku) UCL	0.775				SD in Original Scale		1.224
187										95% t UCL		1.068
188										95% Percentile Bootstrap UCL		1.08
189										95% BCA Bootstrap UCL		1.099
190												
191	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
192					k star (bias corrected)	0.548	**Data appear Gamma Distributed at 5% Significance Level**					
193					Theta Star	1.723						
194					nu star	65.71						
195												
196					A-D Test Statistic	0.696	**Nonparametric Statistics**					
197					5% A-D Critical Value	0.81				Kaplan-Meier (KM) Method		
198					K-S Test Statistic	0.81				Mean		0.822
199					5% K-S Critical Value	0.121				SD		1.215
200	**Data appear Gamma Distributed at 5% Significance Level**									SE of Mean		0.148

201											95% KM (t) UCL	1.068
202	**Assuming Gamma Distribution**										95% KM (z) UCL	1.065
203	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	1.067
204	Minimum	1E-12									95% KM (bootstrap t) UCL	1.153
205	Maximum	6.1									95% KM (BCA) UCL	1.065
206	Mean	0.82									95% KM (Percentile Bootstrap) UCL	1.083
207	Median	0.25									95% KM (Chebyshev) UCL	1.465
208	SD	1.225									97.5% KM (Chebyshev) UCL	1.743
209	k star	0.173									99% KM (Chebyshev) UCL	2.29
210	Theta star	4.743										
211	Nu star	23.87									**Potential UCLs to Use**	
212	AppChi2	13.75									95% KM (Chebyshev) UCL	1.465
213	95% Gamma Approximate UCL	1.424										
214	95% Adjusted Gamma UCL	1.441										
215	**Note: DL/2 is not a recommended method.**											
216												
217	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
218	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
219	**For additional insight, the user may want to consult a statistician.**											
220												
221												
222	**SILVER**											
223												
224	**General Statistics**											
225	Number of Valid Data	69									Number of Detected Data	54
226	Number of Distinct Detected Data	51									Number of Non-Detect Data	15
227											Percent Non-Detects	21.74%
228												
229	**Raw Statistics**										**Log-transformed Statistics**	
230	Minimum Detected	0.0088									Minimum Detected	-4.733
231	Maximum Detected	55.8									Maximum Detected	4.022
232	Mean of Detected	9.956									Mean of Detected	0.915
233	SD of Detected	12.12									SD of Detected	2.324
234	Minimum Non-Detect	0.074									Minimum Non-Detect	-2.604
235	Maximum Non-Detect	0.46									Maximum Non-Detect	-0.777
236												
237	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	28
238	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	41
239	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	40.58%
240												
241	**UCL Statistics**											
242	**Normal Distribution Test with Detected Values Only**										**Lognormal Distribution Test with Detected Values Only**	
243	Lilliefors Test Statistic	0.206									Lilliefors Test Statistic	0.16
244	5% Lilliefors Critical Value	0.121									5% Lilliefors Critical Value	0.121
245	**Data not Normal at 5% Significance Level**										**Data not Lognormal at 5% Significance Level**	
246												
247	**Assuming Normal Distribution**										**Assuming Lognormal Distribution**	
248	DL/2 Substitution Method										DL/2 Substitution Method	
249	Mean	7.807									Mean	0.113
250	SD	11.46									SD	2.569

251				95% DL/2 (t) UCL	10.11					95% H-Stat (DL/2) UCL	78.21
252												
253			Maximum Likelihood Estimate(MLE) Method							Log ROS Method		
254				Mean	2.913					Mean in Log Scale	0.209	
255				SD	16.66					SD in Log Scale	2.463	
256				95% MLE (t) UCL	6.258					Mean in Original Scale	7.815	
257				95% MLE (Tiku) UCL	6.689					SD in Original Scale	11.46	
258										95% t UCL	10.11	
259										95% Percentile Bootstrap UCL	10.15	
260										95% BCA Bootstrap UCL	10.45	
261												
262			Gamma Distribution Test with Detected Values Only							Data Distribution Test with Detected Values Only		
263				k star (bias corrected)	0.451					Data appear Gamma Distributed at 5% Significance Level		
264				Theta Star	22.07							
265				nu star	48.71							
266												
267				A-D Test Statistic	0.715					Nonparametric Statistics		
268				5% A-D Critical Value	0.823					Kaplan-Meier (KM) Method		
269				K-S Test Statistic	0.823					Mean	7.803	
270				5% K-S Critical Value	0.129					SD	11.38	
271			Data appear Gamma Distributed at 5% Significance Level							SE of Mean	1.383	
272										95% KM (t) UCL	10.11	
273			Assuming Gamma Distribution							95% KM (z) UCL	10.08	
274				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	10.1	
275				Minimum	1E-12					95% KM (bootstrap t) UCL	10.6	
276				Maximum	55.8					95% KM (BCA) UCL	10.29	
277				Mean	7.818					95% KM (Percentile Bootstrap) UCL	10.12	
278				Median	2.5					95% KM (Chebyshev) UCL	13.83	
279				SD	11.46					97.5% KM (Chebyshev) UCL	16.44	
280				k star	0.138					99% KM (Chebyshev) UCL	21.56	
281				Theta star	56.54							
282				Nu star	19.08					Potential UCLs to Use		
283				AppChi2	10.18					95% KM (Chebyshev) UCL	13.83	
284				95% Gamma Approximate UCL	14.66							
285				95% Adjusted Gamma UCL	14.86							
286	Note: DL/2 is not a recommended method.											
287												
288	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
289	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
290	For additional insight, the user may want to consult a statistician.											
291												

	General UCL Statistics for Data Sets with Non-Detects	
User Selected Options		
From File	WorkSheet.wst	
Full Precision	OFF	
Confidence Coefficient	95%	
Number of Bootstrap Operations	2000	

DIBUTYLTIN

General Statistics

Number of Valid Data	6	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	3
Number of Missing Values	34	Percent Non-Detects	50.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	5.5	Minimum Detected	1.705
Maximum Detected	11	Maximum Detected	2.398
Mean of Detected	8.8	Mean of Detected	2.132
SD of Detected	2.91	SD of Detected	0.374
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	5.6	Maximum Non-Detect	1.723
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%

Warning: There are only 3 Distinct Detected Values in this data set

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.893	Shapiro Wilk Test Statistic	0.861
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.517	Mean	1.456
SD	4.057	SD	0.795
95% DL/2 (t) UCL	8.854	95% H-Stat (DL/2) UCL	20.13
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.683

51											SD in Log Scale	0.551
52											Mean in Original Scale	6.127
53											SD in Original Scale	3.47
54											95% t UCL	8.982
55											95% Percentile Bootstrap UCL	8.293
56											95% BCA Bootstrap UCL	8.599
57												
58	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
59					k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**					
60					Theta Star	N/A						
61					nu star	N/A						
62												
63					A-D Test Statistic	N/A	**Nonparametric Statistics**					
64					5% A-D Critical Value	N/A					Kaplan-Meier (KM) Method	
65					K-S Test Statistic	N/A					Mean	7.15
66					5% K-S Critical Value	N/A					SD	2.355
67	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	1.177
68											95% KM (t) UCL	9.523
69	**Assuming Gamma Distribution**										95% KM (z) UCL	9.087
70					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	10.43
71					Minimum	N/A					95% KM (bootstrap t) UCL	8.546
72					Maximum	N/A					95% KM (BCA) UCL	11
73					Mean	N/A					95% KM (Percentile Bootstrap) UCL	N/A
74					Median	N/A					95% KM (Chebyshev) UCL	12.28
75					SD	N/A					97.5% KM (Chebyshev) UCL	14.5
76					k star	N/A					99% KM (Chebyshev) UCL	18.87
77					Theta star	N/A						
78					Nu star	N/A	**Potential UCLs to Use**					
79					AppChi2	N/A					95% KM (t) UCL	9.523
80					95% Gamma Approximate UCL	N/A					95% KM (Percentile Bootstrap) UCL	N/A
81					95% Adjusted Gamma UCL	N/A						
82	**Note: DL/2 is not a recommended method.**											
83												
84	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
85	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
86	**For additional insight, the user may want to consult a statistician.**											
87												

	A	B	C	D	E	F	G	H	I	J	K	L
1				**General UCL Statistics for Data Sets with Non-Detects**								
2			**User Selected Options**									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	**DIBUTYLTIN**											
10												
11						**General Statistics**							
12						Number of Valid Data	3			Number of Detected Data		1
13						Number of Distinct Detected Data	1			Number of Non-Detect Data		2
14						Number of Missing Values	7			Percent Non-Detects		66.67%
15												
16						**Warning: This data set only has 3 observations!**							
17						**Data set is too small to compute reliable and meaningful statistics and estimates!**						
18						**The data set for variable DIBUTYLTIN was not processed!**						
19												
20						**It is suggested to collect at least 8 to 10 observations before using these statistical methods!**						
21						**If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.**						
22												
23												

	A	B	C	D	E	F	G	H	I	J	K	L
1				**General UCL Statistics for Data Sets with Non-Detects**								
2			**User Selected Options**									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	**DIBUTYLTIN**											
10												
11						**General Statistics**							
12						Number of Valid Data	3			Number of Detected Data		2
13						Number of Distinct Detected Data	2			Number of Non-Detect Data		1
14						Number of Missing Values	7			Percent Non-Detects		33.33%
15												
16						**Warning: This data set only has 3 observations!**							
17						**Data set is too small to compute reliable and meaningful statistics and estimates!**						
18						**The data set for variable DIBUTYLTIN was not processed!**						
19												
20						**It is suggested to collect at least 8 to 10 observations before using these statistical methods!**						
21						**If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.**						
22												
23												

	General UCL Statistics for Full Data Sets	
User Selected Options		
From File	Converted_Data.wst	
Full Precision	OFF	
Confidence Coefficient	95%	
Number of Bootstrap Operations	2000	

TOTAL AROCLOR

General Statistics

Number of Valid Observations	6	Number of Distinct Observations	6
Number of Missing Values	44		

Raw Statistics		**Log-transformed Statistics**	
Minimum	11	Minimum of Log Data	2.398
Maximum	120	Maximum of Log Data	4.787
Mean	44.33	Mean of log Data	3.345
Median	21	SD of log Data	1.022
SD	45.58		
Coefficient of Variation	1.028		
Skewness	1.208		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!

If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data

Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.789	Shapiro Wilk Test Statistic	0.863
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	81.83	95% H-UCL	327.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	119.2
95% Adjusted-CLT UCL (Chen-1995)	84.74	97.5% Chebyshev (MVUE) UCL	152.3
95% Modified-t UCL (Johnson-1978)	83.36	99% Chebyshev (MVUE) UCL	217.3
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.741	**Data appear Normal at 5% Significance Level**	

51					Theta Star	59.85						
52					MLE of Mean	44.33						
53					MLE of Standard Deviation	51.51						
54					nu star	8.889						
55					Approximate Chi Square Value (.05)	3.26	**Nonparametric Statistics**					
56					Adjusted Level of Significance	0.0122					95% CLT UCL	74.94
57					Adjusted Chi Square Value	2.158					95% Jackknife UCL	81.83
58											95% Standard Bootstrap UCL	72.02
59					Anderson-Darling Test Statistic	0.548					95% Bootstrap-t UCL	259.6
60					Anderson-Darling 5% Critical Value	0.711					95% Hall's Bootstrap UCL	360.3
61					Kolmogorov-Smirnov Test Statistic	0.262					95% Percentile Bootstrap UCL	71.5
62					Kolmogorov-Smirnov 5% Critical Value	0.339					95% BCA Bootstrap UCL	79.83
63	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	125.4
64											97.5% Chebyshev(Mean, Sd) UCL	160.5
65	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	229.5
66					95% Approximate Gamma UCL	120.9						
67					95% Adjusted Gamma UCL	182.6						
68												
69	**Potential UCL to Use**										Use 95% Student's-t UCL	81.83
70												
71	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
72	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
73	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
74												
75												
76	**BERYLLIUM**											
77												
78	**General Statistics**											
79	Number of Valid Observations					51	Number of Distinct Observations					31
80												
81	**Raw Statistics**						**Log-transformed Statistics**					
82	Minimum					0.17	Minimum of Log Data					-1.772
83	Maximum					5.6	Maximum of Log Data					1.723
84	Mean					1.65	Mean of log Data					0.345
85	Median					1.65	SD of log Data					0.622
86	SD					0.88						
87	Coefficient of Variation					0.533						
88	Skewness					1.713						
89												
90	**Relevant UCL Statistics**											
91	**Normal Distribution Test**						**Lognormal Distribution Test**					
92	Lilliefors Test Statistic					0.128	Lilliefors Test Statistic					0.168
93	Lilliefors Critical Value					0.124	Lilliefors Critical Value					0.124
94	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
95												
96	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
97	95% Student's-t UCL					1.856	95% H-UCL					2.037
98	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					2.404
99	95% Adjusted-CLT UCL (Chen-1995)					1.884	97.5% Chebyshev (MVUE) UCL					2.705
100	95% Modified-t UCL (Johnson-1978)					1.861	99% Chebyshev (MVUE) UCL					3.298

Gamma Distribution Test		**Data Distribution**
k star (bias corrected)	3.188	**Data do not follow a Discernable Distribution (0.05)**
Theta Star	0.517	
MLE of Mean	1.65	
MLE of Standard Deviation	0.924	
nu star	325.2	
Approximate Chi Square Value (.05)	284.4	**Nonparametric Statistics**
Adjusted Level of Significance	0.0453	95% CLT UCL 1.853
Adjusted Chi Square Value	283.3	95% Jackknife UCL 1.856
		95% Standard Bootstrap UCL 1.854
Anderson-Darling Test Statistic	1.123	95% Bootstrap-t UCL 1.899
Anderson-Darling 5% Critical Value	0.756	95% Hall's Bootstrap UCL 1.95
Kolmogorov-Smirnov Test Statistic	0.139	95% Percentile Bootstrap UCL 1.87
Kolmogorov-Smirnov 5% Critical Value	0.125	95% BCA Bootstrap UCL 1.879
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 2.187
		97.5% Chebyshev(Mean, Sd) UCL 2.419
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 2.876
95% Approximate Gamma UCL	1.887	
95% Adjusted Gamma UCL	1.894	
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL 2.187

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

COBALT

General Statistics

Number of Valid Observations	31	Number of Distinct Observations	31

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.76	Minimum of Log Data	-0.274
Maximum	70.8	Maximum of Log Data	4.26
Mean	12.18	Mean of log Data	2.064
Median	9.4	SD of log Data	0.992
SD	13.47		
Coefficient of Variation	1.106		
Skewness	3.137		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.673	Shapiro Wilk Test Statistic	0.973
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	16.28	95% H-UCL	19.95

151	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	23.84
152					95% Adjusted-CLT UCL (Chen-1995)	17.61					97.5% Chebyshev (MVUE) UCL	28.7
153					95% Modified-t UCL (Johnson-1978)	16.51					99% Chebyshev (MVUE) UCL	38.26
154												
155	**Gamma Distribution Test**						**Data Distribution**					
156					k star (bias corrected)	1.184	**Data appear Gamma Distributed at 5% Significance Level**					
157					Theta Star	10.28						
158					MLE of Mean	12.18						
159					MLE of Standard Deviation	11.19						
160					nu star	73.43						
161					Approximate Chi Square Value (.05)	54.7	**Nonparametric Statistics**					
162					Adjusted Level of Significance	0.0413					95% CLT UCL	16.16
163					Adjusted Chi Square Value	53.8					95% Jackknife UCL	16.28
164											95% Standard Bootstrap UCL	16.09
165					Anderson-Darling Test Statistic	0.393					95% Bootstrap-t UCL	19.4
166					Anderson-Darling 5% Critical Value	0.769					95% Hall's Bootstrap UCL	36.46
167					Kolmogorov-Smirnov Test Statistic	0.125					95% Percentile Bootstrap UCL	16.45
168					Kolmogorov-Smirnov 5% Critical Value	0.161					95% BCA Bootstrap UCL	18.16
169	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	22.72
170											97.5% Chebyshev(Mean, Sd) UCL	27.29
171	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	36.25
172					95% Approximate Gamma UCL	16.35						
173					95% Adjusted Gamma UCL	16.62						
174												
175	**Potential UCL to Use**										Use 95% Approximate Gamma UCL	16.35
176												
177	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
178	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
179	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
180												
181												
182	**COPPER**											
183												
184	**General Statistics**											
185					Number of Valid Observations	51					Number of Distinct Observations	46
186												
187	**Raw Statistics**						**Log-transformed Statistics**					
188					Minimum	1.6					Minimum of Log Data	0.47
189					Maximum	84.1					Maximum of Log Data	4.432
190					Mean	18.92					Mean of log Data	2.727
191					Median	15.8					SD of log Data	0.675
192					SD	13.85						
193					Coefficient of Variation	0.732						
194					Skewness	2.49						
195												
196	**Relevant UCL Statistics**											
197	**Normal Distribution Test**						**Lognormal Distribution Test**					
198					Lilliefors Test Statistic	0.192					Lilliefors Test Statistic	0.0943
199					Lilliefors Critical Value	0.124					Lilliefors Critical Value	0.124
200	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					

201												
202	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
203					95% Student's-t UCL	22.17					95% H-UCL	23.25
204	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	27.66
205					95% Adjusted-CLT UCL (Chen-1995)	22.83					97.5% Chebyshev (MVUE) UCL	31.36
206					95% Modified-t UCL (Johnson-1978)	22.28					99% Chebyshev (MVUE) UCL	38.64
207												
208	**Gamma Distribution Test**						**Data Distribution**					
209					k star (bias corrected)	2.369	**Data appear Gamma Distributed at 5% Significance Level**					
210					Theta Star	7.987						
211					MLE of Mean	18.92						
212					MLE of Standard Deviation	12.29						
213					nu star	241.6						
214					Approximate Chi Square Value (.05)	206.7	**Nonparametric Statistics**					
215					Adjusted Level of Significance	0.0453					95% CLT UCL	22.11
216					Adjusted Chi Square Value	205.7					95% Jackknife UCL	22.17
217											95% Standard Bootstrap UCL	22.05
218					Anderson-Darling Test Statistic	0.533					95% Bootstrap-t UCL	23.36
219					Anderson-Darling 5% Critical Value	0.76					95% Hall's Bootstrap UCL	24.44
220					Kolmogorov-Smirnov Test Statistic	0.107					95% Percentile Bootstrap UCL	22.23
221					Kolmogorov-Smirnov 5% Critical Value	0.125					95% BCA Bootstrap UCL	22.8
222	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	27.38
223											97.5% Chebyshev(Mean, Sd) UCL	31.03
224	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	38.22
225					95% Approximate Gamma UCL	22.13						
226					95% Adjusted Gamma UCL	22.23						
227												
228	**Potential UCL to Use**										Use 95% Approximate Gamma UCL	22.13
229												
230	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
231	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
232	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
233												
234												
235	**NICKEL**											
236												
237	**General Statistics**											
238					Number of Valid Observations	51					Number of Distinct Observations	48
239												
240	**Raw Statistics**						**Log-transformed Statistics**					
241					Minimum	2.7					Minimum of Log Data	0.993
242					Maximum	103					Maximum of Log Data	4.635
243					Mean	21.66					Mean of log Data	2.871
244					Median	20					SD of log Data	0.667
245					SD	15.8						
246					Coefficient of Variation	0.73						
247					Skewness	3.018						
248												
249	**Relevant UCL Statistics**											
250	**Normal Distribution Test**						**Lognormal Distribution Test**					

251				Lilliefors Test Statistic	0.179					Lilliefors Test Statistic	0.1	
252				Lilliefors Critical Value	0.124					Lilliefors Critical Value	0.124	
253	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
254												
255	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
256				95% Student's-t UCL	25.37					95% H-UCL	26.64	
257	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	31.66	
258				95% Adjusted-CLT UCL (Chen-1995)	26.3					97.5% Chebyshev (MVUE) UCL	35.86	
259				95% Modified-t UCL (Johnson-1978)	25.52					99% Chebyshev (MVUE) UCL	44.11	
260												
261	**Gamma Distribution Test**						**Data Distribution**					
262				k star (bias corrected)	2.464		**Data appear Gamma Distributed at 5% Significance Level**					
263				Theta Star	8.792							
264				MLE of Mean	21.66							
265				MLE of Standard Deviation	13.8							
266				nu star	251.3							
267				Approximate Chi Square Value (.05)	215.6		**Nonparametric Statistics**					
268				Adjusted Level of Significance	0.0453					95% CLT UCL	25.3	
269				Adjusted Chi Square Value	214.6					95% Jackknife UCL	25.37	
270										95% Standard Bootstrap UCL	25.29	
271				Anderson-Darling Test Statistic	0.662					95% Bootstrap-t UCL	26.69	
272				Anderson-Darling 5% Critical Value	0.759					95% Hall's Bootstrap UCL	31.86	
273				Kolmogorov-Smirnov Test Statistic	0.0995					95% Percentile Bootstrap UCL	25.33	
274				Kolmogorov-Smirnov 5% Critical Value	0.125					95% BCA Bootstrap UCL	26.31	
275	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	31.3	
276										97.5% Chebyshev(Mean, Sd) UCL	35.48	
277	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	43.67	
278				95% Approximate Gamma UCL	25.25							
279				95% Adjusted Gamma UCL	25.36							
280												
281	**Potential UCL to Use**									Use 95% Approximate Gamma UCL	25.25	
282												
283	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
284	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
285	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
286												
287												
288	**LEAD**											
289												
290	**General Statistics**											
291				Number of Valid Observations	51					Number of Distinct Observations	44	
292												
293	**Raw Statistics**						**Log-transformed Statistics**					
294				Minimum	1.5					Minimum of Log Data	0.405	
295				Maximum	163					Maximum of Log Data	5.094	
296				Mean	18.94					Mean of log Data	2.417	
297				Median	9.6					SD of log Data	0.971	
298				SD	26.27							
299				Coefficient of Variation	1.387							
300				Skewness	3.765							

301												
302	**Relevant UCL Statistics**											
303	**Normal Distribution Test**						**Lognormal Distribution Test**					
304					Lilliefors Test Statistic	0.285					Lilliefors Test Statistic	0.115
305					Lilliefors Critical Value	0.124					Lilliefors Critical Value	0.124
306	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
307												
308	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
309					95% Student's-t UCL	25.11					95% H-UCL	24.57
310	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	30.02
311					95% Adjusted-CLT UCL (Chen-1995)	27.07					97.5% Chebyshev (MVUE) UCL	35.34
312					95% Modified-t UCL (Johnson-1978)	25.43					99% Chebyshev (MVUE) UCL	45.78
313												
314	**Gamma Distribution Test**						**Data Distribution**					
315					k star (bias corrected)	1.039	**Data appear Lognormal at 5% Significance Level**					
316					Theta Star	18.24						
317					MLE of Mean	18.94						
318					MLE of Standard Deviation	18.59						
319					nu star	105.9						
320					Approximate Chi Square Value (.05)	83.19	**Nonparametric Statistics**					
321					Adjusted Level of Significance	0.0453					95% CLT UCL	24.99
322					Adjusted Chi Square Value	82.6					95% Jackknife UCL	25.11
323											95% Standard Bootstrap UCL	24.84
324					Anderson-Darling Test Statistic	2.016					95% Bootstrap-t UCL	28.91
325					Anderson-Darling 5% Critical Value	0.778					95% Hall's Bootstrap UCL	49.46
326					Kolmogorov-Smirnov Test Statistic	0.194					95% Percentile Bootstrap UCL	25.35
327					Kolmogorov-Smirnov 5% Critical Value	0.128					95% BCA Bootstrap UCL	27.28
328	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	34.98
329											97.5% Chebyshev(Mean, Sd) UCL	41.91
330	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	55.54
331					95% Approximate Gamma UCL	24.13						
332					95% Adjusted Gamma UCL	24.3						
333												
334	**Potential UCL to Use**										Use 95% H-UCL	24.57
335												
336	**ProUCL computes and outputs H-statistic based UCLs for historical reasons only.**											
337	**H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.**											
338	**It is therefore recommended to avoid the use of H-statistic based 95% UCLs.**											
339	**Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.**											
340												
341	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
342	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
343	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
344												
345												
346	**VANADIUM**											
347												
348	**General Statistics**											
349					Number of Valid Observations	31					Number of Distinct Observations	30
350												

	A	B	C	D	E	F	G	H	I	J	K	L
351	**Raw Statistics**						**Log-transformed Statistics**					
352					Minimum	6.4					Minimum of Log Data	1.856
353					Maximum	48.1					Maximum of Log Data	3.873
354					Mean	29.96					Mean of log Data	3.334
355					Median	31					SD of log Data	0.408
356					SD	9.577						
357					Coefficient of Variation	0.32						
358					Skewness	-0.328						
359												
360	**Relevant UCL Statistics**											
361	**Normal Distribution Test**						**Lognormal Distribution Test**					
362					Shapiro Wilk Test Statistic	0.988					Shapiro Wilk Test Statistic	0.872
363					Shapiro Wilk Critical Value	0.929					Shapiro Wilk Critical Value	0.929
364	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
365												
366	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
367					95% Student's-t UCL	32.88					95% H-UCL	35.01
368	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	40.38
369					95% Adjusted-CLT UCL (Chen-1995)	32.68					97.5% Chebyshev (MVUE) UCL	44.71
370					95% Modified-t UCL (Johnson-1978)	32.86					99% Chebyshev (MVUE) UCL	53.2
371												
372	**Gamma Distribution Test**						**Data Distribution**					
373					k star (bias corrected)	7.012	**Data appear Normal at 5% Significance Level**					
374					Theta Star	4.272						
375					MLE of Mean	29.96						
376					MLE of Standard Deviation	11.31						
377					nu star	434.8						
378					Approximate Chi Square Value (.05)	387.4	**Nonparametric Statistics**					
379					Adjusted Level of Significance	0.0413					95% CLT UCL	32.79
380					Adjusted Chi Square Value	384.9					95% Jackknife UCL	32.88
381											95% Standard Bootstrap UCL	32.71
382					Anderson-Darling Test Statistic	0.557					95% Bootstrap-t UCL	32.73
383					Anderson-Darling 5% Critical Value	0.747					95% Hall's Bootstrap UCL	32.69
384					Kolmogorov-Smirnov Test Statistic	0.128					95% Percentile Bootstrap UCL	32.69
385					Kolmogorov-Smirnov 5% Critical Value	0.158					95% BCA Bootstrap UCL	32.7
386	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	37.46
387											97.5% Chebyshev(Mean, Sd) UCL	40.7
388	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	47.07
389					95% Approximate Gamma UCL	33.62						
390					95% Adjusted Gamma UCL	33.84						
391												
392	**Potential UCL to Use**										Use 95% Student's-t UCL	32.88
393												
394	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
395	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
396	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
397												
398												
399	**ZINC**											
400												

General Statistics		
Number of Valid Observations	51	Number of Distinct Observations 51
Raw Statistics		**Log-transformed Statistics**
Minimum	3.8	Minimum of Log Data 1.335
Maximum	4370	Maximum of Log Data 8.383
Mean	159.3	Mean of log Data 4.08
Median	59.3	SD of log Data 1.044
SD	605.4	
Coefficient of Variation	3.8	
Skewness	7	
Relevant UCL Statistics		
Normal Distribution Test		**Lognormal Distribution Test**
Lilliefors Test Statistic	0.431	Lilliefors Test Statistic 0.112
Lilliefors Critical Value	0.124	Lilliefors Critical Value 0.124
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**
Assuming Normal Distribution		**Assuming Lognormal Distribution**
95% Student's-t UCL	301.4	95% H-UCL 144.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL 176.3
95% Adjusted-CLT UCL (Chen-1995)	387.5	97.5% Chebyshev (MVUE) UCL 209.2
95% Modified-t UCL (Johnson-1978)	315.2	99% Chebyshev (MVUE) UCL 273.8
Gamma Distribution Test		**Data Distribution**
k star (bias corrected)	0.597	**Data appear Lognormal at 5% Significance Level**
Theta Star	266.9	
MLE of Mean	159.3	
MLE of Standard Deviation	206.2	
nu star	60.88	
Approximate Chi Square Value (.05)	43.94	**Nonparametric Statistics**
Adjusted Level of Significance	0.0453	95% CLT UCL 298.8
Adjusted Chi Square Value	43.52	95% Jackknife UCL 301.4
		95% Standard Bootstrap UCL 298.9
Anderson-Darling Test Statistic	5.925	95% Bootstrap-t UCL 1413
Anderson-Darling 5% Critical Value	0.804	95% Hall's Bootstrap UCL 878.8
Kolmogorov-Smirnov Test Statistic	0.255	95% Percentile Bootstrap UCL 330
Kolmogorov-Smirnov 5% Critical Value	0.13	95% BCA Bootstrap UCL 480.6
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 528.8
		97.5% Chebyshev(Mean, Sd) UCL 688.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 1003
95% Approximate Gamma UCL	220.8	
95% Adjusted Gamma UCL	222.9	
Potential UCL to Use		Use 95% H-UCL 144.2
ProUCL computes and outputs H-statistic based UCLs for historical reasons only.		
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.		
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.		
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.		

	A	B	C	D	E	F	G	H	I	J	K	L
451												
452	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
453	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
454	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											
455												

1				General UCL Statistics for Data Sets with Non-Detects								
2		User Selected Options										
3		From File		Converted_Data.wst								
4		Full Precision		OFF								
5		Confidence Coefficient		95%								
6		Number of Bootstrap Operations		2000								
7												
8												
9	1-METHYLNAPHTHALENE											
10												
11				General Statistics								
12				Number of Valid Data		31			Number of Detected Data			0
13				Number of Distinct Detected Data		0			Number of Non-Detect Data			31
14									Percent Non-Detects			100.00%
15												
16				Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!								
17				Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!								
18				The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).								
19												
20				The data set for variable 1-METHYLNAPHTHALENE was not processed!								
21												
22												
23												
24	BAP EQUIVALENT-1/2 NON-DETECTS											
25												
26				General Statistics								
27				Number of Valid Data		51			Number of Detected Data			15
28				Number of Distinct Detected Data		15			Number of Non-Detect Data			36
29									Percent Non-Detects			70.59%
30												
31				Raw Statistics					Log-transformed Statistics			
32				Minimum Detected		9.839			Minimum Detected			2.286
33				Maximum Detected		810.2			Maximum Detected			6.697
34				Mean of Detected		254.7			Mean of Detected			4.99
35				SD of Detected		249.3			SD of Detected			1.23
36				Minimum Non-Detect		0.49			Minimum Non-Detect			-0.713
37				Maximum Non-Detect		870			Maximum Non-Detect			6.768
38												
39	Note: Data have multiple DLs - Use of KM Method is recommended								Number treated as Non-Detect			51
40	For all methods (except KM, DL/2, and ROS Methods),								Number treated as Detected			0
41	Observations < Largest ND are treated as NDs								Single DL Non-Detect Percentage			100.00%
42												
43				UCL Statistics								
44				Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only			
45				Shapiro Wilk Test Statistic		0.839			Shapiro Wilk Test Statistic			0.961
46				5% Shapiro Wilk Critical Value		0.881			5% Shapiro Wilk Critical Value			0.881
47				Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level			
48												
49				Assuming Normal Distribution					Assuming Lognormal Distribution			
50				DL/2 Substitution Method					DL/2 Substitution Method			

51					Mean	216.5					Mean	4.535
52					SD	173.1					SD	2.012
53					95% DL/2 (t) UCL	257.1					95% H-Stat (DL/2) UCL	1937
54												
55					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
56					**MLE method failed to converge properly**						Mean in Log Scale	3.941
57											SD in Log Scale	1.088
58											Mean in Original Scale	103.1
59											SD in Original Scale	166
60											95% t UCL	142.1
61											95% Percentile Bootstrap UCL	141.3
62											95% BCA Bootstrap UCL	152.5
63												
64					**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**	
65					k star (bias corrected)	0.88					**Data appear Gamma Distributed at 5% Significance Level**	
66					Theta Star	289.5						
67					nu star	26.39						
68												
69					A-D Test Statistic	0.157					**Nonparametric Statistics**	
70					5% A-D Critical Value	0.762					Kaplan-Meier (KM) Method	
71					K-S Test Statistic	0.762					Mean	130.5
72					5% K-S Critical Value	0.228					SD	179.6
73					**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean	31.83
74											95% KM (t) UCL	183.9
75					**Assuming Gamma Distribution**						95% KM (z) UCL	182.9
76					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	179.1
77					Minimum	9.839					95% KM (bootstrap t) UCL	191.6
78					Maximum	810.2					95% KM (BCA) UCL	198.9
79					Mean	298.3					95% KM (Percentile Bootstrap) UCL	189.9
80					Median	379.7					95% KM (Chebyshev) UCL	269.3
81					SD	202.5					97.5% KM (Chebyshev) UCL	329.3
82					k star	1.486					99% KM (Chebyshev) UCL	447.2
83					Theta star	200.8						
84					Nu star	151.5					**Potential UCLs to Use**	
85					AppChi2	124.1					95% KM (t) UCL	183.9
86					95% Gamma Approximate UCL	364.3						
87					95% Adjusted Gamma UCL	366.5						
88	**Note: DL/2 is not a recommended method.**											
89												
90	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
91	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
92	**For additional insight, the user may want to consult a statistician.**											
93												
94												
95	**BAP EQUIVALENT-POSITIVE RESULTS**											
96												
97	**General Statistics**											
98					Number of Valid Data	51					Number of Detected Data	15
99					Number of Distinct Detected Data	15					Number of Non-Detect Data	36
100											Percent Non-Detects	70.59%

101												
102	**Raw Statistics**						**Log-transformed Statistics**					
103					Minimum Detected	0.09					Minimum Detected	-2.408
104					Maximum Detected	319.2					Maximum Detected	5.766
105					Mean of Detected	117.2					Mean of Detected	3.568
106					SD of Detected	110.8					SD of Detected	2.565
107					Minimum Non-Detect	0.49					Minimum Non-Detect	-0.713
108					Maximum Non-Detect	870					Maximum Non-Detect	6.768
109												
110	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	51
111	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
112	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
113												
114	**UCL Statistics**											
115	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
116					Shapiro Wilk Test Statistic	0.887					Shapiro Wilk Test Statistic	0.769
117					5% Shapiro Wilk Critical Value	0.881					5% Shapiro Wilk Critical Value	0.881
118	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
119												
120	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
121					DL/2 Substitution Method						DL/2 Substitution Method	
122					Mean	176.1					Mean	4.117
123					SD	129.8					SD	2.347
124					95% DL/2 (t) UCL	206.5					95% H-Stat (DL/2) UCL	3646
125												
126					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
127	**MLE method failed to converge properly**										Mean in Log Scale	2.139
128											SD in Log Scale	1.997
129											Mean in Original Scale	41.84
130											SD in Original Scale	77.64
131											95% t UCL	60.06
132											95% Percentile Bootstrap UCL	62.08
133											95% BCA Bootstrap UCL	64.24
134												
135	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
136					k star (bias corrected)	0.466	**Data appear Normal at 5% Significance Level**					
137					Theta Star	251.6						
138					nu star	13.97						
139												
140					A-D Test Statistic	0.581	**Nonparametric Statistics**					
141					5% A-D Critical Value	0.791	Kaplan-Meier (KM) Method					
142					K-S Test Statistic	0.791					Mean	76.51
143					5% K-S Critical Value	0.233					SD	102.8
144	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	22.19
145											95% KM (t) UCL	113.7
146	**Assuming Gamma Distribution**										95% KM (z) UCL	113
147					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	113.7
148					Minimum	0.09					95% KM (bootstrap t) UCL	126.8
149					Maximum	446.1					95% KM (BCA) UCL	117.1
150					Mean	158.3					95% KM (Percentile Bootstrap) UCL	115.3

151					Median	199.5				95% KM (Chebyshev) UCL		173.2
152					SD	108.5				97.5% KM (Chebyshev) UCL		215.1
153					k star	1.066				99% KM (Chebyshev) UCL		297.3
154					Theta star	148.5						
155					Nu star	108.8				**Potential UCLs to Use**		
156					AppChi2	85.68				95% KM (t) UCL		113.7
157				95% Gamma Approximate UCL		200.9				95% KM (Percentile Bootstrap) UCL		115.3
158				95% Adjusted Gamma UCL		202.4						
159	**Note: DL/2 is not a recommended method.**											
160												
161	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
162	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
163	**For additional insight, the user may want to consult a statistician.**											
164												
165												
166	**BENZO(A)ANTHRACENE**											
167												
168	**General Statistics**											
169					Number of Valid Data	51				Number of Detected Data		12
170					Number of Distinct Detected Data	10				Number of Non-Detect Data		39
171										Percent Non-Detects		76.47%
172												
173	**Raw Statistics**						**Log-transformed Statistics**					
174					Minimum Detected	7.2				Minimum Detected		1.974
175					Maximum Detected	190				Maximum Detected		5.247
176					Mean of Detected	83.35				Mean of Detected		4.101
177					SD of Detected	58.84				SD of Detected		0.96
178					Minimum Non-Detect	0.61				Minimum Non-Detect		-0.494
179					Maximum Non-Detect	870				Maximum Non-Detect		6.768
180												
181	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		51
182	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		0
183	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		100.00%
184												
185	**UCL Statistics**											
186	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
187					Shapiro Wilk Test Statistic	0.91				Shapiro Wilk Test Statistic		0.906
188					5% Shapiro Wilk Critical Value	0.859				5% Shapiro Wilk Critical Value		0.859
189	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
190												
191	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
192					DL/2 Substitution Method					DL/2 Substitution Method		
193					Mean	179				Mean		4.403
194					SD	127.5				SD		1.892
195					95% DL/2 (t) UCL	209				95% H-Stat (DL/2) UCL		1210
196												
197					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
198	**MLE method failed to converge properly**									Mean in Log Scale		3.191
199										SD in Log Scale		0.904
200										Mean in Original Scale		37.04

201											SD in Original Scale	40.25
202											95% t UCL	46.48
203											95% Percentile Bootstrap UCL	46.47
204											95% BCA Bootstrap UCL	48.74
205												
206	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
207					k star (bias corrected)	1.333	**Data appear Normal at 5% Significance Level**					
208					Theta Star	62.55						
209					nu star	31.98						
210												
211					A-D Test Statistic	0.349	**Nonparametric Statistics**					
212					5% A-D Critical Value	0.744	Kaplan-Meier (KM) Method					
213					K-S Test Statistic	0.744					Mean	52.89
214					5% K-S Critical Value	0.249					SD	57.41
215	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	13.41
216											95% KM (t) UCL	75.36
217	**Assuming Gamma Distribution**										95% KM (z) UCL	74.94
218	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	73.09
219					Minimum	7.2					95% KM (bootstrap t) UCL	81.22
220					Maximum	221.3					95% KM (BCA) UCL	85.76
221					Mean	117.1					95% KM (Percentile Bootstrap) UCL	81.22
222					Median	148.8					95% KM (Chebyshev) UCL	111.3
223					SD	56.42					97.5% KM (Chebyshev) UCL	136.6
224					k star	2.867					99% KM (Chebyshev) UCL	186.3
225					Theta star	40.86						
226					Nu star	292.4	**Potential UCLs to Use**					
227					AppChi2	253.8					95% KM (t) UCL	75.36
228					95% Gamma Approximate UCL	135					95% KM (Percentile Bootstrap) UCL	81.22
229					95% Adjusted Gamma UCL	135.5						
230	**Note: DL/2 is not a recommended method.**											
231												
232	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
233	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
234	**For additional insight, the user may want to consult a statistician.**											
235												
236												
237	**BENZO(A)PYRENE**											
238												
239	**General Statistics**											
240					Number of Valid Data	51					Number of Detected Data	12
241					Number of Distinct Detected Data	11					Number of Non-Detect Data	39
242											Percent Non-Detects	76.47%
243												
244	**Raw Statistics**						**Log-transformed Statistics**					
245					Minimum Detected	5					Minimum Detected	1.609
246					Maximum Detected	170					Maximum Detected	5.136
247					Mean of Detected	78.63					Mean of Detected	3.992
248					SD of Detected	57.89					SD of Detected	1.053
249					Minimum Non-Detect	0.49					Minimum Non-Detect	-0.713
250					Maximum Non-Detect	870					Maximum Non-Detect	6.768

251												
252	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	51
253	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
254	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
255												
256	**UCL Statistics**											
257	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
258	Shapiro Wilk Test Statistic					0.899	Shapiro Wilk Test Statistic					0.904
259	5% Shapiro Wilk Critical Value					0.859	5% Shapiro Wilk Critical Value					0.859
260	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
261												
262	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
263	DL/2 Substitution Method						DL/2 Substitution Method					
264	Mean					177.9	Mean					4.342
265	SD					128.4	SD					1.98
266	95% DL/2 (t) UCL					208	95% H-Stat (DL/2) UCL					1457
267												
268	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
269	**MLE method failed to converge properly**						Mean in Log Scale					2.998
270							SD in Log Scale					0.99
271							Mean in Original Scale					33.07
272							SD in Original Scale					39.32
273							95% t UCL					42.3
274							95% Percentile Bootstrap UCL					42.42
275							95% BCA Bootstrap UCL					44.44
276												
277	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
278	k star (bias corrected)					1.171	**Data appear Normal at 5% Significance Level**					
279	Theta Star					67.14						
280	nu star					28.11						
281												
282	A-D Test Statistic					0.301	**Nonparametric Statistics**					
283	5% A-D Critical Value					0.746	Kaplan-Meier (KM) Method					
284	K-S Test Statistic					0.746	Mean					49.18
285	5% K-S Critical Value					0.25	SD					56.07
286	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					13.1
287							95% KM (t) UCL					71.12
288	**Assuming Gamma Distribution**						95% KM (z) UCL					70.71
289	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					68.95
290	Minimum					5	95% KM (bootstrap t) UCL					74.78
291	Maximum					219	95% KM (BCA) UCL					83.93
292	Mean					112.2	95% KM (Percentile Bootstrap) UCL					73.86
293	Median					143.1	95% KM (Chebyshev) UCL					106.3
294	SD					56.22	97.5% KM (Chebyshev) UCL					131
295	k star					2.567	99% KM (Chebyshev) UCL					179.5
296	Theta star					43.7						
297	Nu star					261.8	**Potential UCLs to Use**					
298	AppChi2					225.4	95% KM (t) UCL					71.12
299	95% Gamma Approximate UCL					130.3	95% KM (Percentile Bootstrap) UCL					73.86
300	95% Adjusted Gamma UCL					130.9						

	A	B	C	D	E	F	G	H	I	J	K	L
301	**Note: DL/2 is not a recommended method.**											
302												
303	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
304	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
305	**For additional insight, the user may want to consult a statistician.**											
306												
307												
308	**BENZO(B)FLUORANTHENE**											
309												
310	**General Statistics**											
311	Number of Valid Data					51	Number of Detected Data					13
312	Number of Distinct Detected Data					12	Number of Non-Detect Data					38
313							Percent Non-Detects					74.51%
314												
315	**Raw Statistics**						**Log-transformed Statistics**					
316	Minimum Detected					8.5	Minimum Detected					2.14
317	Maximum Detected					310	Maximum Detected					5.737
318	Mean of Detected					135.4	Mean of Detected					4.535
319	SD of Detected					99.88	SD of Detected					1.043
320	Minimum Non-Detect					0.76	Minimum Non-Detect					-0.274
321	Maximum Non-Detect					870	Maximum Non-Detect					6.768
322												
323	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					51
324	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
325	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
326												
327	**UCL Statistics**											
328	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
329	Shapiro Wilk Test Statistic					0.923	Shapiro Wilk Test Statistic					0.913
330	5% Shapiro Wilk Critical Value					0.866	5% Shapiro Wilk Critical Value					0.866
331	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
332												
333	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
334	DL/2 Substitution Method						DL/2 Substitution Method					
335	Mean					187	Mean					4.514
336	SD					124.3	SD					1.815
337	95% DL/2 (t) UCL					216.1	95% H-Stat (DL/2) UCL					1101
338												
339	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
340	**MLE method failed to converge properly**						Mean in Log Scale					3.604
341							SD in Log Scale					0.995
342							Mean in Original Scale					60.33
343							SD in Original Scale					69.76
344							95% t UCL					76.7
345							95% Percentile Bootstrap UCL					76.39
346							95% BCA Bootstrap UCL					81.63
347												
348	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
349	k star (bias corrected)					1.194	**Data appear Normal at 5% Significance Level**					
350	Theta Star					113.4						

351					nu star	31.05						
352												
353					A-D Test Statistic	0.28	**Nonparametric Statistics**					
354					5% A-D Critical Value	0.751				Kaplan-Meier (KM) Method		
355					K-S Test Statistic	0.751					Mean	87.05
356					5% K-S Critical Value	0.241					SD	97.46
357	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	22.14
358											95% KM (t) UCL	124.1
359	**Assuming Gamma Distribution**										95% KM (z) UCL	123.5
360				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	120.5
361					Minimum	8.5					95% KM (bootstrap t) UCL	132
362					Maximum	357.8					95% KM (BCA) UCL	142.7
363					Mean	183.3					95% KM (Percentile Bootstrap) UCL	130
364					Median	235.5					95% KM (Chebyshev) UCL	183.5
365					SD	94.13					97.5% KM (Chebyshev) UCL	225.3
366					k star	2.464					99% KM (Chebyshev) UCL	307.3
367					Theta star	74.38						
368					Nu star	251.3	**Potential UCLs to Use**					
369					AppChi2	215.6					95% KM (t) UCL	124.1
370				95% Gamma Approximate UCL		213.6					95% KM (Percentile Bootstrap) UCL	130
371				95% Adjusted Gamma UCL		214.6						
372	**Note: DL/2 is not a recommended method.**											
373												
374	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
375	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
376	**For additional insight, the user may want to consult a statistician.**											
377												
378												
379	**BENZO(K)FLUORANTHENE**											
380												
381	**General Statistics**											
382					Number of Valid Data	51					Number of Detected Data	3
383					Number of Distinct Detected Data	3					Number of Non-Detect Data	48
384											Percent Non-Detects	94.12%
385												
386	**Raw Statistics**						**Log-transformed Statistics**					
387					Minimum Detected	10.25					Minimum Detected	2.327
388					Maximum Detected	200					Maximum Detected	5.298
389					Mean of Detected	86.42					Mean of Detected	3.839
390					SD of Detected	100.3					SD of Detected	1.486
391					Minimum Non-Detect	0.98					Minimum Non-Detect	-0.0202
392					Maximum Non-Detect	870					Maximum Non-Detect	6.768
393												
394	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	51
395	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
396	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
397												
398	**Warning: There are only 3 Distinct Detected Values in this data set**											
399	**The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.**											
400	**Those methods will return a 'N/A' value on your output display!**											

	A	B	C	D	E	F	G	H	I	J	K	L
401												
402	**It is necessary to have 4 or more Distinct Values for bootstrap methods.**											
403	**However, results obtained using 4 to 9 distinct values may not be reliable.**											
404	**It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.**											
405												
406												
407	**UCL Statistics**											
408	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
409	Shapiro Wilk Test Statistic					0.896	Shapiro Wilk Test Statistic					0.999
410	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767
411	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
412												
413	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
414	DL/2 Substitution Method						DL/2 Substitution Method					
415	Mean					158.2	Mean					3.793
416	SD					138.8	SD					2.245
417	95% DL/2 (t) UCL					190.8	95% H-Stat (DL/2) UCL					1887
418												
419	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
420	**MLE method failed to converge properly**						Mean in Log Scale					-2.493
421							SD in Log Scale					2.001
422							Mean in Original Scale					5.216
423							SD in Original Scale					28.68
424							95% t UCL					11.95
425							95% Percentile Bootstrap UCL					12.9
426							95% BCA Bootstrap UCL					20.11
427												
428	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
429	k star (bias corrected)					N/A	**Data appear Normal at 5% Significance Level**					
430	Theta Star					N/A						
431	nu star					N/A						
432												
433	A-D Test Statistic					N/A	**Nonparametric Statistics**					
434	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
435	K-S Test Statistic					N/A	Mean					21.13
436	5% K-S Critical Value					N/A	SD					40.84
437	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					10.91
438							95% KM (t) UCL					39.42
439	**Assuming Gamma Distribution**						95% KM (z) UCL					39.08
440	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					47.18
441	Minimum					N/A	95% KM (bootstrap t) UCL					54.21
442	Maximum					N/A	95% KM (BCA) UCL					N/A
443	Mean					N/A	95% KM (Percentile Bootstrap) UCL					N/A
444	Median					N/A	95% KM (Chebyshev) UCL					68.7
445	SD					N/A	97.5% KM (Chebyshev) UCL					89.29
446	k star					N/A	99% KM (Chebyshev) UCL					129.7
447	Theta star					N/A						
448	Nu star					N/A	**Potential UCLs to Use**					
449	AppChi2					N/A	95% KM (t) UCL					39.42
450	95% Gamma Approximate UCL					N/A	95% KM (Percentile Bootstrap) UCL					N/A

451	95% Adjusted Gamma UCL					N/A						
452	**Note: DL/2 is not a recommended method.**											
453												
454	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
455	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
456	**For additional insight, the user may want to consult a statistician.**											
457												
458												
459	**CHRYSENE**											
460												
461	**General Statistics**											
462	Number of Valid Data					51	Number of Detected Data					15
463	Number of Distinct Detected Data					15	Number of Non-Detect Data					36
464							Percent Non-Detects					70.59%
465												
466	**Raw Statistics**						**Log-transformed Statistics**					
467	Minimum Detected					7.3	Minimum Detected					1.988
468	Maximum Detected					220	Maximum Detected					5.394
469	Mean of Detected					101.6	Mean of Detected					4.31
470	SD of Detected					65.96	SD of Detected					0.957
471	Minimum Non-Detect					0.58	Minimum Non-Detect					-0.545
472	Maximum Non-Detect					870	Maximum Non-Detect					6.768
473												
474	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					51
475	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
476	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
477												
478	**UCL Statistics**											
479	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
480	Shapiro Wilk Test Statistic					0.959	Shapiro Wilk Test Statistic					0.897
481	5% Shapiro Wilk Critical Value					0.881	5% Shapiro Wilk Critical Value					0.881
482	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
483												
484	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
485	DL/2 Substitution Method						DL/2 Substitution Method					
486	Mean					171.5	Mean					4.362
487	SD					123.4	SD					1.891
488	95% DL/2 (t) UCL					200.5	95% H-Stat (DL/2) UCL					1161
489												
490	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
491	**MLE method failed to converge properly**						Mean in Log Scale					3.569
492							SD in Log Scale					0.901
493							Mean in Original Scale					52.4
494							SD in Original Scale					50.33
495							95% t UCL					64.22
496							95% Percentile Bootstrap UCL					63.95
497							95% BCA Bootstrap UCL					67.85
498												
499	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
500	k star (bias corrected)					1.451	**Data appear Normal at 5% Significance Level**					

501					Theta Star	69.99						
502					nu star	43.54						
503												
504					A-D Test Statistic	0.329	**Nonparametric Statistics**					
505					5% A-D Critical Value	0.75					Kaplan-Meier (KM) Method	
506					K-S Test Statistic	0.75					Mean	68.79
507					5% K-S Critical Value	0.225					SD	68.3
508	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	14.74
509											95% KM (t) UCL	93.5
510	**Assuming Gamma Distribution**										95% KM (z) UCL	93.04
511				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	91.33
512					Minimum	7.3					95% KM (bootstrap t) UCL	94.51
513					Maximum	228.8					95% KM (BCA) UCL	101.4
514					Mean	124.3					95% KM (Percentile Bootstrap) UCL	98.2
515					Median	159.1					95% KM (Chebyshev) UCL	133
516					SD	59.67					97.5% KM (Chebyshev) UCL	160.9
517					k star	2.78					99% KM (Chebyshev) UCL	215.5
518					Theta star	44.72						
519					Nu star	283.6	**Potential UCLs to Use**					
520					AppChi2	245.6					95% KM (t) UCL	93.5
521					95% Gamma Approximate UCL	143.6					95% KM (Percentile Bootstrap) UCL	98.2
522					95% Adjusted Gamma UCL	144.2						
523	**Note: DL/2 is not a recommended method.**											
524												
525	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
526	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
527	**For additional insight, the user may want to consult a statistician.**											
528												
529												
530	**DIBENZO(A,H)ANTHRACENE**											
531												
532	**General Statistics**											
533					Number of Valid Data	51					Number of Detected Data	7
534					Number of Distinct Detected Data	7					Number of Non-Detect Data	44
535											Percent Non-Detects	86.27%
536												
537	**Raw Statistics**						**Log-transformed Statistics**					
538					Minimum Detected	32					Minimum Detected	3.466
539					Maximum Detected	83					Maximum Detected	4.419
540					Mean of Detected	59					Mean of Detected	4.038
541					SD of Detected	16.87					SD of Detected	0.313
542					Minimum Non-Detect	0.54					Minimum Non-Detect	-0.616
543					Maximum Non-Detect	870					Maximum Non-Detect	6.768
544												
545	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	51
546	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
547	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
548												
549	**Warning: There are only 7 Detected Values in this data**											
550	**Note: It should be noted that even though bootstrap may be performed on this data set**											

	A	B	C	D	E	F	G	H	I	J	K	L
551	**the resulting calculations may not be reliable enough to draw conclusions**											
552												
553	**It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.**											
554												
555												
556	**UCL Statistics**											
557	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
558					Shapiro Wilk Test Statistic	0.954					Shapiro Wilk Test Statistic	0.92
559					5% Shapiro Wilk Critical Value	0.803					5% Shapiro Wilk Critical Value	0.803
560	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
561												
562	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
563					DL/2 Substitution Method						DL/2 Substitution Method	
564					Mean	167.7					Mean	4.032
565					SD	135.6					SD	2.208
566					95% DL/2 (t) UCL	199.5					95% H-Stat (DL/2) UCL	2128
567												
568					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
569	**MLE method failed to converge properly**										Mean in Log Scale	3.38
570											SD in Log Scale	0.359
571											Mean in Original Scale	31.54
572											SD in Original Scale	13.98
573											95% t UCL	34.82
574											95% Percentile Bootstrap UCL	34.89
575											95% BCA Bootstrap UCL	35.32
576												
577	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
578					k star (bias corrected)	7.463	**Data appear Normal at 5% Significance Level**					
579					Theta Star	7.906						
580					nu star	104.5						
581												
582					A-D Test Statistic	0.33	**Nonparametric Statistics**					
583					5% A-D Critical Value	0.708					Kaplan-Meier (KM) Method	
584					K-S Test Statistic	0.708					Mean	41.45
585					5% K-S Critical Value	0.312					SD	15.85
586	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	3.828
587											95% KM (t) UCL	47.87
588	**Assuming Gamma Distribution**										95% KM (z) UCL	47.75
589					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	51.73
590					Minimum	32					95% KM (bootstrap t) UCL	47.26
591					Maximum	83					95% KM (BCA) UCL	59.76
592					Mean	61.89					95% KM (Percentile Bootstrap) UCL	58.15
593					Median	64					95% KM (Chebyshev) UCL	58.14
594					SD	6.759					97.5% KM (Chebyshev) UCL	65.36
595					k star	68.74					99% KM (Chebyshev) UCL	79.54
596					Theta star	0.9						
597					Nu star	7012	**Potential UCLs to Use**					
598					AppChi2	6818					95% KM (t) UCL	47.87
599					95% Gamma Approximate UCL	63.65					95% KM (Percentile Bootstrap) UCL	58.15
600					95% Adjusted Gamma UCL	63.7						

	A	B	C	D	E	F	G	H	I	J	K	L
601	**Note: DL/2 is not a recommended method.**											
602												
603	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
604	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
605	**For additional insight, the user may want to consult a statistician.**											
606												
607												
608	**FLUORANTHENE**											
609												
610	**General Statistics**											
611	Number of Valid Data					51	Number of Detected Data					18
612	Number of Distinct Detected Data					17	Number of Non-Detect Data					33
613							Percent Non-Detects					64.71%
614												
615	**Raw Statistics**						**Log-transformed Statistics**					
616	Minimum Detected					3.1	Minimum Detected					1.131
617	Maximum Detected					430	Maximum Detected					6.064
618	Mean of Detected					157.4	Mean of Detected					4.444
619	SD of Detected					128.1	SD of Detected					1.477
620	Minimum Non-Detect					1.6	Minimum Non-Detect					0.47
621	Maximum Non-Detect					870	Maximum Non-Detect					6.768
622												
623	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					51
624	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
625	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
626												
627	**UCL Statistics**											
628	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
629	Shapiro Wilk Test Statistic					0.937	Shapiro Wilk Test Statistic					0.859
630	5% Shapiro Wilk Critical Value					0.897	5% Shapiro Wilk Critical Value					0.897
631	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
632												
633	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
634	DL/2 Substitution Method						DL/2 Substitution Method					
635	Mean					190.8	Mean					4.545
636	SD					127.3	SD					1.792
637	95% DL/2 (t) UCL					220.7	95% H-Stat (DL/2) UCL					1071
638												
639	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
640	**MLE method failed to converge properly**						Mean in Log Scale					3.703
641							SD in Log Scale					1.221
642							Mean in Original Scale					78.6
643							SD in Original Scale					97.05
644							95% t UCL					101.4
645							95% Percentile Bootstrap UCL					102.4
646							95% BCA Bootstrap UCL					105
647												
648	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
649	k star (bias corrected)					0.824	**Data appear Normal at 5% Significance Level**					
650	Theta Star					191						

651					nu star	29.67						
652												
653					A-D Test Statistic	0.451	**Nonparametric Statistics**					
654					5% A-D Critical Value	0.769					Kaplan-Meier (KM) Method	
655					K-S Test Statistic	0.769					Mean	111.1
656					5% K-S Critical Value	0.21					SD	119.4
657	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	23.88
658											95% KM (t) UCL	151.1
659	**Assuming Gamma Distribution**										95% KM (z) UCL	150.3
660					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	151
661					Minimum	3.1					95% KM (bootstrap t) UCL	154.7
662					Maximum	430					95% KM (BCA) UCL	152.5
663					Mean	168.8					95% KM (Percentile Bootstrap) UCL	154
664					Median	196.4					95% KM (Chebyshev) UCL	215.1
665					SD	106.6					97.5% KM (Chebyshev) UCL	260.2
666					k star	1.247					99% KM (Chebyshev) UCL	348.6
667					Theta star	135.4						
668					Nu star	127.2	**Potential UCLs to Use**					
669					AppChi2	102.1					95% KM (t) UCL	151.1
670					95% Gamma Approximate UCL	210.2					95% KM (Percentile Bootstrap) UCL	154
671					95% Adjusted Gamma UCL	211.5						
672	**Note: DL/2 is not a recommended method.**											
673												
674	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
675	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
676	**For additional insight, the user may want to consult a statistician.**											
677												
678												
679	**INDENO(1,2,3-CD)PYRENE**											
680												
681	**General Statistics**											
682					Number of Valid Data	51					Number of Detected Data	12
683					Number of Distinct Detected Data	11					Number of Non-Detect Data	39
684											Percent Non-Detects	76.47%
685												
686	**Raw Statistics**						**Log-transformed Statistics**					
687					Minimum Detected	26					Minimum Detected	3.258
688					Maximum Detected	160					Maximum Detected	5.075
689					Mean of Detected	101.1					Mean of Detected	4.512
690					SD of Detected	41.89					SD of Detected	0.523
691					Minimum Non-Detect	0.5					Minimum Non-Detect	-0.693
692					Maximum Non-Detect	870					Maximum Non-Detect	6.768
693												
694	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	51
695	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
696	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
697												
698	**UCL Statistics**											
699	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
700					Shapiro Wilk Test Statistic	0.96					Shapiro Wilk Test Statistic	0.892

701	5% Shapiro Wilk Critical Value					0.859	5% Shapiro Wilk Critical Value					0.859
702	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
703												
704	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
705	DL/2 Substitution Method						DL/2 Substitution Method					
706	Mean					183.2	Mean					4.469
707	SD					123.1	SD					1.914
708	95% DL/2 (t) UCL					212	95% H-Stat (DL/2) UCL					1373
709												
710	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
711	**MLE method failed to converge properly**						Mean in Log Scale					4.025
712							SD in Log Scale					0.486
713							Mean in Original Scale					63.05
714							SD in Original Scale					33.14
715							95% t UCL					70.82
716							95% Percentile Bootstrap UCL					71.14
717							95% BCA Bootstrap UCL					71.6
718												
719	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
720	k star (bias corrected)					3.763	**Data appear Normal at 5% Significance Level**					
721	Theta Star					26.86						
722	nu star					90.32						
723												
724	A-D Test Statistic					0.318	**Nonparametric Statistics**					
725	5% A-D Critical Value					0.732	Kaplan-Meier (KM) Method					
726	K-S Test Statistic					0.732	Mean					71.06
727	5% K-S Critical Value					0.246	SD					48.15
728	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					11.25
729							95% KM (t) UCL					89.9
730	**Assuming Gamma Distribution**						95% KM (z) UCL					89.55
731	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					88.87
732	Minimum					26	95% KM (bootstrap t) UCL					90.42
733	Maximum					183	95% KM (BCA) UCL					105.4
734	Mean					123.3	95% KM (Percentile Bootstrap) UCL					99.18
735	Median					145.3	95% KM (Chebyshev) UCL					120.1
736	SD					37.13	97.5% KM (Chebyshev) UCL					141.3
737	k star					8.212	99% KM (Chebyshev) UCL					182.9
738	Theta star					15.01						
739	Nu star					837.6	**Potential UCLs to Use**					
740	AppChi2					771.5	95% KM (t) UCL					89.9
741	95% Gamma Approximate UCL					133.9	95% KM (Percentile Bootstrap) UCL					99.18
742	95% Adjusted Gamma UCL					134.2						
743	**Note: DL/2 is not a recommended method.**											
744												
745	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
746	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
747	**For additional insight, the user may want to consult a statistician.**											
748												
749												
750	**PHENANTHRENE**											

751												
752	**General Statistics**											
753					Number of Valid Data	51				Number of Detected Data		19
754					Number of Distinct Detected Data	16				Number of Non-Detect Data		32
755										Percent Non-Detects		62.75%
756												
757	**Raw Statistics**									**Log-transformed Statistics**		
758					Minimum Detected	2.4				Minimum Detected		0.875
759					Maximum Detected	700				Maximum Detected		6.551
760					Mean of Detected	110.3				Mean of Detected		3.846
761					SD of Detected	157				SD of Detected		1.537
762					Minimum Non-Detect	4.4				Minimum Non-Detect		1.482
763					Maximum Non-Detect	870				Maximum Non-Detect		6.768
764												
765	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		51
766	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		0
767	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		100.00%
768												
769	**UCL Statistics**											
770	**Normal Distribution Test with Detected Values Only**									**Lognormal Distribution Test with Detected Values Only**		
771					Shapiro Wilk Test Statistic	0.62				Shapiro Wilk Test Statistic		0.937
772					5% Shapiro Wilk Critical Value	0.901				5% Shapiro Wilk Critical Value		0.901
773	**Data not Normal at 5% Significance Level**									**Data appear Lognormal at 5% Significance Level**		
774												
775	**Assuming Normal Distribution**									**Assuming Lognormal Distribution**		
776					DL/2 Substitution Method					DL/2 Substitution Method		
777					Mean	182.8				Mean		4.56
778					SD	142.6				SD		1.559
779					95% DL/2 (t) UCL	216.2				95% H-Stat (DL/2) UCL		618.5
780												
781					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
782	**MLE method failed to converge properly**									Mean in Log Scale		3.371
783										SD in Log Scale		1.157
784										Mean in Original Scale		58.34
785										SD in Original Scale		103.4
786										95% t UCL		82.62
787										95% Percentile Bootstrap UCL		84.63
788										95% BCA Bootstrap UCL		99.38
789												
790	**Gamma Distribution Test with Detected Values Only**									**Data Distribution Test with Detected Values Only**		
791					k star (bias corrected)	0.628				**Data appear Gamma Distributed at 5% Significance Level**		
792					Theta Star	175.6						
793					nu star	23.87						
794												
795					A-D Test Statistic	0.379				**Nonparametric Statistics**		
796					5% A-D Critical Value	0.783				Kaplan-Meier (KM) Method		
797					K-S Test Statistic	0.783				Mean		77.69
798					5% K-S Critical Value	0.207				SD		112.3
799	**Data appear Gamma Distributed at 5% Significance Level**									SE of Mean		19.64
800										95% KM (t) UCL		110.6

801	**Assuming Gamma Distribution**										95% KM (z) UCL	110
802	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	110.4
803					Minimum	1E-12					95% KM (bootstrap t) UCL	122.8
804					Maximum	700					95% KM (BCA) UCL	112.9
805					Mean	111.3					95% KM (Percentile Bootstrap) UCL	110.6
806					Median	123					95% KM (Chebyshev) UCL	163.3
807					SD	109.4					97.5% KM (Chebyshev) UCL	200.4
808					k star	0.246					99% KM (Chebyshev) UCL	273.1
809					Theta star	452.2						
810					Nu star	25.11	**Potential UCLs to Use**					
811					AppChi2	14.7					95% KM (t) UCL	110.6
812					95% Gamma Approximate UCL	190.2						
813					95% Adjusted Gamma UCL	193.2						
814	**Note: DL/2 is not a recommended method.**											
815												
816	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
817	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
818	**For additional insight, the user may want to consult a statistician.**											
819												
820												
821	**PYRENE**											
822												
823	**General Statistics**											
824					Number of Valid Data	51					Number of Detected Data	16
825					Number of Distinct Detected Data	15					Number of Non-Detect Data	35
826											Percent Non-Detects	68.63%
827												
828	**Raw Statistics**						**Log-transformed Statistics**					
829					Minimum Detected	3.5					Minimum Detected	1.253
830					Maximum Detected	480					Maximum Detected	6.174
831					Mean of Detected	191.4					Mean of Detected	4.715
832					SD of Detected	153.5					SD of Detected	1.357
833					Minimum Non-Detect	1.5					Minimum Non-Detect	0.405
834					Maximum Non-Detect	870					Maximum Non-Detect	6.768
835												
836	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	51
837	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
838	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
839												
840	**UCL Statistics**											
841	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
842					Shapiro Wilk Test Statistic	0.918					Shapiro Wilk Test Statistic	0.878
843					5% Shapiro Wilk Critical Value	0.887					5% Shapiro Wilk Critical Value	0.887
844	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
845												
846	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
847					DL/2 Substitution Method						DL/2 Substitution Method	
848					Mean	201.7					Mean	4.575
849					SD	135					SD	1.848
850					95% DL/2 (t) UCL	233.3					95% H-Stat (DL/2) UCL	1278

851												
852					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
853					**MLE method failed to converge properly**						Mean in Log Scale	3.794
854											SD in Log Scale	1.136
855											Mean in Original Scale	84.79
856											SD in Original Scale	112.7
857											95% t UCL	111.2
858											95% Percentile Bootstrap UCL	113.4
859											95% BCA Bootstrap UCL	114.7
860												
861					**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**	
862					k star (bias corrected)	0.906					**Data appear Normal at 5% Significance Level**	
863					Theta Star	211.3						
864					nu star	28.98						
865												
866					A-D Test Statistic	0.339					**Nonparametric Statistics**	
867					5% A-D Critical Value	0.762					Kaplan-Meier (KM) Method	
868					K-S Test Statistic	0.762					Mean	115.6
869					5% K-S Critical Value	0.221					SD	135.6
870					**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean	26.36
871											95% KM (t) UCL	159.8
872					**Assuming Gamma Distribution**						95% KM (z) UCL	158.9
873					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	157.6
874					Minimum	3.5					95% KM (bootstrap t) UCL	165.8
875					Maximum	480					95% KM (BCA) UCL	168.1
876					Mean	210					95% KM (Percentile Bootstrap) UCL	161.9
877					Median	232.5					95% KM (Chebyshev) UCL	230.5
878					SD	123.6					97.5% KM (Chebyshev) UCL	280.2
879					k star	1.689					99% KM (Chebyshev) UCL	377.9
880					Theta star	124.3						
881					Nu star	172.3					**Potential UCLs to Use**	
882					AppChi2	143					95% KM (t) UCL	159.8
883					95% Gamma Approximate UCL	253.1					95% KM (Percentile Bootstrap) UCL	161.9
884					95% Adjusted Gamma UCL	254.5						
885	**Note: DL/2 is not a recommended method.**											
886												
887	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
888	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
889	**For additional insight, the user may want to consult a statistician.**											
890												
891												
892	**AROCLOR-1248**											
893												
894	**General Statistics**											
895					Number of Valid Data	51					Number of Detected Data	0
896					Number of Distinct Detected Data	0					Number of Non-Detect Data	51
897											Percent Non-Detects	100.00%
898												
899	**Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!**											
900	**Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!**											

	A	B	C	D	E	F	G	H	I	J	K	L
901	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
902												
903	The data set for variable AROCLOR-1248 was not processed!											
904												
905												
906												
907	AROCLOR-1254											
908												
909	General Statistics											
910	Number of Valid Data					51	Number of Detected Data					0
911	Number of Distinct Detected Data					0	Number of Non-Detect Data					51
912							Percent Non-Detects					100.00%
913												
914	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
915	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
916	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
917												
918	The data set for variable AROCLOR-1254 was not processed!											
919												
920												
921												
922	AROCLOR-1260											
923												
924	General Statistics											
925	Number of Valid Data					51	Number of Detected Data					6
926	Number of Distinct Detected Data					6	Number of Non-Detect Data					45
927							Percent Non-Detects					88.24%
928												
929	Raw Statistics						Log-transformed Statistics					
930	Minimum Detected					11	Minimum Detected					2.398
931	Maximum Detected					120	Maximum Detected					4.787
932	Mean of Detected					44.33	Mean of Detected					3.345
933	SD of Detected					45.58	SD of Detected					1.022
934	Minimum Non-Detect					1.7	Minimum Non-Detect					0.531
935	Maximum Non-Detect					44	Maximum Non-Detect					3.784
936												
937	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					49
938	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					2
939	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					96.08%
940												
941	Warning: There are only 6 Detected Values in this data											
942	Note: It should be noted that even though bootstrap may be performed on this data set											
943	the resulting calculations may not be reliable enough to draw conclusions											
944												
945	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
946												
947												
948	UCL Statistics											
949	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
950	Shapiro Wilk Test Statistic					0.789	Shapiro Wilk Test Statistic					0.863

951				5% Shapiro Wilk Critical Value	0.788					5% Shapiro Wilk Critical Value	0.788
952	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
953												
954	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
955				DL/2 Substitution Method						DL/2 Substitution Method		
956				Mean	13.8					Mean	1.975	
957				SD	19.38					SD	1.265	
958				95% DL/2 (t) UCL	18.35					95% H-Stat (DL/2) UCL	25.53	
959												
960				Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method		
961	**MLE method failed to converge properly**									Mean in Log Scale	0.53	
962										SD in Log Scale	1.3	
963										Mean in Original Scale	6.589	
964										SD in Original Scale	20.08	
965										95% t UCL	11.3	
966										95% Percentile Bootstrap UCL	11.64	
967										95% BCA Bootstrap UCL	13.9	
968												
969	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
970				k star (bias corrected)	0.741		**Data appear Normal at 5% Significance Level**					
971				Theta Star	59.85							
972				nu star	8.889							
973												
974				A-D Test Statistic	0.548		**Nonparametric Statistics**					
975				5% A-D Critical Value	0.711					Kaplan-Meier (KM) Method		
976				K-S Test Statistic	0.711					Mean	15.21	
977				5% K-S Critical Value	0.339					SD	17.87	
978	**Data appear Gamma Distributed at 5% Significance Level**									SE of Mean	2.758	
979										95% KM (t) UCL	19.83	
980	**Assuming Gamma Distribution**									95% KM (z) UCL	19.74	
981				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	18.92	
982				Minimum	11					95% KM (bootstrap t) UCL	31.08	
983				Maximum	120					95% KM (BCA) UCL	81.76	
984				Mean	47.27					95% KM (Percentile Bootstrap) UCL	23.18	
985				Median	48.25					95% KM (Chebyshev) UCL	27.23	
986				SD	15.59					97.5% KM (Chebyshev) UCL	32.43	
987				k star	7.998					99% KM (Chebyshev) UCL	42.65	
988				Theta star	5.91							
989				Nu star	815.8		**Potential UCLs to Use**					
990				AppChi2	750.5					95% KM (t) UCL	19.83	
991				95% Gamma Approximate UCL	51.38					95% KM (Percentile Bootstrap) UCL	23.18	
992				95% Adjusted Gamma UCL	51.5							
993	**Note: DL/2 is not a recommended method.**											
994												
995	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
996	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
997	**For additional insight, the user may want to consult a statistician.**											
998												
999												
1000												

1				**General UCL Statistics for Data Sets with Non-Detects**								
2		**User Selected Options**										
3		From File		Converted_Data.wst								
4		Full Precision		OFF								
5		Confidence Coefficient		95%								
6		Number of Bootstrap Operations		2000								
7												
8												
9	**ANTIMONY**											
10												
11						**General Statistics**							
12				Number of Valid Data		51				Number of Detected Data		16
13				Number of Distinct Detected Data		13				Number of Non-Detect Data		35
14										Percent Non-Detects		68.63%
15												
16				**Raw Statistics**						**Log-transformed Statistics**		
17				Minimum Detected		0.16				Minimum Detected		-1.833
18				Maximum Detected		23.9				Maximum Detected		3.174
19				Mean of Detected		1.827				Mean of Detected		-0.899
20				SD of Detected		5.89				SD of Detected		1.198
21				Minimum Non-Detect		0.027				Minimum Non-Detect		-3.612
22				Maximum Non-Detect		0.27				Maximum Non-Detect		-1.309
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		41
25	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		10
26	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		80.39%
27												
28						**UCL Statistics**							
29				**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**		
30				Shapiro Wilk Test Statistic		0.299				Shapiro Wilk Test Statistic		0.668
31				5% Shapiro Wilk Critical Value		0.887				5% Shapiro Wilk Critical Value		0.887
32				**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**		
33												
34				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**		
35				DL/2 Substitution Method						DL/2 Substitution Method		
36				Mean		0.625				Mean		-2.118
37				SD		3.329				SD		1.134
38				95% DL/2 (t) UCL		1.406				95% H-Stat (DL/2) UCL		0.339
39												
40				Maximum Likelihood Estimate(MLE) Method		N/A				Log ROS Method		
41				**MLE yields a negative mean**						Mean in Log Scale		-3.109
42										SD in Log Scale		1.747
43										Mean in Original Scale		0.587
44										SD in Original Scale		3.335
45										95% t UCL		1.37
46										95% Percentile Bootstrap UCL		1.514
47										95% BCA Bootstrap UCL		2.003
48												
49				**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**		
50				k star (bias corrected)		0.393				**Data do not follow a Discernable Distribution (0.05)**		

51				Theta Star	4.644							
52				nu star	12.59							
53												
54				A-D Test Statistic	3.717	**Nonparametric Statistics**						
55				5% A-D Critical Value	0.81					Kaplan-Meier (KM) Method		
56				K-S Test Statistic	0.81					Mean		0.683
57				5% K-S Critical Value	0.229					SD		3.286
58	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		0.475
59										95% KM (t) UCL		1.48
60	**Assuming Gamma Distribution**									95% KM (z) UCL		1.465
61			Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL		1.462
62				Minimum	1E-12					95% KM (bootstrap t) UCL		18.35
63				Maximum	23.9					95% KM (BCA) UCL		1.633
64				Mean	2.318					95% KM (Percentile Bootstrap) UCL		1.612
65				Median	0.966					95% KM (Chebyshev) UCL		2.755
66				SD	4.018					97.5% KM (Chebyshev) UCL		3.651
67				k star	0.145					99% KM (Chebyshev) UCL		5.412
68				Theta star	16.01							
69				Nu star	14.77	**Potential UCLs to Use**						
70				AppChi2	7.102					95% KM (BCA) UCL		1.633
71				95% Gamma Approximate UCL	4.821							
72				95% Adjusted Gamma UCL	4.929							
73	**Note: DL/2 is not a recommended method.**											
74												
75	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
76	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
77	**For additional insight, the user may want to consult a statistician.**											
78												
79												
80	**ARSENIC**											
81												
82	**General Statistics**											
83				Number of Valid Data	51					Number of Detected Data		50
84				Number of Distinct Detected Data	42					Number of Non-Detect Data		1
85										Percent Non-Detects		1.96%
86												
87	**Raw Statistics**					**Log-transformed Statistics**						
88				Minimum Detected	0.55					Minimum Detected		-0.598
89				Maximum Detected	35.9					Maximum Detected		3.581
90				Mean of Detected	5.282					Mean of Detected		1.43
91				SD of Detected	4.987					SD of Detected		0.677
92				Minimum Non-Detect	0.75					Minimum Non-Detect		-0.288
93				Maximum Non-Detect	0.75					Maximum Non-Detect		-0.288
94												
95												
96	**UCL Statistics**											
97	**Normal Distribution Test with Detected Values Only**					**Lognormal Distribution Test with Detected Values Only**						
98				Shapiro Wilk Test Statistic	0.57					Shapiro Wilk Test Statistic		0.969
99				5% Shapiro Wilk Critical Value	0.947					5% Shapiro Wilk Critical Value		0.947
100	**Data not Normal at 5% Significance Level**					**Data appear Lognormal at 5% Significance Level**						

101												
102	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
103				DL/2 Substitution Method						DL/2 Substitution Method		
104				Mean		5.186				Mean		1.382
105				SD		4.984				SD		0.75
106				95% DL/2 (t) UCL		6.355				95% H-Stat (DL/2) UCL		6.573
107												
108				Maximum Likelihood Estimate(MLE) Method						Log ROS Method		
109				Mean		5.087				Mean in Log Scale		1.4
110				SD		5.075				SD in Log Scale		0.702
111				95% MLE (t) UCL		6.277				Mean in Original Scale		5.197
112				95% MLE (Tiku) UCL		6.208				SD in Original Scale		4.974
113										95% t UCL		6.364
114										95% Percentile Bootstrap UCL		6.455
115										95% BCA Bootstrap UCL		6.843
116												
117	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
118				k star (bias corrected)		2.159	**Data appear Gamma Distributed at 5% Significance Level**					
119				Theta Star		2.446						
120				nu star		215.9						
121												
122				A-D Test Statistic		0.72	**Nonparametric Statistics**					
123				5% A-D Critical Value		0.761				Kaplan-Meier (KM) Method		
124				K-S Test Statistic		0.761				Mean		5.189
125				5% K-S Critical Value		0.127				SD		4.932
126	**Data appear Gamma Distributed at 5% Significance Level**									SE of Mean		0.698
127										95% KM (t) UCL		6.358
128	**Assuming Gamma Distribution**									95% KM (z) UCL		6.337
129				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL		6.35
130				Minimum		1E-12				95% KM (bootstrap t) UCL		7.298
131				Maximum		35.9				95% KM (BCA) UCL		6.63
132				Mean		5.178				95% KM (Percentile Bootstrap) UCL		6.461
133				Median		4.5				95% KM (Chebyshev) UCL		8.23
134				SD		4.992				97.5% KM (Chebyshev) UCL		9.546
135				k star		0.73				99% KM (Chebyshev) UCL		12.13
136				Theta star		7.098						
137				Nu star		74.42	**Potential UCLs to Use**					
138				AppChi2		55.55				95% KM (BCA) UCL		6.63
139				95% Gamma Approximate UCL		6.937						
140				95% Adjusted Gamma UCL		6.997						
141	**Note: DL/2 is not a recommended method.**											
142												
143	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
144	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
145	**For additional insight, the user may want to consult a statistician.**											
146												
147												
148	**CADMIUM**											
149												
150	**General Statistics**											

151					Number of Valid Data	51					Number of Detected Data	35
152					Number of Distinct Detected Data	32					Number of Non-Detect Data	16
153											Percent Non-Detects	31.37%
154												
155	**Raw Statistics**						**Log-transformed Statistics**					
156					Minimum Detected	0.017					Minimum Detected	-4.075
157					Maximum Detected	33.6					Maximum Detected	3.515
158					Mean of Detected	3.483					Mean of Detected	-0.309
159					SD of Detected	6.291					SD of Detected	2.056
160					Minimum Non-Detect	0.0069					Minimum Non-Detect	-4.976
161					Maximum Non-Detect	0.14					Maximum Non-Detect	-1.966
162												
163	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	23
164	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	28
165	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	45.10%
166												
167	**UCL Statistics**											
168	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
169					Shapiro Wilk Test Statistic	0.584					Shapiro Wilk Test Statistic	0.945
170					5% Shapiro Wilk Critical Value	0.934					5% Shapiro Wilk Critical Value	0.934
171	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
172												
173	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
174					DL/2 Substitution Method						DL/2 Substitution Method	
175					Mean	2.394					Mean	-1.763
176					SD	5.436					SD	2.809
177					95% DL/2 (t) UCL	3.67					95% H-Stat (DL/2) UCL	56.72
178												
179					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
180	**MLE yields a negative mean**										Mean in Log Scale	-1.727
181											SD in Log Scale	2.726
182											Mean in Original Scale	2.393
183											SD in Original Scale	5.437
184											95% t UCL	3.669
185											95% Percentile Bootstrap UCL	3.776
186											95% BCA Bootstrap UCL	4.282
187												
188	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
189					k star (bias corrected)	0.403	**Data appear Lognormal at 5% Significance Level**					
190					Theta Star	8.65						
191					nu star	28.18						
192												
193					A-D Test Statistic	1.04	**Nonparametric Statistics**					
194					5% A-D Critical Value	0.83					Kaplan-Meier (KM) Method	
195					K-S Test Statistic	0.83					Mean	2.396
196					5% K-S Critical Value	0.159					SD	5.382
197	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.765
198											95% KM (t) UCL	3.678
199	**Assuming Gamma Distribution**										95% KM (z) UCL	3.654
200					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	3.67

201				Minimum	1E-12				95% KM (bootstrap t) UCL		4.709	
202				Maximum	33.6				95% KM (BCA) UCL		3.89	
203				Mean	2.39				95% KM (Percentile Bootstrap) UCL		3.723	
204				Median	0.17				95% KM (Chebyshev) UCL		5.729	
205				SD	5.438				97.5% KM (Chebyshev) UCL		7.171	
206				k star	0.093				99% KM (Chebyshev) UCL		10	
207				Theta star	25.69							
208				Nu star	9.488				**Potential UCLs to Use**			
209				AppChi2	3.625				99% KM (Chebyshev) UCL		10	
210				95% Gamma Approximate UCL	6.257							
211				95% Adjusted Gamma UCL	6.444							
212	**Note: DL/2 is not a recommended method.**											
213												
214	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
215	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
216	**For additional insight, the user may want to consult a statistician.**											
217												
218												
219	**MERCURY**											
220												
221	**General Statistics**											
222				Number of Valid Data	51				Number of Detected Data		35	
223				Number of Distinct Detected Data	30				Number of Non-Detect Data		16	
224									Percent Non-Detects		31.37%	
225												
226	**Raw Statistics**						**Log-transformed Statistics**					
227				Minimum Detected	0.0079				Minimum Detected		-4.841	
228				Maximum Detected	1.5				Maximum Detected		0.405	
229				Mean of Detected	0.134				Mean of Detected		-2.911	
230				SD of Detected	0.263				SD of Detected		1.267	
231				Minimum Non-Detect	0.0068				Minimum Non-Detect		-4.991	
232				Maximum Non-Detect	0.057				Maximum Non-Detect		-2.865	
233												
234	Note: Data have multiple DLs - Use of KM Method is recommended								Number treated as Non-Detect		37	
235	For all methods (except KM, DL/2, and ROS Methods),								Number treated as Detected		14	
236	Observations < Largest ND are treated as NDs								Single DL Non-Detect Percentage		72.55%	
237												
238	**UCL Statistics**											
239	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
240				Shapiro Wilk Test Statistic	0.481				Shapiro Wilk Test Statistic		0.953	
241				5% Shapiro Wilk Critical Value	0.934				5% Shapiro Wilk Critical Value		0.934	
242	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
243												
244	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
245				DL/2 Substitution Method					DL/2 Substitution Method			
246				Mean	0.0951				Mean		-3.511	
247				SD	0.225				SD		1.432	
248				95% DL/2 (t) UCL	0.148				95% H-Stat (DL/2) UCL		0.147	
249												
250				Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method			

	A	B	C	D	E	F	G	H	I	J	K	L
251	**MLE yields a negative mean**										Mean in Log Scale	-3.642
252											SD in Log Scale	1.552
253											Mean in Original Scale	0.0939
254											SD in Original Scale	0.225
255											95% t UCL	0.147
256											95% Percentile Bootstrap UCL	0.149
257											95% BCA Bootstrap UCL	0.182
258												
259	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
260					k star (bias corrected)	0.636	**Data appear Lognormal at 5% Significance Level**					
261					Theta Star	0.21						
262					nu star	44.54						
263												
264					A-D Test Statistic	1.682	**Nonparametric Statistics**					
265					5% A-D Critical Value	0.795					Kaplan-Meier (KM) Method	
266					K-S Test Statistic	0.795					Mean	0.0953
267					5% K-S Critical Value	0.155					SD	0.222
268	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.0316
269											95% KM (t) UCL	0.148
270	**Assuming Gamma Distribution**										95% KM (z) UCL	0.147
271					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.148
272					Minimum	1E-12					95% KM (bootstrap t) UCL	0.225
273					Maximum	1.5					95% KM (BCA) UCL	0.153
274					Mean	0.102					95% KM (Percentile Bootstrap) UCL	0.152
275					Median	0.033					95% KM (Chebyshev) UCL	0.233
276					SD	0.224					97.5% KM (Chebyshev) UCL	0.293
277					k star	0.18					99% KM (Chebyshev) UCL	0.41
278					Theta star	0.567						
279					Nu star	18.39	**Potential UCLs to Use**					
280					AppChi2	9.676					95% KM (Chebyshev) UCL	0.233
281					95% Gamma Approximate UCL	0.194						
282					95% Adjusted Gamma UCL	0.198						
283	**Note: DL/2 is not a recommended method.**											
284												
285	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
286	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
287	**For additional insight, the user may want to consult a statistician.**											
288												
289												
290	**SILVER**											
291												
292	**General Statistics**											
293					Number of Valid Data	51					Number of Detected Data	30
294					Number of Distinct Detected Data	29					Number of Non-Detect Data	21
295											Percent Non-Detects	41.18%
296												
297	**Raw Statistics**						**Log-transformed Statistics**					
298					Minimum Detected	0.021					Minimum Detected	-3.863
299					Maximum Detected	9.1					Maximum Detected	2.208
300					Mean of Detected	1.504					Mean of Detected	-0.938

	A	B	C	D	E	F	G	H	I	J	K	L
301					SD of Detected	2.352					SD of Detected	1.868
302					Minimum Non-Detect	0.072					Minimum Non-Detect	-2.631
303					Maximum Non-Detect	0.17					Maximum Non-Detect	-1.772
304												
305	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	34
306	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	17
307	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	66.67%
308												
309	**UCL Statistics**											
310	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
311					Shapiro Wilk Test Statistic	0.652					Shapiro Wilk Test Statistic	0.922
312					5% Shapiro Wilk Critical Value	0.927					5% Shapiro Wilk Critical Value	0.927
313	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
314												
315	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
316					DL/2 Substitution Method						DL/2 Substitution Method	
317					Mean	0.905					Mean	-1.796
318					SD	1.931					SD	1.767
319					95% DL/2 (t) UCL	1.359					95% H-Stat (DL/2) UCL	1.77
320												
321					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
322	**MLE yields a negative mean**										Mean in Log Scale	-1.785
323											SD in Log Scale	1.776
324											Mean in Original Scale	0.907
325											SD in Original Scale	1.93
326											95% t UCL	1.36
327											95% Percentile Bootstrap UCL	1.385
328											95% BCA Bootstrap UCL	1.492
329												
330	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
331					k star (bias corrected)	0.45	**Data do not follow a Discernable Distribution (0.05)**					
332					Theta Star	3.34						
333					nu star	27.01						
334												
335					A-D Test Statistic	1.068	**Nonparametric Statistics**					
336					5% A-D Critical Value	0.815	Kaplan-Meier (KM) Method					
337					K-S Test Statistic	0.815					Mean	0.905
338					5% K-S Critical Value	0.17					SD	1.913
339	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.272
340											95% KM (t) UCL	1.361
341	**Assuming Gamma Distribution**										95% KM (z) UCL	1.353
342	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	1.358
343					Minimum	1E-12					95% KM (bootstrap t) UCL	1.724
344					Maximum	9.1					95% KM (BCA) UCL	1.383
345					Mean	1.285					95% KM (Percentile Bootstrap) UCL	1.38
346					Median	0.853					95% KM (Chebyshev) UCL	2.092
347					SD	1.861					97.5% KM (Chebyshev) UCL	2.606
348					k star	0.345					99% KM (Chebyshev) UCL	3.615
349					Theta star	3.727						
350					Nu star	35.16	**Potential UCLs to Use**					

	A	B	C	D	E	F	G	H	I	J	K	L
351					AppChi2	22.59				97.5% KM (Chebyshev) UCL		2.606
352				95% Gamma Approximate UCL		1.999						
353				95% Adjusted Gamma UCL		2.026						
354	**Note: DL/2 is not a recommended method.**											
355												
356	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
357	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
358	**For additional insight, the user may want to consult a statistician.**											
359												

1				**General UCL Statistics for Data Sets with Non-Detects**								
2		**User Selected Options**										
3		From File		WorkSheet.wst								
4		Full Precision		OFF								
5		Confidence Coefficient		95%								
6		Number of Bootstrap Operations		2000								
7												
8												
9	**Arsenic**											
10												
11						**General Statistics**							
12				Number of Valid Data	69			Number of Detected Data	67			
13				Number of Distinct Detected Data	50			Number of Non-Detect Data	2			
14				Number of Missing Values	12			Percent Non-Detects	2.90%			
15												
16				**Raw Statistics**				**Log-transformed Statistics**				
17				Minimum Detected	1.4			Minimum Detected	0.336			
18				Maximum Detected	11.4			Maximum Detected	2.434			
19				Mean of Detected	6.172			Mean of Detected	1.722			
20				SD of Detected	2.455			SD of Detected	0.482			
21				Minimum Non-Detect	0.77			Minimum Non-Detect	-0.261			
22				Maximum Non-Detect	12.3			Maximum Non-Detect	2.51			
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended							Number treated as Non-Detect	69			
25	For all methods (except KM, DL/2, and ROS Methods),							Number treated as Detected	0			
26	Observations < Largest ND are treated as NDs							Single DL Non-Detect Percentage	100.00%			
27												
28						**UCL Statistics**							
29				**Normal Distribution Test with Detected Values Only**				**Lognormal Distribution Test with Detected Values Only**				
30				Lilliefors Test Statistic	0.0398			Lilliefors Test Statistic	0.127			
31				5% Lilliefors Critical Value	0.108			5% Lilliefors Critical Value	0.108			
32				**Data appear Normal at 5% Significance Level**				**Data not Lognormal at 5% Significance Level**				
33												
34				**Assuming Normal Distribution**				**Assuming Lognormal Distribution**				
35				DL/2 Substitution Method				DL/2 Substitution Method				
36				Mean	6.087			Mean	1.685			
37				SD	2.517			SD	0.574			
38				95% DL/2 (t) UCL	6.593			95% H-Stat (DL/2) UCL	7.264			
39												
40				Maximum Likelihood Estimate(MLE) Method	N/A			Log ROS Method				
41				**MLE method failed to converge properly**				Mean in Log Scale	1.704			
42								SD in Log Scale	0.497			
43								Mean in Original Scale	6.096			
44								SD in Original Scale	2.48			
45								95% t UCL	6.594			
46								95% Percentile Bootstrap UCL	6.602			
47								95% BCA Bootstrap UCL	6.601			
48												
49				**Gamma Distribution Test with Detected Values Only**				**Data Distribution Test with Detected Values Only**				
50				k star (bias corrected)	5.045			**Data appear Normal at 5% Significance Level**				

	A	B	C	D	E	F	G	H	I	J	K	L
51					Theta Star	1.223						
52					nu star	676.1						
53												
54					A-D Test Statistic	0.714	**Nonparametric Statistics**					
55					5% A-D Critical Value	0.754					Kaplan-Meier (KM) Method	
56					K-S Test Statistic	0.754					Mean	6.101
57					5% K-S Critical Value	0.109					SD	2.485
58	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	0.304
59											95% KM (t) UCL	6.608
60	**Assuming Gamma Distribution**										95% KM (z) UCL	6.601
61				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	6.607
62					Minimum	1E-12					95% KM (bootstrap t) UCL	6.626
63					Maximum	11.4					95% KM (BCA) UCL	6.593
64					Mean	6.091					95% KM (Percentile Bootstrap) UCL	6.596
65					Median	6.2					95% KM (Chebyshev) UCL	7.425
66					SD	2.531					97.5% KM (Chebyshev) UCL	7.998
67					k star	1.084					99% KM (Chebyshev) UCL	9.123
68					Theta star	5.62						
69					Nu star	149.6	**Potential UCLs to Use**					
70					AppChi2	122.3					95% KM (t) UCL	6.608
71					95% Gamma Approximate UCL	7.449					95% KM (Percentile Bootstrap) UCL	6.596
72					95% Adjusted Gamma UCL	7.481						
73	**Note: DL/2 is not a recommended method.**											
74												
75	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
76	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
77	**For additional insight, the user may want to consult a statistician.**											
78												

APPENDIX B-6—SEDIMENT AREA-WEIGHTED AVERAGE CONCENTRATIONS

Appendix B-6

Methodology for Calculating Area-Weighted Averages

Weighted average concentrations were calculated for parameters determined to be the primary risk contributors though the risk assessments (see Sections 5 and 6) for each depth interval using the Thiessen polygon figures. Weighted average-concentrations were calculated for the risk assessments to represent one type of exposure point concentrations (EPC) evaluated in the assessments. Because numerous sediment samples were collected at the site, and because many samples are more densely located adjacent to the site, a weighted average may provide a more realistic EPC than a 95% UCL on the mean for some exposure pathways. The weighted average-concentrations were calculated as follows:

1. Thiessen polygons were constructed around each sampling point as described in Section 4.0;
2. The acreage of each polygon was determined;
3. The chemical concentrations for each sample located within each polygon were multiplied by the acreage of that polygon and divided by the total acreage of all the polygons within the exposure area; and
4. The average chemical concentrations across all of the polygons within the exposure area were then calculated.

Tables B-11, B-12, and B-13 present the acreages for each of the polygons for each depth interval calculated for the primary risk contributors: PAHs and PCBs, several metals, and cobalt, respectively. Table 4-14 presents the weighted average for each of the primary risk contributors for each depth interval. Background concentrations were excluded from the area-weighted average calculations. In addition, for the surface sediment, locations SD-2, SD-39, SD-79, SD-80, SD-81, SD-82, SD-104, SD-105, and SD-106 were excluded because they are located outside of Dark Head Cove, and because the density of samples outside the cove was much lower compared to those inside the Dark Head Cove, these samples represent a much larger area than most of the other polygons. Therefore, including them in the weighted-average calculation would have biased the results lower. Likewise, for the subsurface sediment samples, locations SD-79, SD-80,

SD-81, SD-82, SD-104, SD-105, and SD-106 were excluded from the weighted-average calculations. Finally, samples from the two upgradient locations in Cow Pen Creek (SD-1 and SD-78) also were not included in the weighted-average calculations.

TABLE B-11

ACREAGES OF THE THEISSEN POLYGONS FOR EACH SAMPLE LOCATION FOR PAHS AND PCBS
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Sample Location	Acreage			
	0-6"	>6 to 18"	>18 to 30"	>30"
Site Locations				
SD-2	NA*	NA*	NA*	NA*
SD-3	0.35	NS	NS	NS
SD-4	0.27	NS	NS	NS
SD-5	0.89	NS	NS	NS
SD-6	0.09	NS	NS	NS
SD-7	0.61	NS	NS	NS
SD-8	0.52	NS	NS	NS
SD-9	0.16	NS	NS	NS
SD-10	0.10	NS	NS	NS
SD-11	0.12	NS	NS	NS
SD-12	0.20	NS	NS	NS
SD-13	0.38	0.43	0.43	NS
SD-14	0.31	0.36	0.36	NS
SD-15	0.81	NS	NS	NS
SD-16	0.23	0.24	0.24	NS
SD-17	0.31	NS	NS	NS
SD-18	0.52	NS	NS	NS
SD-19	0.05	0.07	0.07	NS
SD-20	0.47	NS	NS	NS
SD-21	0.52	NS	NS	NS
SD-22	0.45	NS	NS	NS
SD-23	0.67	NS	NS	NS
SD-24	1.40	NS	NS	NS
SD-25	0.79	NS	NS	NS
SD-26	0.63	NS	NS	NS
SD-27	0.39	0.41	0.41	NS
SD-28	0.23	0.35	0.35	NS
SD-29	0.54	0.71	0.71	NS
SD-30	0.79	NS	NS	NS
SD-31	0.48	0.48	0.48	NS
SD-32	0.41	NS	NS	NS
SD-33	0.89	NS	NS	NS
SD-34	1.31	NS	NS	NS
SD-35	0.86	NS	NS	NS
SD-36	0.62	NS	NS	NS
SD-37	0.87	NS	NS	NS
SD-38	0.75	NS	NS	NS
SD-39	NA*	NA*	NA*	NA*
SD-40	0.63	0.78	0.78	NS
SD-41	NS	NS	NS	NS
SD-42	NS	NS	NS	NS
SD-43	0.27	0.52	0.52	0.68
SD-44	0.32	0.32	0.32	0.41
SD-45	0.38	0.42	0.42	0.42
SD-46	0.56	0.56	0.56	0.56
SD-47	0.62	0.99	0.99	1.08

TABLE B-11

ACREAGES OF THE THEISSEN POLYGONS FOR EACH SAMPLE LOCATION FOR PAHS AND PCBS
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Sample Location	Acreage			
	0-6"	>6 to 18"	>18 to 30"	>30"
SD-48	0.29	0.79	0.79	1.18
SD-49	0.45	0.56	0.56	0.86
SD-50	0.38	0.52	0.52	0.57
SD-51	0.83	1.51	1.51	1.51
SD-53	0.41	0.51	0.51	0.84
SD-54	0.53	0.73	0.73	1.02
SD-55	0.58	0.66	0.66	NS
SD-56	0.61	1.06	1.06	1.06
SD-57	0.35	0.35	0.35	0.67
SD-58	0.10	0.13	0.13	0.59
SD-59	0.37	0.39	0.39	0.76
SD-60	0.20	0.23	0.23	0.29
SD-61	0.48	0.68	0.68	0.68
SD-62	0.79	0.90	0.90	0.90
SD-63	0.33	0.95	0.95	0.95
SD-64	0.71	1.11	1.11	1.11
SD-65	0.58	0.75	1.12	1.12
SD-66	0.45	0.63	0.63	0.69
SD-67	0.21	0.28	0.28	0.51
SD-68	0.27	0.62	0.62	0.65
SD-69	0.12	0.14	0.14	NS
SD-70	0.55	0.75	0.75	0.75
SD-71	0.40	0.66	1.23	2.03
SD-72	0.91	1.05	1.25	NS
SD-73	0.04	0.05	0.05	0.23
SD-74	0.25	0.25	0.25	NS
SD-75	0.43	0.84	0.84	1.68
SD-76	0.03	0.08	0.08	0.12
SD-77	0.05	0.05	0.05	0.44
SD-79	NA*	NA*	NA*	NA*
SD-80	NA*	NA*	NA*	NA*
SD-81	NA*	NA*	NA*	NA*
SD-82	NA*	NA*	NA*	NA*
SD-83	0.33	0.70	0.66	0.63
SD-84	0.25	0.25	0.25	NS
SD-85	0.76	1.08	1.08	1.08
SD-86	0.55	1.17	1.17	1.17
SD-87	0.70	0.93	0.93	0.93
SD-88	0.32	0.32	0.32	0.77
SD-89	0.61	0.86	0.86	0.90
SD-90	0.48	0.63	0.63	0.82
SD-91	0.49	0.49	NS	NS
SD-92	0.64	0.69	NS	NS
SD-93	0.77	1.01	1.06	1.06
SD-94	0.63	2.25	2.25	2.25
SD-95	0.58	1.06	1.06	1.06
SD-96	0.65	1.22	1.22	1.43

TABLE B-11

ACREAGES OF THE THEISSEN POLYGONS FOR EACH SAMPLE LOCATION FOR PAHS AND PCBS
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Sample Location	Acreage			
	0-6"	>6 to 18"	>18 to 30"	>30"
SD-97	0.59	1.24	1.24	1.24
SD-98	0.71	1.39	1.39	1.42
SD-99	0.43	0.97	0.97	0.97
SD-100	0.99	1.87	1.87	2.58
SD-101	0.65	1.17	1.17	1.17
SD-102	0.77	1.44	1.44	2.04
SD-103	1.52	2.10	2.10	NS
SD-104	NA*	NA*	NA*	NA*
SD-105	NA*	NA*	NA*	NA*
SD-106	NA*	NA*	NA*	NA*
Total Acreage	**46.89**	**46.75**	**46.71**	**45.89**

NS - Not Sampled

* These locations were not included in the total acreage calculation for reasons discussed in the Section 4.2 of the report.

TABLE B-12

ACREAGES OF THE THEISSEN POLYGONS FOR EACH SAMPLE LOCATION FOR SEVERAL METALS[1]
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Sample Location	Acreage			
	0-6"	>6 to 18"	>18 to 30"	>30"
Site Locations				
SD-2	NA*	NA*	NA*	NA*
SD-3	0.35	NS	NS	NS
SD-4	0.27	NS	NS	NS
SD-5	0.88	NS	NS	NS
SD-6	0.08	NS	NS	NS
SD-7	0.61	NS	NS	NS
SD-8	0.52	NS	NS	NS
SD-9	0.16	NS	NS	NS
SD-10	0.10	NS	NS	NS
SD-11	0.12	NS	NS	NS
SD-12	0.20	NS	NS	NS
SD-13	0.38	0.43	0.43	NS
SD-14	0.31	0.36	0.36	NS
SD-15	0.81	NS	NS	NS
SD-16	0.23	0.24	0.24	NS
SD-17	0.31	NS	NS	NS
SD-18	0.52	NS	NS	NS
SD-19	0.05	0.07	0.07	NS
SD-20	0.47	NS	NS	NS
SD-21	0.52	NS	NS	NS
SD-22	0.45	NS	NS	NS
SD-23	0.67	NS	NS	NS
SD-24	1.40	NS	NS	NS
SD-25	0.79	NS	NS	NS
SD-26	0.63	NS	NS	NS
SD-27	0.39	0.41	0.41	NS
SD-28	0.23	0.35	0.35	NS
SD-29	0.54	0.71	0.71	NS
SD-30	0.79	NS	NS	NS
SD-31	0.48	0.48	0.48	NS
SD-32	0.41	NS	NS	NS
SD-33	0.89	NS	NS	NS
SD-34	1.31	NS	NS	NS
SD-35	0.86	NS	NS	NS
SD-36	0.62	NS	NS	NS
SD-37	0.87	NS	NS	NS
SD-38	0.75	NS	NS	NS
SD-39	NA*	NA*	NA*	NA*
SD-40	0.29	0.78	0.78	NS
SD-41	0.58	NS	NS	NS
SD-42	0.19	0.71	0.71	NS
SD-43	0.27	0.52	0.52	0.68
SD-44	0.32	0.32	0.32	0.41
SD-45	0.38	0.42	0.42	0.42
SD-46	0.56	0.56	0.56	0.56
SD-47	0.40	0.99	0.99	1.08

TABLE B-12

ACREAGES OF THE THEISSEN POLYGONS FOR EACH SAMPLE LOCATION FOR SEVERAL METALS[1]
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Sample Location	Acreage			
	0-6"	>6 to 18"	>18 to 30"	>30"
SD-48	0.29	0.79	0.79	1.18
SD-49	0.42	0.56	0.56	0.86
SD-50	0.38	0.52	0.52	0.57
SD-51	0.83	1.51	1.51	1.51
SD-53	0.41	0.51	0.51	0.84
SD-54	0.53	0.73	0.73	1.02
SD-55	0.58	0.66	0.66	NS
SD-56	0.61	1.06	1.06	1.06
SD-57	0.35	0.35	0.35	0.67
SD-58	0.10	0.13	0.13	0.59
SD-59	0.37	0.39	0.39	0.76
SD-60	0.20	0.23	0.23	0.29
SD-61	0.48	0.68	0.68	0.68
SD-62	0.79	0.90	0.90	0.90
SD-63	0.33	0.95	0.95	0.95
SD-64	0.71	1.11	1.11	1.11
SD-65	0.58	0.75	1.12	1.12
SD-66	0.45	0.63	0.63	0.69
SD-67	0.21	0.28	0.28	0.51
SD-68	0.27	0.62	0.62	0.65
SD-69	0.12	0.14	0.14	NS
SD-70	0.55	0.75	0.75	0.75
SD-71	0.40	0.66	1.23	2.03
SD-72	0.91	1.05	1.25	NS
SD-73	0.04	0.05	0.05	0.23
SD-74	0.25	0.25	0.25	NS
SD-75	0.43	0.84	0.84	1.68
SD-76	0.03	0.08	0.08	0.12
SD-77	0.05	0.05	0.05	0.44
SD-79	NA*	NA*	NA*	NA*
SD-80	NA*	NA*	NA*	NA*
SD-81	NA*	NA*	NA*	NA*
SD-82	NA*	NA*	NA*	NA*
SD-83	0.33	0.70	0.66	0.63
SD-84	0.25	0.25	0.25	NS
SD-85	0.76	1.07	1.07	1.08
SD-86	0.37	0.47	0.47	1.17
SD-87	0.70	0.93	0.93	0.93
SD-88	0.32	0.32	0.32	0.77
SD-89	0.61	0.86	0.86	0.90
SD-90	0.48	0.63	0.63	0.82
SD-91	0.49	0.49	NS	NS
SD-92	0.64	0.69	NS	NS
SD-93	0.77	1.01	1.06	1.06
SD-94	0.63	2.25	2.25	2.25
SD-95	0.58	1.06	1.06	1.06
SD-96	0.65	1.22	1.22	1.43

TABLE B-12

ACREAGES OF THE THEISSEN POLYGONS FOR EACH SAMPLE LOCATION FOR SEVERAL METALS[1]
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Sample Location	Acreage			
	0-6"	>6 to 18"	>18 to 30"	>30"
SD-97	0.59	1.24	1.24	1.24
SD-98	0.71	1.39	1.39	1.42
SD-99	0.43	0.97	0.97	0.97
SD-100	0.99	1.87	1.87	2.58
SD-101	0.65	1.17	1.17	1.17
SD-102	0.77	1.44	1.44	2.04
SD-103	1.52	2.10	2.10	NS
SD-104	NA*	NA*	NA*	NA*
SD-105	NA*	NA*	NA*	NA*
SD-106	NA*	NA*	NA*	NA*
Total Acreage	**46.89**	**46.75**	**25.69**	**23.93**

NS - Not Sampled

* These locations were not included in the total acreage calculation for reasons discussed in the Section 4.2 of the report.

1 - The acreages apply to antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc.

TABLE B-13

ACREAGES OF THE THEISSEN POLYGONS FOR EACH SAMPLE LOCATION FOR COBALT
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Sample Location	Acreage			
	0-6"	>6 to 18"	>18 to 30"	>30"
Site Locations				
SD-2	NA*	NA*	NA*	NA*
SD-3	NS	NS	NS	NS
SD-4	NS	NS	NS	NS
SD-5	NS	NS	NS	NS
SD-6	NS	NS	NS	NS
SD-7	NS	NS	NS	NS
SD-8	NS	NS	NS	NS
SD-9	NS	NS	NS	NS
SD-10	NS	NS	NS	NS
SD-11	NS	NS	NS	NS
SD-12	NS	NS	NS	NS
SD-13	0.43	0.43	0.43	NS
SD-14	0.52	0.55	0.55	NS
SD-15	0.86	NS	NS	NS
SD-16	0.25	0.25	0.25	NS
SD-17	0.56	NS	NS	NS
SD-18	0.52	NS	NS	NS
SD-19	0.07	0.07	0.07	NS
SD-20	0.47	NS	NS	NS
SD-21	1.04	NS	NS	NS
SD-22	0.45	NS	NS	NS
SD-23	1.00	NS	NS	NS
SD-24	1.76	NS	NS	NS
SD-25	1.19	NS	NS	NS
SD-26	1.00	NS	NS	NS
SD-27	0.42	0.42	0.42	NS
SD-28	0.44	0.44	0.44	NS
SD-29	0.62	0.99	0.99	NS
SD-30	1.40	NS	NS	NS
SD-31	0.48	0.48	0.48	NS
SD-32	0.58	NS	NS	NS
SD-33	1.50	NS	NS	NS
SD-34	2.98	NS	NS	NS
SD-35	3.32	NS	NS	NS
SD-36	1.21	NS	NS	NS
SD-37	1.09	NS	NS	NS
SD-38	1.21	NS	NS	NS
SD-39	NA*	NA*	NA*	NA*
SD-40	0.44	0.78	0.78	NS
SD-41	0.58	NS	NS	NS
SD-42	1.44	1.44	1.44	NS
SD-43	0.85	0.81	0.81	0.81
SD-44	1.21	1.21	1.21	1.39
SD-45	0.44	0.44	0.44	1.70
SD-46	1.05	1.05	1.05	1.05
SD-47	1.23	1.44	1.44	1.53

TABLE B-13

ACREAGES OF THE THEISSEN POLYGONS FOR EACH SAMPLE LOCATION FOR COBALT
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Sample Location	Acreage			
	0-6"	>6 to 18"	>18 to 30"	>30"
SD-48	0.53	0.86	0.86	1.25
SD-49	0.48	0.88	0.88	1.18
SD-50	0.39	0.90	0.90	0.95
SD-51	0.92	3.77	3.77	3.77
SD-53	0.41	0.51	0.51	0.91
SD-54	0.73	3.20	3.20	3.83
SD-55	0.58	0.98	0.98	NS
SD-56	0.93	3.15	3.15	3.36
SD-57	0.42	0.42	0.42	1.03
SD-58	0.13	0.13	0.13	0.66
SD-59	0.43	0.46	0.46	1.22
SD-60	0.20	0.23	0.23	0.29
SD-61	0.68	1.31	1.31	1.35
SD-62	1.04	3.36	3.36	3.36
SD-63	0.33	1.04	1.04	1.04
SD-64	0.71	1.34	1.34	1.34
SD-65	1.12	1.71	1.71	1.71
SD-66	0.45	0.63	0.63	0.69
SD-67	0.27	0.28	0.28	0.60
SD-68	0.27	0.62	0.62	0.67
SD-69	0.33	0.33	0.33	NS
SD-70	0.72	0.98	0.98	1.15
SD-71	0.76	1.23	1.23	2.03
SD-72	1.11	1.25	1.25	NS
SD-73	0.06	0.06	0.06	0.45
SD-74	0.25	0.25	0.25	NS
SD-75	0.50	0.86	0.86	1.77
SD-76	0.08	0.08	0.08	0.12
SD-77	0.05	0.05	0.05	0.44
SD-79	NA*	NA*	NA*	NA*
SD-80	NA*	NA*	NA*	NA*
SD-81	NA*	NA*	NA*	NA*
SD-82	NA*	NA*	NA*	NA*
SD-83	NS	NS	NS	NS
SD-84	NS	NS	NS	NS
SD-85	NS	NS	NS	NS
SD-86	NS	NS	NS	NS
SD-87	NS	NS	NS	NS
SD-88	NS	NS	NS	NS
SD-89	NS	NS	NS	NS
SD-90	NS	NS	NS	NS
SD-91	NS	NS	NS	NS
SD-92	NS	NS	NS	NS
SD-93	NS	NS	NS	NS
SD-94	NS	NS	NS	NS
SD-95	NS	NS	NS	NS
SD-96	NS	NS	NS	NS

TABLE B-13

ACREAGES OF THE THEISSEN POLYGONS FOR EACH SAMPLE LOCATION FOR COBALT
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Sample Location	Acreage			
	0-6"	>6 to 18"	>18 to 30"	>30"
SD-97	NS	NS	NS	NS
SD-98	NS	NS	NS	NS
SD-99	NS	NS	NS	NS
SD-100	NS	NS	NS	NS
SD-101	NS	NS	NS	NS
SD-102	NS	NS	NS	NS
SD-103	NS	NS	NS	NS
SD-104	NA*	NA*	NA*	NA*
SD-105	NA*	NA*	NA*	NA*
SD-106	NA*	NA*	NA*	NA*
Total Acreage	**47.43**	**41.65**	**41.60**	**41.21**

NS - Not Sampled

* These locations were not included in the total acreage calculation for reasons discussed in the Section 4.2 of the report.

TABLE B-14

WEIGHTED AVERAGE CONCENTRATIONS FOR EACH DEPTH INTERVAL
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Weighted Averages			
Parameter	**0-6"**	**>6 to 18"**	**>18 to 30"**	**>30"**
Semivolatile Organics (ug/kg)				
ACENAPHTHENE	346	240	286	137
ACENAPHTHYLENE	411	243	223	139
ANTHRACENE	402	272	367	141
BAP EQUIVALENT-1/2 NONDETECTS	1070	962	1181	182
BAP EQUIVALENT-POSITIVE RESULTS	677	751	1041	161
BENZO(A)ANTHRACENE	571	590	801	154
BENZO(A)PYRENE	570	590	774	153
BENZO(B)FLUORANTHENE	754	780	1042	165
BENZO(G,H,I)PERYLENE	574	500	566	159
BENZO(K)FLUORANTHENE	412	321	335	134
CHRYSENE	653	644	882	152
DIBENZO(A,H)ANTHRACENE	436	291	293	143
FLUORANTHENE	862	936	1505	168
FLUORENE	399	231	267	139
INDENO(1,2,3-CD)PYRENE	552	459	525	162
NAPHTHALENE	402	231	225	140
PHENANTHRENE	597	552	935	153
PYRENE	1137	1219	1619	175
TOTAL PAHS	5108	5954	8571	325
Pesticides/PCBs (ug/kg)				
AROCLOR-1248	83	90	44	11.8
AROCLOR-1254	86	22	34	12.0
AROCLOR-1260	947	449	171	9.5
TOTAL AROCLOR	945	513	176	1.96
Inorganics (mg/kg)				
ANTIMONY	13.0	1.65	1.09	0.22
ARSENIC	7.81	6.90	6.25	4.96
BERYLLIUM	1.65	1.75	1.73	1.62
CADMIUM	9.0	18.7	20.4	2.14
CHROMIUM	138	262	307	55.9
COBALT	16.3	16.5	15.0	11.2
COPPER	91.1	70.0	49.4	18.4
LEAD	264	135	87.9	17.2
MERCURY	0.38	0.51	0.76	0.07
NICKEL	30.9	33.2	30.0	21.0
SELENIUM	1.10	1.34	1.28	0.81
SILVER	1.81	4.94	7.63	0.72
THALLIUM	0.45	0.27	0.24	0.47
ZINC	283	281	254	141

Note: Weighted averages are only presented for the primary risk contributors and other chemicals that were analytes in the same samples.

APPENDIX B-7—SHALLOW WATER DIRECT CONTACT EVALUATIONS

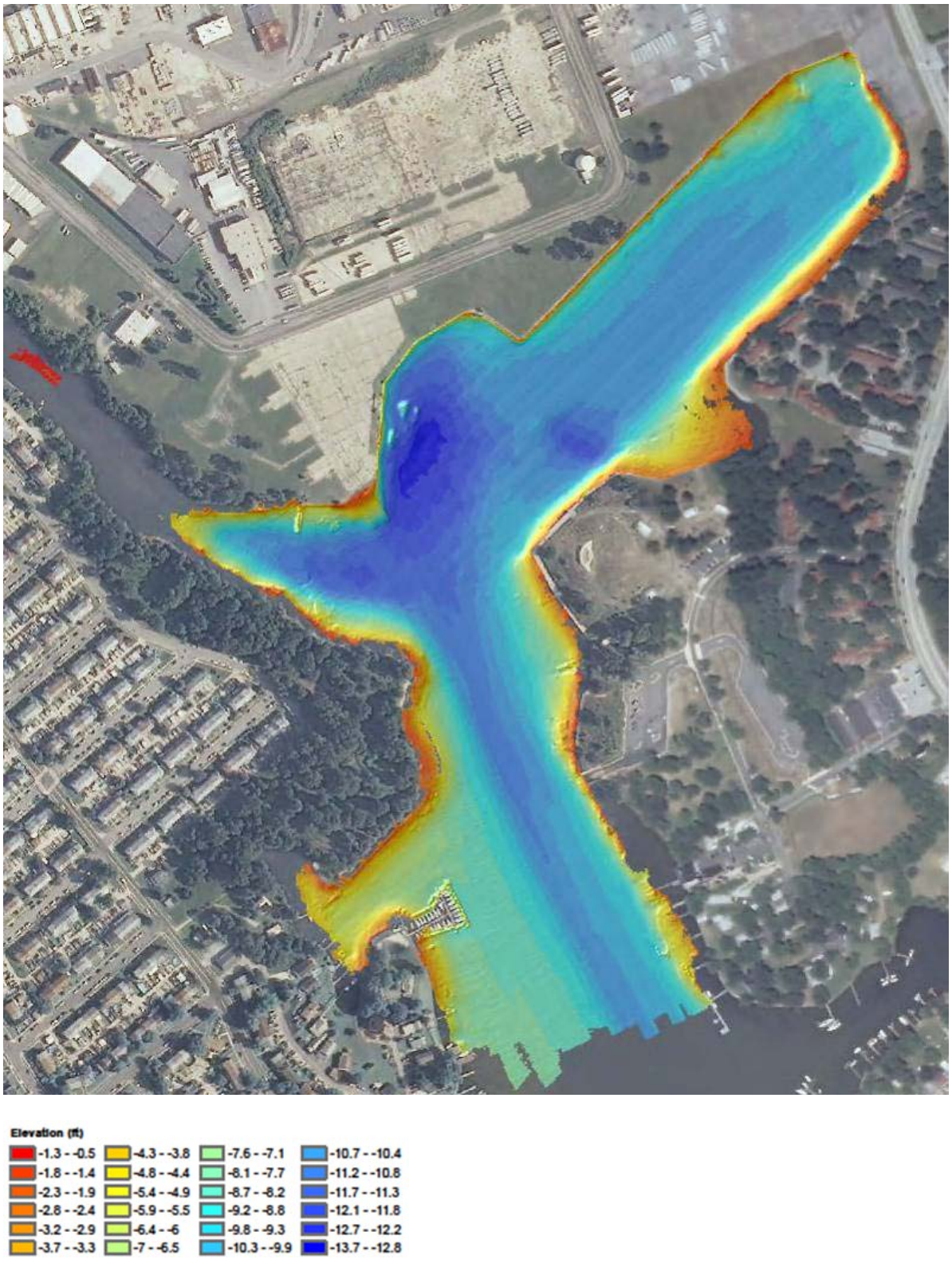

Figure B-1. Modified from Middle River 2010 Bathymetry Survey Report. Bathymetry surface of the survey area. Red circles highlight areas of potential obstructions related to marinas, including docks and pilings (both in use and abandoned), as well as boat docks. Yellow circles highlight areas of particularly dense vegetation. Green circles highlight various other, unidentified features proud of the bottom.

TABLE B-15

SEDIMENT LOCATIONS USED IN THE SHALLOW WATER DIRECT CONTACT EVALUATION
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

SD-3	SD-87	SD-24
SD-83	SD-7	SD-25
SD-4	SD-47	SD-56
SD-43	SD-41	SD-96
SD-84	SD-48	SD-30
SD-44	SD-49	SD-98
SD-85	SD-37	SD-36
SD-5	SD-99	SD-101
SD-86	SD-72	SD-102
SD-42	SD-91	SD-35
SD-6	SD-92	SD-100
SD-45	SD-93	SD-34
SD-46	SD-94	SD-103

TABLE B-16

SEDIMENT LOCATIONS USED IN THE SHALLOW WATER DIRECT CONTACT EVALUATION - COW PEN CREEK ONLY
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

SD-3	SD-6
SD-83	SD-45
SD-4	SD-46
SD-43	SD-87
SD-84	SD-7
SD-44	SD-47
SD-85	SD-41
SD-5	SD-40
SD-42	SD-49
SD-86	SD-48

TABLE B-17

DIRECT CONTACT RISK CHARACTERIZATION OF SURFACE SEDIMENT (0-6") IN COW PEN CREEK USING THE 95% UPPER CONFIDENCE LIMIT
LOCKHEED MARTIN, MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

	Incremental Lifetime Carcinogenic Risk (ILCR)			Estimated Non-Carcinogenic Hazard Quotient (HQ)		
Chemical	**95% UCL or Maximum Concentration[1] (mg/kg)**	**Cancer PRG[2] (mg/kg)**	**Estimated ILCR**	**Primary Target Organs**	**Noncancer PRG[3] (mg/kg)**	**Estimated HQ**
BAP Equivalent-1/2 Non-detects	2.8	0.07	4.0E-05	NA	NA	NA
Aroclor-1248	ND	1.0	NA	NA	NA	NA
Aroclor-1260	0.23	1.0	2.3E-07	NA	NA	NA
Antimony including SD-84[5]	1300	NA	NA	Blood	132	9.8
Antimony excluding SD-84[5]	1.5	NA	NA	Blood	132	0.011
Arsenic	5.7	1.8	3.2E-06	Skin, CVS	108	0.053
Cadmium	61.2	NA	NA	Kidney	352	0.17
Cobalt	16.5	NA	NA	Blood	114	0.14
Hexavalent chromium[4]	1.2	1.4	8.6E-07	None Reported	550	0.0022
		Total ILCR	**4E-05**		Total HI with antimony including SD-84	**10**
					Total HI with antimony excluding SD-84	0.4

Bolded totals exceed the risk target.

1 - The maximum concentration is used in place of the 95% UCL if there are fewer than 5 samples or 3 positive detections in a data set or if the 95% UCL is greater than the maximum concentration.
2 - The cancer PRGs presented are for the lifelong recreational user receptor.
3 - The noncancer PRGs presented are for the child recreational user receptor.
4 - The maximum concentration was used.
5 - The maximum concentration of antimony was at location SD-84 and was 2,320 mg/kg, which is orders of magnitude greater than the second greatest concentration, 4.6 mg/kg. Therefore, antimony 95% UCLs and risk results excluding the maximum concentration from SD-84 are also presented.

BAP = Benzo(a)pyrene
HI = Hazard Index
HQ = Hazard Quotient
ILCR = Incremental Lifetime Carcinogenic Risk
NA = Not Applicable
PRG = Preliminary Remediation Goal
UCL = Upper Confidence Limit

Risk Targets: ILCR = 1E-05 for carcinogens, HI = 1 for noncarcinogens

Target Organ Abbreviations:
CVS = Cardiovascular System

Individual Target Organ HIs

Total Blood HI with antimony including SD-84 =	**10**
Total Blood HI with antimony excluding SD-84 =	0.2
Total CVS HI =	0.05
Total Kidney HI =	0.2
Total Skin HI =	0.05

PROUCL OUTPUT - SHALLOW WATER DIRECT CONTACT LOCATIONS

	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

BAP Equivalent - 1/2 Non-detects

General Statistics

Number of Valid Data	39	Number of Detected Data	34
Number of Distinct Detected Data	34	Number of Non-Detect Data	5
Number of Missing Values	3	Percent Non-Detects	12.82%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	3.39	Minimum Detected	1.221
Maximum Detected	6326	Maximum Detected	8.752
Mean of Detected	1011	Mean of Detected	6.292
SD of Detected	1118	SD of Detected	1.512
Minimum Non-Detect	8.7	Minimum Non-Detect	2.163
Maximum Non-Detect	600	Maximum Non-Detect	6.397
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	15
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	24
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	38.46%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.655	Shapiro Wilk Test Statistic	0.814
5% Shapiro Wilk Critical Value	0.933	5% Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	906.7	Mean	6.087
SD	1079	SD	1.62
95% DL/2 (t) UCL	1198	95% H-Stat (DL/2) UCL	3799
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	651.4	Mean in Log Scale	6.042
SD	1356	SD in Log Scale	1.57
95% MLE (t) UCL	1018	Mean in Original Scale	892.2
95% MLE (Tiku) UCL	1058	SD in Original Scale	1088
		95% t UCL	1186
		95% Percentile Bootstrap UCL	1200
		95% BCA Bootstrap UCL	1297

PROUCL OUTPUT - SHALLOW WATER DIRECT CONTACT LOCATIONS

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.867	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	1165		
nu star	58.99		
A-D Test Statistic	1.342	**Nonparametric Statistics**	
5% A-D Critical Value	0.779	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.779	Mean	896.7
5% K-S Critical Value	0.156	SD	1072
Data not Gamma Distributed at 5% Significance Level		SE of Mean	174.6
		95% KM (t) UCL	1191
Assuming Gamma Distribution		95% KM (z) UCL	1184
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1190
Minimum	1E-12	95% KM (bootstrap t) UCL	1376
Maximum	6326	95% KM (BCA) UCL	1202
Mean	900.7	95% KM (Percentile Bootstrap) UCL	1199
Median	787.3	95% KM (Chebyshev) UCL	1658
SD	1082	97.5% KM (Chebyshev) UCL	1987
k star	0.419	99% KM (Chebyshev) UCL	2633
Theta star	2148		
Nu star	32.71	**Potential UCLs to Use**	
AppChi2	20.64	99% KM (Chebyshev) UCL	2633
95% Gamma Approximate UCL	1428		
95% Adjusted Gamma UCL	1454		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

PROUCL OUTPUT - SHALLOW WATER DIRECT CONTACT LOCATIONS

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Arsenic

General Statistics

Number of Valid Observations	41	Number of Distinct Observations	31
Number of Missing Values	1		

Raw Statistics		**Log-transformed Statistics**	
Minimum	1.8	Minimum of Log Data	0.588
Maximum	12	Maximum of Log Data	2.485
Mean	5.768	Mean of log Data	1.64
Median	4.8	SD of log Data	0.489
SD	2.738		
Coefficient of Variation	0.475		
Skewness	0.707		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.905	Shapiro Wilk Test Statistic	0.951
Shapiro Wilk Critical Value	0.941	Shapiro Wilk Critical Value	0.941
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	6.488	95% H-UCL	6.724
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.809
95% Adjusted-CLT UCL (Chen-1995)	6.522	97.5% Chebyshev (MVUE) UCL	8.682
95% Modified-t UCL (Johnson-1978)	6.496	99% Chebyshev (MVUE) UCL	10.4
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.3	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	1.341		
MLE of Mean	5.768		
MLE of Standard Deviation	2.782		
nu star	352.6		
Approximate Chi Square Value (.05)	310.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0441	95% CLT UCL	6.472
Adjusted Chi Square Value	308.6	95% Jackknife UCL	6.488
		95% Standard Bootstrap UCL	6.462
Anderson-Darling Test Statistic	0.708	95% Bootstrap-t UCL	6.566
Anderson-Darling 5% Critical Value	0.752	95% Hall's Bootstrap UCL	6.506
Kolmogorov-Smirnov Test Statistic	0.126	95% Percentile Bootstrap UCL	6.466
Kolmogorov-Smirnov 5% Critical Value	0.138	95% BCA Bootstrap UCL	6.495

Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.632
		97.5% Chebyshev(Mean, Sd) UCL	8.439
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	10.02
95% Approximate Gamma UCL	6.559		
95% Adjusted Gamma UCL	6.59		
Potential UCL to Use		Use 95% Approximate Gamma UCL	6.559

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Cobalt

General Statistics

Number of Valid Observations	19	Number of Distinct Observations	17
Number of Missing Values	7		

Raw Statistics		**Log-transformed Statistics**	
Minimum	3	Minimum of Log Data	1.099
Maximum	20.7	Maximum of Log Data	3.03
Mean	12.53	Mean of log Data	2.439
Median	13	SD of log Data	0.477
SD	4.696		
Coefficient of Variation	0.375		
Skewness	-0.189		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.973	Shapiro Wilk Test Statistic	0.874
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	14.39	95% H-UCL	16.06
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.04
95% Adjusted-CLT UCL (Chen-1995)	14.25	97.5% Chebyshev (MVUE) UCL	21.76
95% Modified-t UCL (Johnson-1978)	14.39	99% Chebyshev (MVUE) UCL	27.11
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.906	**Data appear Normal at 5% Significance Level**	
Theta Star	2.553		
MLE of Mean	12.53		
MLE of Standard Deviation	5.656		
nu star	186.4		
Approximate Chi Square Value (.05)	155.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0369	95% CLT UCL	14.3
Adjusted Chi Square Value	153.4	95% Jackknife UCL	14.39

PROUCL OUTPUT - SHALLOW WATER DIRECT CONTACT LOCATIONS

		95% Standard Bootstrap UCL	14.25
Anderson-Darling Test Statistic	0.498	95% Bootstrap-t UCL	14.26
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	14.28
Kolmogorov-Smirnov Test Statistic	0.137	95% Percentile Bootstrap UCL	14.18
Kolmogorov-Smirnov 5% Critical Value	0.199	95% BCA Bootstrap UCL	14.22
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	17.22
		97.5% Chebyshev(Mean, Sd) UCL	19.25
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	23.25
95% Approximate Gamma UCL	14.98		
95% Adjusted Gamma UCL	15.22		
Potential UCL to Use		Use 95% Student's-t UCL	14.39

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Lead

General Statistics

Number of Valid Observations	41	Number of Distinct Observations	41
Number of Missing Values	1		

Raw Statistics		**Log-transformed Statistics**	
Minimum	3.95	Minimum of Log Data	1.374
Maximum	31500	Maximum of Log Data	10.36
Mean	852.9	Mean of log Data	4.205
Median	86.8	SD of log Data	1.468
SD	4906		
Coefficient of Variation	5.752		
Skewness	6.402		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.168	Shapiro Wilk Test Statistic	0.843
Shapiro Wilk Critical Value	0.941	Shapiro Wilk Critical Value	0.941
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	2143	95% H-UCL	387.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	429.2
95% Adjusted-CLT UCL (Chen-1995)	2932	97.5% Chebyshev (MVUE) UCL	534
95% Modified-t UCL (Johnson-1978)	2271	99% Chebyshev (MVUE) UCL	739.8
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.271	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	3146		
MLE of Mean	852.9		

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MLE of Standard Deviation	1638		
nu star	22.23		
Approximate Chi Square Value (.05)	12.51	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0441	95% CLT UCL	2113
Adjusted Chi Square Value	12.24	95% Jackknife UCL	2143
		95% Standard Bootstrap UCL	2086
Anderson-Darling Test Statistic	8.941	95% Bootstrap-t UCL	70364
Anderson-Darling 5% Critical Value	0.87	95% Hall's Bootstrap UCL	14854
Kolmogorov-Smirnov Test Statistic	0.434	95% Percentile Bootstrap UCL	2386
Kolmogorov-Smirnov 5% Critical Value	0.151	95% BCA Bootstrap UCL	3164
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4193
		97.5% Chebyshev(Mean, Sd) UCL	5638
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8477
95% Approximate Gamma UCL	1516		
95% Adjusted Gamma UCL	1549		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	4193

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

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	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Aroclor-1248

General Statistics

Number of Valid Data	39	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	39
Number of Missing Values	3	Percent Non-Detects	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Aroclor-1248 was not processed!

Aroclor-1260

General Statistics

Number of Valid Data	39	Number of Detected Data	29
Number of Distinct Detected Data	25	Number of Non-Detect Data	10
Number of Missing Values	3	Percent Non-Detects	25.64%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	14	Minimum Detected	2.639
Maximum Detected	2700	Maximum Detected	7.901
Mean of Detected	456.3	Mean of Detected	5.313
SD of Detected	641.5	SD of Detected	1.332
Minimum Non-Detect	1.7	Minimum Non-Detect	0.531
Maximum Non-Detect	46	Maximum Non-Detect	3.829
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	15
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	24
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	38.46%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.674	Shapiro Wilk Test Statistic	0.974
5% Shapiro Wilk Critical Value	0.926	5% Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

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Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	342	Mean	4.428
SD	584.9	SD	2.009
95% DL/2 (t) UCL	499.9	95% H-Stat (DL/2) UCL	2158
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	114.9	Mean in Log Scale	4.567
SD	805.7	SD in Log Scale	1.728
95% MLE (t) UCL	332.4	Mean in Original Scale	342.3
95% MLE (Tiku) UCL	356.1	SD in Original Scale	584.7
		95% t UCL	500.1
		95% Percentile Bootstrap UCL	511.6
		95% BCA Bootstrap UCL	546.7
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.686	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	664.7		
nu star	39.81		
A-D Test Statistic	0.882	**Nonparametric Statistics**	
5% A-D Critical Value	0.785	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.785	Mean	343.2
5% K-S Critical Value	0.169	SD	576.7
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	93.98
		95% KM (t) UCL	501.6
Assuming Gamma Distribution		95% KM (z) UCL	497.8
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	496.9
Minimum	1E-12	95% KM (bootstrap t) UCL	587
Maximum	2700	95% KM (BCA) UCL	505.8
Mean	339.3	95% KM (Percentile Bootstrap) UCL	494.3
Median	99	95% KM (Chebyshev) UCL	752.8
SD	586.5	97.5% KM (Chebyshev) UCL	930.1
k star	0.102	99% KM (Chebyshev) UCL	1278
Theta star	3337		
Nu star	7.929	**Potential UCLs to Use**	
AppChi2	2.694	95% KM (Chebyshev) UCL	752.8
95% Gamma Approximate UCL	998.6		
95% Adjusted Gamma UCL	1045		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

PROUCL OUTPUT - SHALLOW WATER DIRECT CONTACT LOCATIONS

Antimony

General Statistics

Number of Valid Data	41	Number of Detected Data	27
Number of Distinct Detected Data	23	Number of Non-Detect Data	14
Number of Missing Values	1	Percent Non-Detects	34.15%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.099	Minimum Detected	-2.313
Maximum Detected	2320	Maximum Detected	7.749
Mean of Detected	86.88	Mean of Detected	-0.195
SD of Detected	446.3	SD of Detected	1.895
Minimum Non-Detect	0.13	Minimum Non-Detect	-2.04
Maximum Non-Detect	1.41	Maximum Non-Detect	0.344
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	34
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	82.93%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.199	Shapiro Wilk Test Statistic	0.728
5% Shapiro Wilk Critical Value	0.923	5% Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	57.33	Mean	-0.587
SD	362.2	SD	1.695
95% DL/2 (t) UCL	152.6	95% H-Stat (DL/2) UCL	5.54
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.762
		SD in Log Scale	1.764
		Mean in Original Scale	57.27
		SD in Original Scale	362.2
		95% t UCL	152.5
		95% Percentile Bootstrap UCL	170.4
		95% BCA Bootstrap UCL	227.2
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.17	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	512.4		
nu star	9.155		

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A-D Test Statistic	7.56	**Nonparametric Statistics**	
5% A-D Critical Value	0.913	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.913	Mean	57.3
5% K-S Critical Value	0.188	SD	357.8
Data not Gamma Distributed at 5% Significance Level		SE of Mean	56.94
		95% KM (t) UCL	153.2
Assuming Gamma Distribution		95% KM (z) UCL	151
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	152.6
Minimum	1E-12	95% KM (bootstrap t) UCL	32686
Maximum	2320	95% KM (BCA) UCL	170.6
Mean	57.21	95% KM (Percentile Bootstrap) UCL	170.4
Median	0.22	95% KM (Chebyshev) UCL	305.5
SD	362.2	97.5% KM (Chebyshev) UCL	412.9
k star	0.0746	99% KM (Chebyshev) UCL	623.8
Theta star	767.3		
Nu star	6.114	**Potential UCLs to Use**	
AppChi2	1.698	97.5% KM (Chebyshev) UCL	412.9
95% Gamma Approximate UCL	206		
95% Adjusted Gamma UCL	216.6		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

Cadmium

General Statistics

Number of Valid Data	41	Number of Detected Data	40
Number of Distinct Detected Data	34	Number of Non-Detect Data	1
Number of Missing Values	1	Percent Non-Detects	2.44%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.18	Minimum Detected	-1.715
Maximum Detected	296	Maximum Detected	5.69
Mean of Detected	17.47	Mean of Detected	1.433
SD of Detected	47.02	SD of Detected	1.788
Minimum Non-Detect	0.0079	Minimum Non-Detect	-4.841
Maximum Non-Detect	0.0079	Maximum Non-Detect	-4.841

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.357	Shapiro Wilk Test Statistic	0.955
5% Shapiro Wilk Critical Value	0.94	5% Shapiro Wilk Critical Value	0.94
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

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Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	17.05	Mean	1.263
SD	46.51	SD	2.074
95% DL/2 (t) UCL	29.28	95% H-Stat (DL/2) UCL	103.6
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	16.27	Mean in Log Scale	1.322
SD	46.66	SD in Log Scale	1.903
95% MLE (t) UCL	28.54	Mean in Original Scale	17.05
95% MLE (Tiku) UCL	27.19	SD in Original Scale	46.51
		95% t UCL	29.28
		95% Percentile Bootstrap UCL	31.02
		95% BCA Bootstrap UCL	38.89
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.435	**Data appear Lognormal at 5% Significance Level**	
Theta Star	40.19		
nu star	34.78		
A-D Test Statistic	1.329	**Nonparametric Statistics**	
5% A-D Critical Value	0.824	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.824	Mean	17.05
5% K-S Critical Value	0.148	SD	45.94
Data not Gamma Distributed at 5% Significance Level		SE of Mean	7.266
		95% KM (t) UCL	29.29
Assuming Gamma Distribution		95% KM (z) UCL	29
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	29.28
Minimum	1E-12	95% KM (bootstrap t) UCL	54.64
Maximum	296	95% KM (BCA) UCL	29.08
Mean	17.05	95% KM (Percentile Bootstrap) UCL	30.59
Median	4.3	95% KM (Chebyshev) UCL	48.72
SD	46.51	97.5% KM (Chebyshev) UCL	62.43
k star	0.315	99% KM (Chebyshev) UCL	89.35
Theta star	54.07		
Nu star	25.85	**Potential UCLs to Use**	
AppChi2	15.27	97.5% KM (Chebyshev) UCL	62.43
95% Gamma Approximate UCL	28.87		
95% Adjusted Gamma UCL	29.44		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

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Hexavalent chromium

General Statistics

Number of Valid Data	15	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	12
Number of Missing Values	1	Percent Non-Detects	80.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.74	Minimum Detected	-0.301
Maximum Detected	13	Maximum Detected	2.565
Mean of Detected	4.98	Mean of Detected	0.815
SD of Detected	6.949	SD of Detected	1.534
Minimum Non-Detect	0.44	Minimum Non-Detect	-0.821
Maximum Non-Detect	2	Maximum Non-Detect	0.693
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.33%

Warning: There are only 3 Distinct Detected Values in this data set

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.778	Shapiro Wilk Test Statistic	0.872
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.479	Mean	-0.333
SD	3.201	SD	0.95
95% DL/2 (t) UCL	2.935	95% H-Stat (DL/2) UCL	2.216
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.108
		SD in Log Scale	1.701
		Mean in Original Scale	1.052
		SD in Original Scale	3.322
		95% t UCL	2.563
		95% Percentile Bootstrap UCL	2.732
		95% BCA Bootstrap UCL	3.647

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Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	1.605
5% K-S Critical Value	N/A	SD	3.049
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.965
		95% KM (t) UCL	3.304
Assuming Gamma Distribution		95% KM (z) UCL	3.192
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.862
Minimum	N/A	95% KM (bootstrap t) UCL	15.72
Maximum	N/A	95% KM (BCA) UCL	13
Mean	N/A	95% KM (Percentile Bootstrap) UCL	13
Median	N/A	95% KM (Chebyshev) UCL	5.81
SD	N/A	97.5% KM (Chebyshev) UCL	7.629
k star	N/A	99% KM (Chebyshev) UCL	11.2
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	3.304
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	13
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

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General UCL Statistics for Full Data Sets	
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Arsenic

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	16
Number of Missing Values	1		

Raw Statistics		Log-transformed Statistics	
Minimum	1.8	Minimum of Log Data	0.588
Maximum	11	Maximum of Log Data	2.398
Mean	4.845	Mean of log Data	1.478
Median	4.7	SD of log Data	0.466
SD	2.233		
Std. Error of Mean	0.499		
Coefficient of Variation	0.461		
Skewness	1.093		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.912	Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	5.708	95% H-UCL	6.046
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.139
95% Adjusted-CLT UCL (Chen-1995)	5.797	97.5% Chebyshev (MVUE) UCL	8.125
95% Modified-t UCL (Johnson-1978)	5.729	99% Chebyshev (MVUE) UCL	10.06
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.437	**Data appear Normal at 5% Significance Level**	
Theta Star	1.092		
MLE of Mean	4.845		
MLE of Standard Deviation	2.3		
nu star	177.5		
Approximate Chi Square Value (.05)	147.7	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	5.666
Adjusted Chi Square Value	145.5	95% Jackknife UCL	5.708
		95% Standard Bootstrap UCL	5.631
Anderson-Darling Test Statistic	0.353	95% Bootstrap-t UCL	5.908
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	6.18
Kolmogorov-Smirnov Test Statistic	0.133	95% Percentile Bootstrap UCL	5.675

Kolmogorov-Smirnov 5% Critical Value	0.194	95% BCA Bootstrap UCL	5.825
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.021
		97.5% Chebyshev(Mean, Sd) UCL	7.963
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.812
95% Approximate Gamma UCL	5.823		
95% Adjusted Gamma UCL	5.909		
Potential UCL to Use		Use 95% Student's-t UCL	5.708

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)

and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Cadmium

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	18
Number of Missing Values	1		

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.18	Minimum of Log Data	-1.715
Maximum	296	Maximum of Log Data	5.69
Mean	32.98	Mean of log Data	2.332
Median	20.7	SD of log Data	1.94
SD	63.66		
Std. Error of Mean	14.23		
Coefficient of Variation	1.93		
Skewness	4.08		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.445	Shapiro Wilk Test Statistic	0.855
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	57.59	95% H-UCL	437.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	180.3
95% Adjusted-CLT UCL (Chen-1995)	70.27	97.5% Chebyshev (MVUE) UCL	234.9
95% Modified-t UCL (Johnson-1978)	59.76	99% Chebyshev (MVUE) UCL	342.1
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.492	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	67.07		
MLE of Mean	32.98		
MLE of Standard Deviation	47.03		
nu star	19.67		
Approximate Chi Square Value (.05)	10.61	**Nonparametric Statistics**	

Adjusted Level of Significance	0.038	95% CLT UCL	56.39
Adjusted Chi Square Value	10.08	95% Jackknife UCL	57.59
		95% Standard Bootstrap UCL	55.18
Anderson-Darling Test Statistic	0.854	95% Bootstrap-t UCL	114.5
Anderson-Darling 5% Critical Value	0.799	95% Hall's Bootstrap UCL	152.9
Kolmogorov-Smirnov Test Statistic	0.167	95% Percentile Bootstrap UCL	60.22
Kolmogorov-Smirnov 5% Critical Value	0.204	95% BCA Bootstrap UCL	74.43
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	95.02
		97.5% Chebyshev(Mean, Sd) UCL	121.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	174.6
95% Approximate Gamma UCL	61.16		
95% Adjusted Gamma UCL	64.34		
Potential UCL to Use		Use 95% Approximate Gamma UCL	61.16

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Cobalt

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10
Number of Missing Values	6		

Raw Statistics		**Log-transformed Statistics**	
Minimum	4.8	Minimum of Log Data	1.569
Maximum	26.6	Maximum of Log Data	3.281
Mean	12.93	Mean of log Data	2.463
Median	11.4	SD of log Data	0.469
SD	6.088		
Std. Error of Mean	1.925		
Coefficient of Variation	0.471		
Skewness	1.184		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.91	Shapiro Wilk Test Statistic	0.968
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	16.46	95% H-UCL	18.41
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21.45
95% Adjusted-CLT UCL (Chen-1995)	16.87	97.5% Chebyshev (MVUE) UCL	25.13
95% Modified-t UCL (Johnson-1978)	16.58	99% Chebyshev (MVUE) UCL	32.35
Gamma Distribution Test		**Data Distribution**	

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k star (bias corrected)	3.807	**Data appear Normal at 5% Significance Level**	
Theta Star	3.396		
MLE of Mean	12.93		
MLE of Standard Deviation	6.627		
nu star	76.14		
Approximate Chi Square Value (.05)	57.04	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	16.1
Adjusted Chi Square Value	54.18	95% Jackknife UCL	16.46
		95% Standard Bootstrap UCL	15.94
Anderson-Darling Test Statistic	0.262	95% Bootstrap-t UCL	17.79
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	19.57
Kolmogorov-Smirnov Test Statistic	0.179	95% Percentile Bootstrap UCL	15.97
Kolmogorov-Smirnov 5% Critical Value	0.267	95% BCA Bootstrap UCL	16.66
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	21.32
		97.5% Chebyshev(Mean, Sd) UCL	24.95
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	32.09
95% Approximate Gamma UCL	17.26		
95% Adjusted Gamma UCL	18.17		
Potential UCL to Use		Use 95% Student's-t UCL	16.46

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)

and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

PROUCL OUTPUT - COW PEN CREEK LOCATIONS

	General UCL Statistics for Data Sets with Non-Detects		
User Selected Options			
From File	WorkSheet.wst		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
BAP Equivalent - 1/2 Non-detects			
General Statistics			
Number of Valid Data	18	Number of Detected Data	16
Number of Distinct Detected Data	16	Number of Non-Detect Data	2
Number of Missing Values	3	Percent Non-Detects	11.11%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	466.3	Minimum Detected	6.145
Maximum Detected	6326	Maximum Detected	8.752
Mean of Detected	1513	Mean of Detected	7.075
SD of Detected	1426	SD of Detected	0.659
Minimum Non-Detect	495	Minimum Non-Detect	6.205
Maximum Non-Detect	540	Maximum Non-Detect	6.292
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	14
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	22.22%
UCL Statistics			
Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.645	Shapiro Wilk Test Statistic	0.936
5% Shapiro Wilk Critical Value	0.887	5% Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1374	Mean	6.906
SD	1399	SD	0.79
95% DL/2 (t) UCL	1947	95% H-Stat (DL/2) UCL	2140
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1171	Mean in Log Scale	6.946
SD	1598	SD in Log Scale	0.724
95% MLE (t) UCL	1826	Mean in Original Scale	1386
95% MLE (Tiku) UCL	1827	SD in Original Scale	1389
		95% t UCL	1956
		95% Percentile Bootstrap UCL	1994
		95% BCA Bootstrap UCL	2237
		95% H UCL	2011
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.81	**Data appear Lognormal at 5% Significance Level**	
Theta Star	835.8		
nu star	57.93		

PROUCL OUTPUT - COW PEN CREEK LOCATIONS

A-D Test Statistic	0.791	**Nonparametric Statistics**	
5% A-D Critical Value	0.749	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.749	Mean	1398
5% K-S Critical Value	0.218	SD	1341
Data not Gamma Distributed at 5% Significance Level		SE of Mean	326.5
		95% KM (t) UCL	1966
Assuming Gamma Distribution		95% KM (z) UCL	1935
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1960
Minimum	0.000001	95% KM (bootstrap t) UCL	2758
Maximum	6326	95% KM (BCA) UCL	1996
Mean	1345	95% KM (Percentile Bootstrap) UCL	1972
Median	1006	95% KM (Chebyshev) UCL	2821
SD	1426	97.5% KM (Chebyshev) UCL	3437
k star	0.274	99% KM (Chebyshev) UCL	4647
Theta star	4914		
Nu star	9.852	**Potential UCLs to Use**	
AppChi2	3.849	95% KM (Chebyshev) UCL	2821
95% Gamma Approximate UCL	3442		
95% Adjusted Gamma UCL	3790		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

Aroclor-1248

General Statistics

Number of Valid Data	18	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	18
Number of Missing Values	3	Percent Non-Detects	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Aroclor-1248 was not processed!

PROUCL OUTPUT - COW PEN CREEK LOCATIONS

Aroclor-1260			
General Statistics			
Number of Valid Data	18	Number of Detected Data	13
Number of Distinct Detected Data	12	Number of Non-Detect Data	5
Number of Missing Values	3	Percent Non-Detects	27.78%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	35	Minimum Detected	3.555
Maximum Detected	540	Maximum Detected	6.292
Mean of Detected	216.6	Mean of Detected	5.006
SD of Detected	169.6	SD of Detected	0.969
Minimum Non-Detect	21	Minimum Non-Detect	3.045
Maximum Non-Detect	46	Maximum Non-Detect	3.829
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	11
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	38.89%
UCL Statistics			
Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.898	Shapiro Wilk Test Statistic	0.914
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	160.6	Mean	4.355
SD	170.2	SD	1.362
95% DL/2 (t) UCL	230.4	95% H-Stat (DL/2) UCL	567.1
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	106.7	Mean in Log Scale	4.404
SD	231.1	SD in Log Scale	1.292
95% MLE (t) UCL	201.4	Mean in Original Scale	161.2
95% MLE (Tiku) UCL	212.6	SD in Original Scale	169.6
		95% t UCL	230.8
		95% Percentile Bootstrap UCL	229.7
		95% BCA Bootstrap UCL	238.2
		95% H UCL	496
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.197	**Data appear Normal at 5% Significance Level**	
Theta Star	180.9		
nu star	31.13		

PROUCL OUTPUT - COW PEN CREEK LOCATIONS

A-D Test Statistic	0.439	**Nonparametric Statistics**	
5% A-D Critical Value	0.75	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.75	Mean	166.2
5% K-S Critical Value	0.241	SD	160.6
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	39.4
		95% KM (t) UCL	234.7
Assuming Gamma Distribution		95% KM (z) UCL	231
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	233.9
Minimum	0.000001	95% KM (bootstrap t) UCL	254.1
Maximum	540	95% KM (BCA) UCL	240.1
Mean	156.4	95% KM (Percentile Bootstrap) UCL	228.6
Median	81.5	95% KM (Chebyshev) UCL	337.9
SD	174	97.5% KM (Chebyshev) UCL	412.2
k star	0.159	99% KM (Chebyshev) UCL	558.2
Theta star	984.5		
Nu star	5.721	**Potential UCLs to Use**	
AppChi2	1.499	95% KM (t) UCL	234.7
95% Gamma Approximate UCL	597.1	95% KM (Percentile Bootstrap) UCL	228.6
95% Adjusted Gamma UCL	687		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

Antimony

General Statistics

Number of Valid Data	20	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	10
Number of Missing Values	1	Percent Non-Detects	50.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.47	Minimum Detected	-0.755
Maximum Detected	2320	Maximum Detected	7.749
Mean of Detected	233.5	Mean of Detected	1.038
SD of Detected	733.1	SD of Detected	2.461
Minimum Non-Detect	0.15	Minimum Non-Detect	-1.897
Maximum Non-Detect	1.9	Maximum Non-Detect	0.642
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	15
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.00%

PROUCL OUTPUT - COW PEN CREEK LOCATIONS

UCL Statistics			
Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.367	Shapiro Wilk Test Statistic	0.641
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	117	Mean	-0.0656
SD	518.5	SD	2.135
95% DL/2 (t) UCL	317.5	95% H-Stat (DL/2) UCL	84.87
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.98
		SD in Log Scale	2.739
		Mean in Original Scale	116.8
		SD in Original Scale	518.6
		95% t UCL	317.3
		95% Percentile Bootstrap UCL	348.7
		95% BCA Bootstrap UCL	464.7
		95% H-UCL	563.6
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.186	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	1254		
nu star	3.724		
A-D Test Statistic	2.606	**Nonparametric Statistics**	
5% A-D Critical Value	0.864	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.864	Mean	117
5% K-S Critical Value	0.295	SD	505.4
Data not Gamma Distributed at 5% Significance Level		SE of Mean	119.1
		95% KM (t) UCL	323
Assuming Gamma Distribution		95% KM (z) UCL	313
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	317.4
Minimum	0.000001	95% KM (bootstrap t) UCL	95768
Maximum	2320	95% KM (BCA) UCL	349.1
Mean	116.8	95% KM (Percentile Bootstrap) UCL	349
Median	0.235	95% KM (Chebyshev) UCL	636.3
SD	518.6	97.5% KM (Chebyshev) UCL	861
k star	0.0974	99% KM (Chebyshev) UCL	1302
Theta star	1199		
Nu star	3.895	**Potential UCLs to Use**	
AppChi2	0.68	99% KM (Chebyshev) UCL	1302
95% Gamma Approximate UCL	668.3		
95% Adjusted Gamma UCL	776.2		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

PROUCL OUTPUT - COW PEN CREEK LOCATIONS

Hexavalent Chromium

General Statistics

Number of Valid Data	8	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	7
Number of Missing Values	1	Percent Non-Detects	87.50%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!

It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hexavalent Chromium was not processed!

PROUCL OUTPUT - COW PEN CREEK LOCATIONS

	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Antimony (excluding maximum concentration)

General Statistics

Number of Valid Data	19	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	10
Number of Missing Values	2	Percent Non-Detects	52.63%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.47	Minimum Detected	-0.755
Maximum Detected	4.6	Maximum Detected	1.526
Mean of Detected	1.72	Mean of Detected	0.293
SD of Detected	1.33	SD of Detected	0.748
Minimum Non-Detect	0.15	Minimum Non-Detect	-1.897
Maximum Non-Detect	1.9	Maximum Non-Detect	0.642
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	15
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	78.95%

Warning: There are only 9 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk Test Statistic	0.962
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.04	Mean	-0.477
SD	1.128	SD	1.113
95% DL/2 (t) UCL	1.489	95% H-Stat (DL/2) UCL	2.387
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.354	Mean in Log Scale	-0.511
SD	1.879	SD in Log Scale	0.958

PROUCL OUTPUT - COW PEN CREEK LOCATIONS

95% MLE (t) UCL	1.101	Mean in Original Scale	0.976
95% MLE (Tiku) UCL	2.091	SD in Original Scale	1.148
		95% t UCL	1.432
		95% Percentile Bootstrap UCL	1.44
		95% BCA Bootstrap UCL	1.509
		95% H UCL	1.689
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.511	**Data appear Normal at 5% Significance Level**	
Theta Star	1.138		
nu star	27.2		
A-D Test Statistic	0.304	**Nonparametric Statistics**	
5% A-D Critical Value	0.729	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.729	Mean	1.097
5% K-S Critical Value	0.282	SD	1.051
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.257
		95% KM (t) UCL	1.543
Assuming Gamma Distribution		95% KM (z) UCL	1.52
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.489
Minimum	0.000001	95% KM (bootstrap t) UCL	1.8
Maximum	4.6	95% KM (BCA) UCL	1.721
Mean	0.815	95% KM (Percentile Bootstrap) UCL	1.598
Median	0.000001	95% KM (Chebyshev) UCL	2.219
SD	1.251	97.5% KM (Chebyshev) UCL	2.704
k star	0.132	99% KM (Chebyshev) UCL	3.657
Theta star	6.171		
Nu star	5.017	**Potential UCLs to Use**	
AppChi2	1.16	95% KM (t) UCL	1.543
95% Gamma Approximate UCL	3.524	95% KM (Percentile Bootstrap) UCL	1.598
95% Adjusted Gamma UCL	4.053		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

PROUCL OUTPUT - COW PEN CREEK LOCATIONS

	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

BAP Equivalent - Positive Results

General Statistics

Number of Valid Data	18	Number of Detected Data	16
Number of Distinct Detected Data	16	Number of Non-Detect Data	2
Number of Missing Values	3	Percent Non-Detects	11.11%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	50.39	Minimum Detected	3.92
Maximum Detected	6325	Maximum Detected	8.752
Mean of Detected	1250	Mean of Detected	6.519
SD of Detected	1544	SD of Detected	1.265
Minimum Non-Detect	495	Minimum Non-Detect	6.205
Maximum Non-Detect	540	Maximum Non-Detect	6.292
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	11
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	38.89%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.682	Shapiro Wilk Test Statistic	0.939
5% Shapiro Wilk Critical Value	0.887	5% Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1140	Mean	6.411
SD	1485	SD	1.229
95% DL/2 (t) UCL	1749	95% H-Stat (DL/2) UCL	3153
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	666.3	Mean in Log Scale	6.368
SD	1945	SD in Log Scale	1.267
95% MLE (t) UCL	1464	Mean in Original Scale	1131
95% MLE (Tiku) UCL	1554	SD in Original Scale	1492
		95% t UCL	1742
		95% Percentile Bootstrap UCL	1703
		95% BCA Bootstrap UCL	1986
		95% H UCL	3316

PROUCL OUTPUT - COW PEN CREEK LOCATIONS

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.812	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1540		
nu star	25.98		
A-D Test Statistic	0.362	Nonparametric Statistics	
5% A-D Critical Value	0.766	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.766	Mean	1139
5% K-S Critical Value	0.222	SD	1446
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	352.4
		95% KM (t) UCL	1752
Assuming Gamma Distribution		95% KM (z) UCL	1719
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1750
Minimum	0.000001	95% KM (bootstrap t) UCL	2415
Maximum	6325	95% KM (BCA) UCL	1871
Mean	1112	95% KM (Percentile Bootstrap) UCL	1772
Median	693.8	95% KM (Chebyshev) UCL	2675
SD	1506	97.5% KM (Chebyshev) UCL	3340
k star	0.251	99% KM (Chebyshev) UCL	4645
Theta star	4428		
Nu star	9.037	Potential UCLs to Use	
AppChi2	3.349	95% KM (Chebyshev) UCL	2675
95% Gamma Approximate UCL	2999		
95% Adjusted Gamma UCL	3321		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

APPENDIX C—ECOLOGICAL RISK ASSESSMENT SUPPORTING DOCUMENTATION

TABLE C-1

TERRESTRIAL FOOD CHAIN MODEL - BSAF VALUES
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

Chemical	Biota Sediment Accumulation Factor (BSAF)		
	Conservative	Average	Source
Volatile Organic Compounds			
1,3-DICHLOROBENZENE	1.0	1.0	NA
1,4-DICHLOROBENZENE	1.0	1.0	NA
Semivolatile Organic Compounds			
1,2-DICHLOROBENZENE	1.0	1.0	NA
1,3-DICHLOROBENZENE	1.0	1.0	NA
1,4-DICHLOROBENZENE	1.0	1.0	NA
ACENAPHTHENE	0.29	0.29	USEPA, 2004
ACENAPHTHYLENE	0.29	0.29	USEPA, 2004
ANTHRACENE	0.29	0.29	USEPA, 2004
BENZO(A)ANTHRACENE	0.29	0.29	USEPA, 2004
BENZO(A)PYRENE	0.29	0.29	USEPA, 2004
BENZO(B)FLUORANTHENE	0.29	0.29	USEPA, 2004
BENZO(G,H,I)PERYLENE	0.29	0.29	USEPA, 2004
BENZO(K)FLUORANTHENE	0.29	0.29	USEPA, 2004
CHRYSENE	0.29	0.29	USEPA, 2004
DIBENZO(A,H)ANTHRACENE	0.29	0.29	USEPA, 2004
FLUORANTHENE	0.29	0.29	USEPA, 2004
FLUORENE	0.29	0.29	USEPA, 2004
INDENO(1,2,3-CD)PYRENE	0.29	0.29	USEPA, 2004
PHENANTHRENE	0.29	0.29	USEPA, 2004
PYRENE	0.29	0.29	USEPA, 2004
Metals			
DIBUTYLTIN	10.0	10.0	NOAA, 2000
HEXAVALENT CHROMIUM	0.468	0.1	ORNL, 1998

Notes:

Conservative and average refer to the exposure scenario for which the BSAFs were used. Only one value is available for each chemical in USEPA (2004) and NOAA (2000), so the same value was used for the conservative and average scenarios. Conservative BSAF for hexavalent chromium is 90th percentile, average value is median (ORNL, 1998).

NA - BSAF not available. A default value of 1.0 was used.

TABLE C-2

DRY WEIGHT DERIVATION OF BODY WEIGHT AND FOOD INTAKE FACTORS FOR TERRESTRIAL FOOD CHAIN MODEL

Data from EPA (1993)				Derivation of Factors for Modeling			
Species/Factor	**Age/Sex/ Cond./Seas.**	**Value**	**Study Average**	**Calculation of Values**			**Notes**
Mink							
Body Weight (g)	A M spring	1734	1354	Minimum Value	0.550	kg	
	A F spring	974		Maximum Value	1.734	kg	
				Overall Study Average	1.1031	kg	
	A M summer	1040	852				
	A M fall	1233					
	A F summer	550					
	A F fall	586					
Food Ingestion Rate (g/g-day)	A M summer	0.13	0.13	Conservative value:	0.0607	kg/day	Maximum ingestion rate * Average Body weight * 0.25[(1)]
	A M winter	0.12	0.14	Average value	0.04504	kg/day	Average ingestion rate * Average Body weight * 0.25[(1)]
	A F winter	0.16					
	A M yr-round	0.22	0.22				
	Overall Study Average		0.163				[(1)] - 0.25 = percent solids in fish to convert to a dry weight ingestion rate
Belted Kingfisher							
Body Weight (g)	A B	148		Minimum Value	0.136	kg	
				Maximum Value	0.158	kg	
	A B	136		Overall Study Average	0.1473	kg	
	A B	158					
	A B	158					
Food Ingestion Rate (g/g-day)	A B	0.5		Conservative value:	0.01975	kg/day	Ingestion rate * Maximum Body weight * 0.25[(1)]
				Average value	0.01842	kg/day	Ingestion rate * Average Body weight * 0.25[(1)]
							[(1)] - 0.25 = percent solids in fish to convert to a dry weight ingestion rate
Green Heron							
Body Weight (g)	AB	212		Mean of 34 adults from Florida = 212 g, standard deviation = 5.92 g (Dunning, 1993)			
				Conservative scenario:	0.200	kg	Mean minus 2 standard deviations (Dunning, 1993)
				Average scenario:	0.212	kg	Mean (Dunning, 1993)
Food Ingestion Rate (g/g-day)				Conservative scenario:	0.031	kg/day	Using allometric equation from Nagy (2001) for 0.224 kg marine bird (0.224 kg = mean plus 2 standard deviations from Dunning (1993) green heron data)
	-	-					
				Average scenario:	0.030	kg/day	Using allometric equation from Nagy (2001) for 0.212 kg marine bird

Notes:
A = Adult
F = Female, M = Male, B = Both
BW = Body Weight

TABLE C-3
SOURCES AND ENDPOINTS FOR NOAELS AND LOAELS FOR TERRESTRIAL WILDLIFE

Parameters	Concentration (mg/kg-day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Volatile Organics							
1,4-Dichlorobenzene	300	LOAEL	mortality	chronic	rat	NTP, 1987	ATSDR, 1998
Semivolatiles Organics							
1,2-Dichlorobenzene	120	NOAEL	systemic	chronic	rat	NTP, 1985	IRIS, 2002
1,4-Dichlorobenzene	300	LOAEL	mortality	chronic	rat	NTP, 1987	ATSDR, 1998
7,12-Dimethylbenz(a)anthracene	20	LOAEL	systemic	chronic	nestling/starlings	Trust et al., 1994	
7,12-Dimethylbenz(a)anthracene	2	NOAEL	systemic	chronic	nestling/starlings	Trust et al., 1994	
Acenaphthene	356	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Acenaphthene	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Acenaphthylene	356	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Acenaphthylene	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Anthracene	356	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Anthracene	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Benzo(a)anthracene	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Benzo(a)anthracene	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Benzo(a)pyrene	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Benzo(a)pyrene	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Benzo(b)fluoranthene	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Benzo(b)fluoranthene	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Benzo(g,h,I)perylene	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Benzo(g,h,I)perylene	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Benzo(k)fluoranthene	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Benzo(k)fluoranthene	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Chrysene	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Chrysene	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Dibenzo(a,h)anthracene	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Dibenzo(a,h)anthracene	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Fluoranthene	356	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Fluoranthene	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Fluorene	356	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Fluorene	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Indeno(1,2,3-cd)pyrene	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Indeno(1,2,3-cd)pyrene	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Phenanthrene	356	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Phenanthrene	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Pyrene	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Pyrene	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
PCBs							
Aroclor-1248	0.1	LOAEL	reproductive	chronic	rhesus monkey	Barsotti et al., 1976	Sample et.al., 1996
Aroclor-1254	1.8	LOAEL	reproductive	chronic	pheasant	Dahlgren et al., 1972	Sample et.al., 1996
Aroclor-1254	0.68	LOAEL	reproduction	chronic	mouse	McCoy et al., 1995	Sample et.al., 1996
Inorganics							
Arsenic	4.51	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Arsenic	4.55	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Arsenic	2.24	NOAEL	reproduction & growth	chronic	chicken	USEPA, 2005	
Arsenic	1.04	NOAEL	reproduction & growth	chronic	dog	USEPA, 2005	
Cadmium	6.35	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Cadmium	6.9	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	

TABLE C-3
SOURCES AND ENDPOINTS FOR NOAELS AND LOAELS FOR TERRESTRIAL WILDLIFE

Parameters	Concentration (mg/kg-day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Cadmium	1.47	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Cadmium	0.77	NOAEL	reproduction & growth	chronic	rat	USEPA, 2005	
Chromium(III)	15.63	LOAEL	reproduction & growth	chronic	birds	USEPA, 2008	
Chromium(III)	58.17	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
Chromium(III)	2.66	NOAEL	reproduction & growth	chronic	birds	USEPA, 2008	
Chromium(III)	2.4	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
Chromium(VI)	38.37	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
Chromium(VI)	9.24	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
Copper	34.87	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Copper	82.7	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Copper	4.05	NOAEL	reproduction & growth	chronic	chicken	USEPA, 2007	
Copper	5.6	NOAEL	reproduction & growth	chronic	pig	USEPA, 2007	
Lead	44.63	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Lead	186.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Lead	1.63	NOAEL	reproduction & growth	chronic	chicken	USEPA, 2005	
Lead	4.7	NOAEL	reproduction & growth	chronic	rat	USEPA, 2005	
Mercury	0.064	LOAEL	reproductive	chronic	mallard duck	Heinz, 1979	Sample et.al., 1996
Mercury	0.16	LOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et.al., 1996
Mercury	0.032	NOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et.al., 1996
Nickel	18.57	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Nickel	14.77	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Nickel	6.71	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Nickel	1.7	NOAEL	reproduction & growth	chronic	mouse	USEPA, 2007	
Selenium	0.819	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Selenium	0.661	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Selenium	0.29	NOAEL	reproduction & growth	chronic	chicken	USEPA, 2007	
Selenium	0.143	NOAEL	reproduction & growth	chronic	pig	USEPA, 2007	
Silver	60.47	LOAEL	reproduction & growth	chronic	birds	USEPA, 2006	
Silver	118.62	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2006	
Silver	2.02	NOAEL	reproduction & growth	chronic	turkey	USEPA, 2006	
Silver	6.02	NOAEL	reproduction & growth	chronic	pig	USEPA, 2006	
Tin	23.4	NOAEL	reproductive	chronic	mouse	Davis et al., 1987	Sample et.al., 1996
Tin	35	LOAEL	reproductive	chronic	mouse	Davis et al., 1987	Sample et.al., 1996
Tin	6.76	NOAEL	reproductive	chronic	Japanese quail	Schlatterer et al., 1993	Sample et.al., 1996
Tin	16.9	LOAEL	reproductive	chronic	Japanese quail	Schlatterer et al., 1993	Sample et.al., 1996
Zinc	297.58	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Zinc	171.44	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Zinc	75.4	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Zinc	66.1	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007	

Notes:
NOAEL = No Observed Adverse Effects Level
LOAEL = Lowest Observed Adverse Effects Level
The LOAELs used for several metals were calculated as the geometric mean of growth and reproduction data from the Ecological Soil Screening Levels (U.S. EPA, 2005, 2006, 2007).

TABLE C-4

WILDLIFE TOXICITY REFERENCE VALUES
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

PARAMETER	Toxicity Reference Value (mg/kg/day)			
	Mammal		Bird	
	NOAEL	LOAEL	NOAEL	LOAEL
VOLATILES				
1,3-Dichlorobenzene	NA	NA	NA	NA
1,4-Dichlorobenzene	30	300	NA	NA
SEMIVOLATILES				
1,2-Dichlorobenzene	120	1200	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA
1,4-Dichlorobenzene	30	300	NA	NA
Acenaphthene	65.6	356	2[(1)]	20[(1)]
Acenaphthylene	65.6	356	2[(1)]	20[(1)]
Anthracene	65.6	356	2[(1)]	20[(1)]
Benzo(a)anthracene	0.615	38.4	2[(1)]	20[(1)]
Benzo(a)pyrene	0.615	38.4	2[(1)]	20[(1)]
Benzo(b)fluoranthene	0.615	38.4	2[(1)]	20[(1)]
Benzo(g,h,i)perylene	0.615	38.4	2[(1)]	20[(1)]
Benzo(k)fluoranthene	0.615	38.4	2[(1)]	20[(1)]
Chrysene	0.615	38.4	2[(1)]	20[(1)]
Dibenzo(a,h)anthracene	0.615	38.4	2[(1)]	20[(1)]
Fluoranthene	65.6	356	2[(1)]	20[(1)]
Fluorene	65.6	356	2[(1)]	20[(1)]
Indeno(1,2,3-cd)pyrene	0.615	38.4	2[(1)]	20[(1)]
Phenanthrene	65.6	356	2[(1)]	20[(1)]
Pyrene	0.615	38.4	2[(1)]	20[(1)]
PCBs				
Aroclor-1248	0.01	0.1	NA	NA
Aroclor-1254	0.068	0.68	0.18	1.8
Aroclor-1260	0.068[(2)]	0.68[(2)]	0.18[(2)]	1.8[(2)]
Aroclor-1262	0.068[(2)]	0.68[(2)]	0.18[(2)]	1.8[(2)]
Aroclor-1268	0.068[(2)]	0.68[(2)]	0.18[(2)]	1.8[(2)]
Total Aroclor	0.068[(2)]	0.68[(2)]	0.18[(2)]	1.8[(2)]
INORGANICS				
Arsenic	1.04	4.55	2.24	4.51
Cadmium	0.77	6.9	1.47	6.35
Chromium	2.40	58.17	2.66	15.63
Copper	5.6	82.7	4.05	34.87
Dibutyltin	23.4[(3)]	35[(3)]	6.76[(3)]	16.9[(3)]
Hexavalent Chromium	9.24	38.37	NA	NA
Lead	4.7	186.4	1.63	44.63
Mercury	0.032	0.16	0.0064	0.064
Nickel	1.70	14.77	6.71	18.57
Selenium	0.143	0.661	0.29	0.819
Silver	6.02	118.62	2.02	60.47
Zinc	75.4	297.58	66.1	171.44

Notes:
The sources of these values are presented in the Table C-3.
NOAEL - No observed adverse effect level
LOAEL - Lowest observed adverse effect level
NA - Not available
The NOAELs and LOAELs taken from Table C-3 were divided by 10 if a subchronic study was the basis for the value. If only a NOAEL was available, the value was multiplied by 10 to estimate the LOAEL. If only a LOAEL was available, the value was divided by 10 to estimate the NOAEL.

(1) 7,12-dimethybenz(a)anthracene used as a surrogate (see Table C-3).
(2) The LOAEL for Aroclor-1254 used as surrogate (see Table C-3).
(3) The NOAEL and LOAEL for tin used as surrogate (see Table C-3).

TABLE C-5

KINGFISHER - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SURFACE SEDIMENT(0-6")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed. Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Volatile Organics									
1,3-DICHLOROBENZENE	2.00E-03	3.01E-03	0.00E+00	4.37E-04	4.37E-04	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	3.00E-03	4.51E-03	0.00E+00	6.56E-04	6.56E-04	NV	NV	#VALUE!	#VALUE!
Semivolatile Organics									
1,3-DICHLOROBENZENE	4.20E-01	6.32E-01	0.00E+00	9.18E-02	9.18E-02	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	8.50E-01	1.28E+00	0.00E+00	1.86E-01	1.86E-01	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	7.90E-01	3.45E-01	0.00E+00	5.01E-02	5.01E-02	2.00E+00	2.00E+01	2.5E-02	2.5E-03
ACENAPHTHYLENE	7.90E-01	3.45E-01	0.00E+00	5.01E-02	5.01E-02	2.00E+00	2.00E+01	2.5E-02	2.5E-03
ANTHRACENE	2.30E+00	1.00E+00	0.00E+00	1.46E-01	1.46E-01	2.00E+00	2.00E+01	7.3E-02	7.3E-03
BENZO(A)ANTHRACENE	5.20E+00	2.27E+00	0.00E+00	3.30E-01	3.30E-01	2.00E+00	2.00E+01	1.6E-01	1.6E-02
BENZO(A)PYRENE	4.40E+00	1.92E+00	0.00E+00	2.79E-01	2.79E-01	2.00E+00	2.00E+01	1.4E-01	1.4E-02
BENZO(B)FLUORANTHENE	5.80E+00	2.53E+00	0.00E+00	3.68E-01	3.68E-01	2.00E+00	2.00E+01	1.8E-01	1.8E-02
BENZO(G,H,I)PERYLENE	3.10E+00	1.35E+00	0.00E+00	1.96E-01	1.96E-01	2.00E+00	2.00E+01	9.8E-02	9.8E-03
BENZO(K)FLUORANTHENE	2.70E+00	1.18E+00	0.00E+00	1.71E-01	1.71E-01	2.00E+00	2.00E+01	8.6E-02	8.6E-03
CHRYSENE	5.40E+00	2.36E+00	0.00E+00	3.42E-01	3.42E-01	2.00E+00	2.00E+01	1.7E-01	1.7E-02
DIBENZO(A,H)ANTHRACENE	7.20E-01	3.14E-01	0.00E+00	4.56E-02	4.56E-02	2.00E+00	2.00E+01	2.3E-02	2.3E-03
FLUORANTHENE	1.00E+01	4.36E+00	0.00E+00	6.34E-01	6.34E-01	2.00E+00	2.00E+01	3.2E-01	3.2E-02
FLUORENE	1.40E+00	6.11E-01	0.00E+00	8.87E-02	8.87E-02	2.00E+00	2.00E+01	4.4E-02	4.4E-03
INDENO(1,2,3-CD)PYRENE	3.40E+00	1.48E+00	0.00E+00	2.15E-01	2.15E-01	2.00E+00	2.00E+01	1.1E-01	1.1E-02
PHENANTHRENE	1.20E+01	5.24E+00	0.00E+00	7.60E-01	7.60E-01	2.00E+00	2.00E+01	3.8E-01	3.8E-02
PYRENE	1.30E+01	5.67E+00	0.00E+00	8.24E-01	8.24E-01	2.00E+00	2.00E+01	4.1E-01	4.1E-02
PCBs									
AROCLOR-1254	4.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01	1.80E+00	0.0E+00	0.0E+00
AROCLOR-1260	5.40E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01	1.80E+00	0.0E+00	0.0E+00
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	8.71E-01	8.71E-01	1.80E-01	1.80E+00	4.8E+00	4.8E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	7.55E-02	7.55E-02	1.80E-01	1.80E+00	4.2E-01	4.2E-02
TOTAL AROCLOR	5.40E+01	6.52E+00	0.00E+00	9.47E-01	9.47E-01	1.80E-01	1.80E+00	5.3E+00	5.3E-01
Metals									
ARSENIC	3.72E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E+00	4.51E+00	0.0E+00	0.0E+00
CADMIUM	2.96E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00	6.35E+00	0.0E+00	0.0E+00
CHROMIUM	6.99E+02	1.64E+00	0.00E+00	2.38E-01	2.38E-01	2.66E+00	1.56E+01	9.0E-02	1.5E-02
COPPER	1.83E+02	8.00E+00	0.00E+00	1.16E+00	1.16E+00	4.05E+00	3.49E+01	2.9E-01	3.3E-02
HEXAVALENT CHROMIUM	1.30E+01	6.08E+00	0.00E+00	8.84E-01	8.84E-01	NV	NV	#VALUE!	#VALUE!
LEAD	3.15E+04	7.60E-01	0.00E+00	1.10E-01	1.10E-01	1.63E+00	4.46E+01	6.8E-02	2.5E-03
MERCURY	3.50E+00	4.80E-01	0.00E+00	6.97E-02	6.97E-02	6.40E-03	6.40E-02	1.1E+01	1.1E+00
NICKEL	6.28E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.71E+00	1.86E+01	0.0E+00	0.0E+00
SELENIUM	3.10E+00	2.72E+00	0.00E+00	3.95E-01	3.95E-01	2.90E-01	8.19E-01	1.4E+00	4.8E-01
SILVER	2.86E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E+00	6.05E+01	0.0E+00	0.0E+00
ZINC	6.36E+02	3.92E+01	0.00E+00	5.69E+00	5.69E+00	6.61E+01	1.71E+02	8.6E-02	3.3E-02
DIBUTYLTIN	1.10E-02	1.10E-01	0.00E+00	1.60E-02	1.60E-02	6.76E+00	1.69E+01	2.4E-03	9.5E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.360E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.975E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	0.000E+00	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-6

KINGFISHER - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SURFACE SEDIMENT(0-6")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Dose (mg/kg/d) from: Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	Hazard Quotients LOAEL
Volatile Organics									
1,3-DICHLOROBENZENE	2.00E-03	3.01E-03	0.00E+00	3.76E-04	3.76E-04	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	1.75E-03	2.63E-03	0.00E+00	3.29E-04	3.29E-04	NV	NV	#VALUE!	#VALUE!
Semivolatile Organics									
1,3-DICHLOROBENZENE	5.31E-01	6.32E-01	0.00E+00	7.90E-02	7.90E-02	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	3.86E-01	5.81E-01	0.00E+00	7.27E-02	7.27E-02	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	4.06E-01	1.77E-01	0.00E+00	2.21E-02	2.21E-02	2.00E+00	2.00E+01	1.1E-02	1.1E-03
ACENAPHTHYLENE	4.48E-01	1.95E-01	0.00E+00	2.44E-02	2.44E-02	2.00E+00	2.00E+01	1.2E-02	1.2E-03
ANTHRACENE	4.43E-01	1.93E-01	0.00E+00	2.42E-02	2.42E-02	2.00E+00	2.00E+01	1.2E-02	1.2E-03
BENZO(A)ANTHRACENE	6.65E-01	2.90E-01	0.00E+00	3.63E-02	3.63E-02	2.00E+00	2.00E+01	1.8E-02	1.8E-03
BENZO(A)PYRENE	6.52E-01	2.85E-01	0.00E+00	3.56E-02	3.56E-02	2.00E+00	2.00E+01	1.8E-02	1.8E-03
BENZO(B)FLUORANTHENE	8.43E-01	3.68E-01	0.00E+00	4.60E-02	4.60E-02	2.00E+00	2.00E+01	2.3E-02	2.3E-03
BENZO(G,H,I)PERYLENE	6.01E-01	2.62E-01	0.00E+00	3.28E-02	3.28E-02	2.00E+00	2.00E+01	1.6E-02	1.6E-03
BENZO(K)FLUORANTHENE	4.46E-01	1.95E-01	0.00E+00	2.44E-02	2.44E-02	2.00E+00	2.00E+01	1.2E-02	1.2E-03
CHRYSENE	7.46E-01	3.25E-01	0.00E+00	4.07E-02	4.07E-02	2.00E+00	2.00E+01	2.0E-02	2.0E-03
DIBENZO(A,H)ANTHRACENE	4.68E-01	2.04E-01	0.00E+00	2.55E-02	2.55E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
FLUORANTHENE	1.06E+00	4.63E-01	0.00E+00	5.78E-02	5.78E-02	2.00E+00	2.00E+01	2.9E-02	2.9E-03
FLUORENE	4.38E-01	1.91E-01	0.00E+00	2.39E-02	2.39E-02	2.00E+00	2.00E+01	1.2E-02	1.2E-03
INDENO(1,2,3-CD)PYRENE	5.76E-01	2.52E-01	0.00E+00	3.14E-02	3.14E-02	2.00E+00	2.00E+01	1.6E-02	1.6E-03
PHENANTHRENE	7.48E-01	3.26E-01	0.00E+00	4.08E-02	4.08E-02	2.00E+00	2.00E+01	2.0E-02	2.0E-03
PYRENE	1.33E+00	5.80E-01	0.00E+00	7.25E-02	7.25E-02	2.00E+00	2.00E+01	3.6E-02	3.6E-03
PCBs									
AROCLOR-1254	1.44E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01	1.80E+00	0.0E+00	0.0E+00
AROCLOR-1260	1.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01	1.80E+00	0.0E+00	0.0E+00
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	1.64E-01	1.64E-01	1.80E-01	1.80E+00	9.1E-01	9.1E-02
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	2.29E-02	2.29E-02	1.80E-01	1.80E+00	1.3E-01	1.3E-02
TOTAL AROCLOR	1.38E+00	1.50E+00	0.00E+00	1.87E-01	1.87E-01	1.80E-01	1.80E+00	1.0E+00	1.0E-01
Metals									
ARSENIC	8.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E+00	4.51E+00	0.0E+00	0.0E+00
CADMIUM	1.09E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00	6.35E+00	0.0E+00	0.0E+00
CHROMIUM	1.47E+02	6.35E-01	0.00E+00	7.94E-02	7.94E-02	2.66E+00	1.56E+01	3.0E-02	5.1E-03
COPPER	9.08E+01	4.15E+00	0.00E+00	5.19E-01	5.19E-01	4.05E+00	3.49E+01	1.3E-01	1.5E-02
HEXAVALENT CHROMIUM	1.27E+00	1.27E-01	0.00E+00	1.59E-02	1.59E-02	NV	NV	#VALUE!	#VALUE!
LEAD	4.07E+02	3.83E-01	0.00E+00	4.78E-02	4.78E-02	1.63E+00	4.46E+01	2.9E-02	1.1E-03
MERCURY	3.62E-01	1.98E-01	0.00E+00	2.47E-02	2.47E-02	6.40E-03	6.40E-02	3.9E+00	3.9E-01
NICKEL	3.18E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.71E+00	1.86E+01	0.0E+00	0.0E+00
SELENIUM	1.16E+00	1.83E+00	0.00E+00	2.28E-01	2.28E-01	2.90E-01	8.19E-01	7.9E-01	2.8E-01
SILVER	2.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E+00	6.05E+01	0.0E+00	0.0E+00
ZINC	2.90E+02	3.12E+01	0.00E+00	3.89E+00	3.89E+00	6.61E+01	1.71E+02	5.9E-02	2.3E-02
DIBUTYLTIN	5.52E-03	5.52E-02	0.00E+00	6.90E-03	6.90E-03	6.76E+00	1.69E+01	1.0E-03	4.1E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.473E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.842E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	0.000E+00	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	6.000E-01	km-radius	Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-7

GREEN HERON - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SURFACE SEDIMENT(0-6")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed. Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Volatile Organics									
1,3-DICHLOROBENZENE	2.00E-03	3.01E-03	1.60E-05	4.66E-04	4.82E-04	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	3.00E-03	4.51E-03	2.40E-05	7.00E-04	7.24E-04	NV	NV	#VALUE!	#VALUE!
Semivolatile Organics									
1,3-DICHLOROBENZENE	4.20E-01	6.32E-01	3.36E-03	9.80E-02	1.01E-01	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	8.50E-01	1.28E+00	6.80E-03	1.98E-01	2.05E-01	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	7.90E-01	3.45E-01	6.32E-03	5.34E-02	5.98E-02	2.00E+00	2.00E+01	3.0E-02	3.0E-03
ACENAPHTHYLENE	7.90E-01	3.45E-01	6.32E-03	5.34E-02	5.98E-02	2.00E+00	2.00E+01	3.0E-02	3.0E-03
ANTHRACENE	2.30E+00	1.00E+00	1.84E-02	1.56E-01	1.74E-01	2.00E+00	2.00E+01	8.7E-02	8.7E-03
BENZO(A)ANTHRACENE	5.20E+00	2.27E+00	4.16E-02	3.52E-01	3.93E-01	2.00E+00	2.00E+01	2.0E-01	2.0E-02
BENZO(A)PYRENE	4.40E+00	1.92E+00	3.52E-02	2.98E-01	3.33E-01	2.00E+00	2.00E+01	1.7E-01	1.7E-02
BENZO(B)FLUORANTHENE	5.80E+00	2.53E+00	4.64E-02	3.92E-01	4.39E-01	2.00E+00	2.00E+01	2.2E-01	2.2E-02
BENZO(G,H,I)PERYLENE	3.10E+00	1.35E+00	2.48E-02	2.10E-01	2.34E-01	2.00E+00	2.00E+01	1.2E-01	1.2E-02
BENZO(K)FLUORANTHENE	2.70E+00	1.18E+00	2.16E-02	1.83E-01	2.04E-01	2.00E+00	2.00E+01	1.0E-01	1.0E-02
CHRYSENE	5.40E+00	2.36E+00	4.32E-02	3.65E-01	4.08E-01	2.00E+00	2.00E+01	2.0E-01	2.0E-02
DIBENZO(A,H)ANTHRACENE	7.20E-01	3.14E-01	5.76E-03	4.87E-02	5.45E-02	2.00E+00	2.00E+01	2.7E-02	2.7E-03
FLUORANTHENE	1.00E+01	4.36E+00	8.00E-02	6.76E-01	7.56E-01	2.00E+00	2.00E+01	3.8E-01	3.8E-02
FLUORENE	1.40E+00	6.11E-01	1.12E-02	9.47E-02	1.06E-01	2.00E+00	2.00E+01	5.3E-02	5.3E-03
INDENO(1,2,3-CD)PYRENE	3.40E+00	1.48E+00	2.72E-02	2.30E-01	2.57E-01	2.00E+00	2.00E+01	1.3E-01	1.3E-02
PHENANTHRENE	1.20E+01	5.24E+00	9.60E-02	8.12E-01	9.08E-01	2.00E+00	2.00E+01	4.5E-01	4.5E-02
PYRENE	1.30E+01	5.67E+00	1.04E-01	8.79E-01	9.83E-01	2.00E+00	2.00E+01	4.9E-01	4.9E-02
PCBs									
AROCLOR-1254	4.00E-01	0.00E+00	3.20E-03	0.00E+00	3.20E-03	1.80E-01	1.80E+00	1.8E-02	1.8E-03
AROCLOR-1260	5.40E+01	0.00E+00	4.32E-01	0.00E+00	4.32E-01	1.80E-01	1.80E+00	2.4E+00	2.4E-01
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	9.30E-01	9.30E-01	1.80E-01	1.80E+00	5.2E+00	5.2E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	8.06E-02	8.06E-02	1.80E-01	1.80E+00	4.5E-01	4.5E-02
TOTAL AROCLOR	5.40E+01	6.52E+00	4.32E-01	1.01E+00	1.44E+00	1.80E-01	1.80E+00	8.0E+00	8.0E-01
Metals									
ARSENIC	3.72E+01	0.00E+00	2.98E-01	0.00E+00	2.98E-01	2.24E+00	4.51E+00	1.3E-01	6.6E-02
CADMIUM	2.96E+02	0.00E+00	2.37E+00	0.00E+00	2.37E+00	1.47E+00	6.35E+00	1.6E+00	3.7E-01
CHROMIUM	6.99E+02	1.64E+00	5.59E+00	2.54E-01	5.85E+00	2.66E+00	1.56E+01	2.2E+00	3.7E-01
COPPER	1.83E+02	8.00E+00	1.46E+00	1.24E+00	2.70E+00	4.05E+00	3.49E+01	6.7E-01	7.8E-02
HEXAVALENT CHROMIUM	1.30E+01	6.08E+00	1.04E-01	9.43E-01	1.05E+00	NV	NV	#VALUE!	#VALUE!
LEAD	3.15E+04	7.60E-01	2.52E+02	1.18E-01	2.52E+02	1.63E+00	4.46E+01	1.5E+02	5.6E+00
MERCURY	3.50E+00	4.80E-01	2.80E-02	7.44E-02	1.02E-01	6.40E-03	6.40E-02	1.6E+01	1.6E+00
NICKEL	6.28E+01	0.00E+00	5.02E-01	0.00E+00	5.02E-01	6.71E+00	1.86E+01	7.5E-02	2.7E-02
SELENIUM	3.10E+00	2.72E+00	2.48E-02	4.22E-01	4.46E-01	2.90E-01	8.19E-01	1.5E+00	5.5E-01
SILVER	2.86E+01	0.00E+00	2.29E-01	0.00E+00	2.29E-01	2.02E+00	6.05E+01	1.1E-01	3.8E-03
ZINC	6.36E+02	3.92E+01	5.09E+00	6.08E+00	1.12E+01	6.61E+01	1.71E+02	1.7E-01	6.5E-02
DIBUTYLTIN	1.10E-02	1.10E-01	8.80E-05	1.71E-02	1.71E-02	6.76E+00	1.69E+01	2.5E-03	1.0E-03

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.000E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	3.100E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	1.600E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-8

GREEN HERON - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SURFACE SEDIMENT(0-6")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Dose (mg/kg/d) from: Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	Hazard Quotients LOAEL
Volatile Organics									
1,3-DICHLOROBENZENE	2.00E-03	3.01E-03	1.42E-05	4.26E-04	3.76E-04	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	1.75E-03	2.63E-03	1.24E-05	3.73E-04	3.29E-04	NV	NV	#VALUE!	#VALUE!
Semivolatile Organics									
1,3-DICHLOROBENZENE	5.31E-01	6.32E-01	3.76E-03	8.94E-02	9.32E-02	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	3.86E-01	5.81E-01	2.73E-03	8.23E-02	8.50E-02	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	4.06E-01	1.77E-01	2.87E-03	2.50E-02	2.79E-02	2.00E+00	2.00E+01	1.4E-02	1.4E-03
ACENAPHTHYLENE	4.48E-01	1.95E-01	3.17E-03	2.77E-02	3.08E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
ANTHRACENE	4.43E-01	1.93E-01	3.13E-03	2.74E-02	3.05E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
BENZO(A)ANTHRACENE	6.65E-01	2.90E-01	4.71E-03	4.11E-02	4.58E-02	2.00E+00	2.00E+01	2.3E-02	2.3E-03
BENZO(A)PYRENE	6.52E-01	2.85E-01	4.61E-03	4.03E-02	4.49E-02	2.00E+00	2.00E+01	2.2E-02	2.2E-03
BENZO(B)FLUORANTHENE	8.43E-01	3.68E-01	5.97E-03	5.21E-02	5.80E-02	2.00E+00	2.00E+01	2.9E-02	2.9E-03
BENZO(G,H,I)PERYLENE	6.01E-01	2.62E-01	4.25E-03	3.71E-02	4.14E-02	2.00E+00	2.00E+01	2.1E-02	2.1E-03
BENZO(K)FLUORANTHENE	4.46E-01	1.95E-01	3.16E-03	2.76E-02	3.07E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
CHRYSENE	7.46E-01	3.25E-01	5.28E-03	4.61E-02	5.13E-02	2.00E+00	2.00E+01	2.6E-02	2.6E-03
DIBENZO(A,H)ANTHRACENE	4.68E-01	2.04E-01	3.31E-03	2.89E-02	3.22E-02	2.00E+00	2.00E+01	1.6E-02	1.6E-03
FLUORANTHENE	1.06E+00	4.63E-01	7.50E-03	6.55E-02	7.30E-02	2.00E+00	2.00E+01	3.6E-02	3.6E-03
FLUORENE	4.38E-01	1.91E-01	3.10E-03	2.70E-02	3.01E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
INDENO(1,2,3-CD)PYRENE	5.76E-01	2.52E-01	4.08E-03	3.56E-02	3.97E-02	2.00E+00	2.00E+01	2.0E-02	2.0E-03
PHENANTHRENE	7.48E-01	3.26E-01	5.29E-03	4.62E-02	5.15E-02	2.00E+00	2.00E+01	2.6E-02	2.6E-03
PYRENE	1.33E+00	5.80E-01	9.41E-03	8.21E-02	9.15E-02	2.00E+00	2.00E+01	4.6E-02	4.6E-03
PCBs									
AROCLOR-1254	1.44E-01	0.00E+00	1.02E-03	0.00E+00	1.02E-03	1.80E-01	1.80E+00	5.6E-03	5.6E-04
AROCLOR-1260	1.38E+00	0.00E+00	9.76E-03	0.00E+00	9.76E-03	1.80E-01	1.80E+00	5.4E-02	5.4E-03
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	1.86E-01	1.86E-01	1.80E-01	1.80E+00	1.0E+00	1.0E-01
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	2.59E-02	2.59E-02	1.80E-01	1.80E+00	1.4E-01	1.4E-02
TOTAL AROCLOR	1.38E+00	1.50E+00	9.76E-03	2.12E-01	2.22E-01	1.80E-01	1.80E+00	1.2E+00	1.2E-01
Metals									
ARSENIC	8.16E+00	0.00E+00	5.77E-02	0.00E+00	5.77E-02	2.24E+00	4.51E+00	2.6E-02	1.3E-02
CADMIUM	1.09E+01	0.00E+00	7.73E-02	0.00E+00	7.73E-02	1.47E+00	6.35E+00	5.3E-02	1.2E-02
CHROMIUM	1.47E+02	6.35E-01	1.04E+00	8.99E-02	1.13E+00	2.66E+00	1.56E+01	4.3E-01	7.2E-02
COPPER	9.08E+01	4.15E+00	6.43E-01	5.87E-01	1.23E+00	4.05E+00	3.49E+01	3.0E-01	3.5E-02
HEXAVALENT CHROMIUM	1.27E+00	1.27E-01	9.01E-03	1.80E-02	2.70E-02	NV	NV	#VALUE!	#VALUE!
LEAD	4.07E+02	3.83E-01	2.88E+00	5.41E-02	2.94E+00	1.63E+00	4.46E+01	1.8E+00	6.6E-02
MERCURY	3.62E-01	1.98E-01	2.56E-03	2.79E-02	3.05E-02	6.40E-03	6.40E-02	4.8E+00	4.8E-01
NICKEL	3.18E+01	0.00E+00	2.25E-01	0.00E+00	2.25E-01	6.71E+00	1.86E+01	3.4E-02	1.2E-02
SELENIUM	1.16E+00	1.83E+00	8.20E-03	2.58E-01	2.66E-01	2.90E-01	8.19E-01	9.2E-01	3.3E-01
SILVER	2.20E+00	0.00E+00	1.55E-02	0.00E+00	1.55E-02	2.02E+00	6.05E+01	7.7E-03	2.6E-04
ZINC	2.90E+02	3.12E+01	2.05E+00	4.41E+00	6.46E+00	6.61E+01	1.71E+02	9.8E-02	3.8E-02
DIBUTYLTIN	5.52E-03	5.52E-02	3.90E-05	7.81E-03	7.85E-03	6.76E+00	1.69E+01	1.2E-03	4.6E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.120E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	3.000E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	1.500E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)		km-radius	Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-9

MINK - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SURFACE SEDIMENT(0-6")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Volatile Organics									
1,3-DICHLOROBENZENE	2.00E-03	3.01E-03	2.07E-05	3.32E-04	3.53E-04	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	3.00E-03	4.51E-03	3.11E-05	4.98E-04	5.29E-04	3.00E+01	3.00E+02	1.8E-05	1.8E-06
Semivolatile Organics									
1,3-DICHLOROBENZENE	4.20E-01	6.32E-01	4.36E-03	6.97E-02	7.41E-02	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	8.50E-01	1.28E+00	8.81E-03	1.41E-01	1.50E-01	3.00E+01	3.00E+02	5.0E-03	5.0E-04
ACENAPHTHENE	7.90E-01	3.45E-01	8.19E-03	3.80E-02	4.62E-02	6.56E+01	3.56E+02	7.0E-04	1.3E-04
ACENAPHTHYLENE	7.90E-01	3.45E-01	8.19E-03	3.80E-02	4.62E-02	6.56E+01	3.56E+02	7.0E-04	1.3E-04
ANTHRACENE	2.30E+00	1.00E+00	2.38E-02	1.11E-01	1.35E-01	6.56E+01	3.56E+02	2.1E-03	3.8E-04
BENZO(A)ANTHRACENE	5.20E+00	2.27E+00	5.39E-02	2.50E-01	3.04E-01	6.15E-01	3.84E+01	4.9E-01	7.9E-03
BENZO(A)PYRENE	4.40E+00	1.92E+00	4.56E-02	2.12E-01	2.57E-01	6.15E-01	3.84E+01	4.2E-01	6.7E-03
BENZO(B)FLUORANTHENE	5.80E+00	2.53E+00	6.01E-02	2.79E-01	3.39E-01	6.15E-01	3.84E+01	5.5E-01	8.8E-03
BENZO(G,H,I)PERYLENE	3.10E+00	1.35E+00	3.21E-02	1.49E-01	1.81E-01	6.15E-01	3.84E+01	2.9E-01	4.7E-03
BENZO(K)FLUORANTHENE	2.70E+00	1.18E+00	2.80E-02	1.30E-01	1.58E-01	6.15E-01	3.84E+01	2.6E-01	4.1E-03
CHRYSENE	5.40E+00	2.36E+00	5.60E-02	2.60E-01	3.16E-01	6.15E-01	3.84E+01	5.1E-01	8.2E-03
DIBENZO(A,H)ANTHRACENE	7.20E-01	3.14E-01	7.47E-03	3.47E-02	4.21E-02	6.15E-01	3.84E+01	6.8E-02	1.1E-03
FLUORANTHENE	1.00E+01	4.36E+00	1.04E-01	4.81E-01	5.85E-01	6.56E+01	3.56E+02	8.9E-03	1.6E-03
FLUORENE	1.40E+00	6.11E-01	1.45E-02	6.74E-02	8.19E-02	6.56E+01	3.56E+02	1.2E-03	2.3E-04
INDENO(1,2,3-CD)PYRENE	3.40E+00	1.48E+00	3.53E-02	1.64E-01	1.99E-01	6.15E-01	3.84E+01	3.2E-01	5.2E-03
PHENANTHRENE	1.20E+01	5.24E+00	1.24E-01	5.78E-01	7.02E-01	6.56E+01	3.56E+02	1.1E-02	2.0E-03
PYRENE	1.30E+01	5.67E+00	1.35E-01	6.26E-01	7.61E-01	6.15E-01	3.84E+01	1.2E+00	2.0E-02
PCBs									
AROCLOR-1254	4.00E-01	0.00E+00	4.15E-03	0.00E+00	4.15E-03	6.80E-02	6.80E-01	6.1E-02	6.1E-03
AROCLOR-1260	5.40E+01	0.00E+00	5.60E-01	0.00E+00	5.60E-01	6.80E-02	6.80E-01	8.2E+00	8.2E-01
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	6.62E-01	6.62E-01	6.80E-02	6.80E-01	9.7E+00	9.7E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	5.74E-02	5.74E-02	6.80E-02	6.80E-01	8.4E-01	8.4E-02
TOTAL AROCLOR	5.40E+01	6.52E+00	5.60E-01	7.19E-01	1.28E+00	6.80E-02	6.80E-01	1.9E+01	1.9E+00
Metals									
ARSENIC	3.72E+01	0.00E+00	3.86E-01	0.00E+00	3.86E-01	1.04E+00	4.55E+00	3.7E-01	8.5E-02
CADMIUM	2.96E+02	0.00E+00	3.07E+00	0.00E+00	3.07E+00	7.70E-01	6.90E+00	4.0E+00	4.4E-01
CHROMIUM	6.99E+02	1.64E+00	7.25E+00	1.81E-01	7.43E+00	2.40E+00	5.82E+01	3.1E+00	1.3E-01
COPPER	1.83E+02	8.00E+00	1.90E+00	8.83E-01	2.78E+00	5.60E+00	8.27E+01	5.0E-01	3.4E-02
HEXAVALENT CHROMIUM	1.30E+01	6.08E+00	1.35E-01	6.71E-01	8.06E-01	9.24E+00	3.84E+01	8.7E-02	2.1E-02
LEAD	3.15E+04	7.60E-01	3.27E+02	8.38E-02	3.27E+02	4.70E+00	1.86E+02	7.0E+01	1.8E+00
MERCURY	3.50E+00	4.80E-01	3.63E-02	5.30E-02	8.92E-02	3.20E-02	1.60E-01	2.8E+00	5.6E-01
NICKEL	6.28E+01	0.00E+00	6.51E-01	0.00E+00	6.51E-01	1.70E+00	1.48E+01	3.8E-01	4.4E-02
SELENIUM	3.10E+00	2.72E+00	3.21E-02	3.00E-01	3.32E-01	1.43E-01	6.61E-01	2.3E+00	5.0E-01
SILVER	2.86E+01	0.00E+00	2.97E-01	0.00E+00	2.97E-01	6.02E+00	1.19E+02	4.9E-02	2.5E-03
ZINC	6.36E+02	3.92E+01	6.59E+00	4.32E+00	1.09E+01	7.54E+01	2.98E+02	1.4E-01	3.7E-02
DIBUTYLTIN	1.10E-02	1.10E-01	1.14E-04	1.21E-02	1.22E-02	2.34E+01	3.50E+01	5.2E-04	3.5E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	5.50E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	6.07E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	5.70E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-10

MINK - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SURFACE SEDIMENT(0-6")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Volatile Organics									
1,3-DICHLOROBENZENE	2.00E-03	3.01E-03	7.68E-06	1.23E-04	1.31E-04	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	1.75E-03	2.63E-03	6.72E-06	1.08E-04	1.14E-04	3.00E+01	3.00E+02	3.8E-06	3.8E-07
Semivolatile Organics									
1,3-DICHLOROBENZENE	5.31E-01	6.32E-01	2.04E-03	2.58E-02	2.78E-02	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	3.86E-01	5.81E-01	1.48E-03	2.37E-02	2.52E-02	3.00E+01	3.00E+02	8.4E-04	8.4E-05
ACENAPHTHENE	4.06E-01	1.77E-01	1.56E-03	7.23E-03	8.78E-03	6.56E+01	3.56E+02	1.3E-04	2.5E-05
ACENAPHTHYLENE	4.48E-01	1.95E-01	1.72E-03	7.98E-03	9.70E-03	6.56E+01	3.56E+02	1.5E-04	2.7E-05
ANTHRACENE	4.43E-01	1.93E-01	1.70E-03	7.89E-03	9.59E-03	6.56E+01	3.56E+02	1.5E-04	2.7E-05
BENZO(A)ANTHRACENE	6.65E-01	2.90E-01	2.55E-03	1.19E-02	1.44E-02	6.15E-01	3.84E+01	2.3E-02	3.8E-04
BENZO(A)PYRENE	6.52E-01	2.85E-01	2.50E-03	1.16E-02	1.41E-02	6.15E-01	3.84E+01	2.3E-02	3.7E-04
BENZO(B)FLUORANTHENE	8.43E-01	3.68E-01	3.24E-03	1.50E-02	1.83E-02	6.15E-01	3.84E+01	3.0E-02	4.8E-04
BENZO(G,H,I)PERYLENE	6.01E-01	2.62E-01	2.31E-03	1.07E-02	1.30E-02	6.15E-01	3.84E+01	2.1E-02	3.4E-04
BENZO(K)FLUORANTHENE	4.46E-01	1.95E-01	1.71E-03	7.96E-03	9.67E-03	6.15E-01	3.84E+01	1.6E-02	2.5E-04
CHRYSENE	7.46E-01	3.25E-01	2.86E-03	1.33E-02	1.62E-02	6.15E-01	3.84E+01	2.6E-02	4.2E-04
DIBENZO(A,H)ANTHRACENE	4.68E-01	2.04E-01	1.80E-03	8.34E-03	1.01E-02	6.15E-01	3.84E+01	1.6E-02	2.6E-04
FLUORANTHENE	1.06E+00	4.63E-01	4.07E-03	1.89E-02	2.30E-02	6.56E+01	3.56E+02	3.5E-04	6.4E-05
FLUORENE	4.38E-01	1.91E-01	1.68E-03	7.80E-03	9.48E-03	6.56E+01	3.56E+02	1.4E-04	2.7E-05
INDENO(1,2,3-CD)PYRENE	5.76E-01	2.52E-01	2.21E-03	1.03E-02	1.25E-02	6.15E-01	3.84E+01	2.0E-02	3.3E-04
PHENANTHRENE	7.48E-01	3.26E-01	2.87E-03	1.33E-02	1.62E-02	6.56E+01	3.56E+02	2.5E-04	4.6E-05
PYRENE	1.33E+00	5.80E-01	5.10E-03	2.37E-02	2.88E-02	6.15E-01	3.84E+01	4.7E-02	7.5E-04
PCBs									
AROCLOR-1254	1.44E-01	0.00E+00	5.51E-04	0.00E+00	5.51E-04	6.80E-02	6.80E-01	8.1E-03	8.1E-04
AROCLOR-1260	1.38E+00	0.00E+00	5.30E-03	0.00E+00	5.30E-03	6.80E-02	6.80E-01	7.8E-02	7.8E-03
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	5.37E-02	5.37E-02	6.80E-02	6.80E-01	7.9E-01	7.9E-02
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	7.47E-03	7.47E-03	6.80E-02	6.80E-01	1.1E-01	1.1E-02
TOTAL AROCLOR	1.38E+00	1.50E+00	5.30E-03	6.12E-02	6.65E-02	6.80E-02	6.80E-01	9.8E-01	9.8E-02
Metals									
ARSENIC	8.16E+00	0.00E+00	3.13E-02	0.00E+00	3.13E-02	1.04E+00	4.55E+00	3.0E-02	6.9E-03
CADMIUM	1.09E+01	0.00E+00	4.19E-02	0.00E+00	4.19E-02	7.70E-01	6.90E+00	5.4E-02	6.1E-03
CHROMIUM	1.47E+02	6.35E-01	5.65E-01	2.59E-02	5.91E-01	2.40E+00	5.82E+01	2.5E-01	1.0E-02
COPPER	9.08E+01	4.15E+00	3.49E-01	1.69E-01	5.18E-01	5.60E+00	8.27E+01	9.3E-02	6.3E-03
HEXAVALENT CHROMIUM	1.27E+00	1.27E-01	4.89E-03	5.20E-03	1.01E-02	9.24E+00	3.84E+01	1.1E-03	2.6E-04
LEAD	4.07E+02	3.83E-01	1.56E+00	1.56E-02	1.58E+00	4.70E+00	1.86E+02	3.4E-01	8.5E-03
MERCURY	3.62E-01	1.98E-01	1.39E-03	8.06E-03	9.45E-03	3.20E-02	1.60E-01	3.0E-01	5.9E-02
NICKEL	3.18E+01	0.00E+00	1.22E-01	0.00E+00	1.22E-01	1.70E+00	1.48E+01	7.2E-02	8.3E-03
SELENIUM	1.16E+00	1.83E+00	4.45E-03	7.45E-02	7.90E-02	1.43E-01	6.61E-01	5.5E-01	1.2E-01
SILVER	2.20E+00	0.00E+00	8.43E-03	0.00E+00	8.43E-03	6.02E+00	1.19E+02	1.4E-03	7.1E-05
ZINC	2.90E+02	3.12E+01	1.11E+00	1.27E+00	2.38E+00	7.54E+01	2.98E+02	3.2E-02	8.0E-03
DIBUTYLTIN	5.52E-03	5.52E-02	2.12E-05	2.25E-03	2.27E-03	2.34E+01	3.50E+01	9.7E-05	6.5E-05

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.10E+00	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	4.50E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	4.23E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	1.558E+03	acres	Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-11

KINGFISHER - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed. Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
1,2-DICHLOROBENZENE	2.60E-01	4.87E-01	0.00E+00	7.08E-02	7.08E-02	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	1.80E-01	3.37E-01	0.00E+00	4.90E-02	4.90E-02	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	2.40E+00	1.30E+00	0.00E+00	1.89E-01	1.89E-01	2.00E+00	2.00E+01	9.5E-02	9.5E-03
ACENAPHTHYLENE	2.80E-01	1.52E-01	0.00E+00	2.21E-02	2.21E-02	2.00E+00	2.00E+01	1.1E-02	1.1E-03
ANTHRACENE	4.40E+00	2.39E+00	0.00E+00	3.47E-01	3.47E-01	2.00E+00	2.00E+01	1.7E-01	1.7E-02
BENZO(A)ANTHRACENE	1.20E+01	6.52E+00	0.00E+00	9.47E-01	9.47E-01	2.00E+00	2.00E+01	4.7E-01	4.7E-02
BENZO(A)PYRENE	9.00E+00	4.89E+00	0.00E+00	7.11E-01	7.11E-01	2.00E+00	2.00E+01	3.6E-01	3.6E-02
BENZO(B)FLUORANTHENE	1.00E+01	5.44E+00	0.00E+00	7.89E-01	7.89E-01	2.00E+00	2.00E+01	3.9E-01	3.9E-02
BENZO(G,H,I)PERYLENE	4.80E+00	2.61E+00	0.00E+00	3.79E-01	3.79E-01	2.00E+00	2.00E+01	1.9E-01	1.9E-02
BENZO(K)FLUORANTHENE	7.30E+00	3.97E+00	0.00E+00	5.76E-01	5.76E-01	2.00E+00	2.00E+01	2.9E-01	2.9E-02
CHRYSENE	1.20E+01	6.52E+00	0.00E+00	9.47E-01	9.47E-01	2.00E+00	2.00E+01	4.7E-01	4.7E-02
DIBENZO(A,H)ANTHRACENE	7.90E-01	4.29E-01	0.00E+00	6.24E-02	6.24E-02	2.00E+00	2.00E+01	3.1E-02	3.1E-03
FLUORANTHENE	2.00E+01	1.09E+01	0.00E+00	1.58E+00	1.58E+00	2.00E+00	2.00E+01	7.9E-01	7.9E-02
FLUORENE	2.00E+00	1.09E+00	0.00E+00	1.58E-01	1.58E-01	2.00E+00	2.00E+01	7.9E-02	7.9E-03
INDENO(1,2,3-CD)PYRENE	5.60E+00	3.04E+00	0.00E+00	4.42E-01	4.42E-01	2.00E+00	2.00E+01	2.2E-01	2.2E-02
PHENANTHRENE	1.50E+01	8.15E+00	0.00E+00	1.18E+00	1.18E+00	2.00E+00	2.00E+01	5.9E-01	5.9E-02
PYRENE	2.40E+01	1.30E+01	0.00E+00	1.89E+00	1.89E+00	2.00E+00	2.00E+01	9.5E-01	9.5E-02
PCBs									
AROCLOR-1248	2.30E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NV	NV	#VALUE!	#VALUE!
AROCLOR-1260	1.40E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01	1.80E+00	0.0E+00	0.0E+00
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	8.71E-01	8.71E-01	1.80E-01	1.80E+00	4.8E+00	4.8E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	7.55E-02	7.55E-02	1.80E-01	1.80E+00	4.2E-01	4.2E-02
TOTAL AROCLOR	1.40E+01	6.52E+00	0.00E+00	9.47E-01	9.47E-01	1.80E-01	1.80E+00	5.3E+00	5.3E-01
Metals									
ARSENIC	1.26E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E+00	4.51E+00	0.0E+00	0.0E+00
CADMIUM	3.06E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00	6.35E+00	0.0E+00	0.0E+00
CHROMIUM	2.46E+03	1.64E+00	0.00E+00	2.38E-01	2.38E-01	2.66E+00	1.56E+01	9.0E-02	1.5E-02
COPPER	1.78E+02	8.00E+00	0.00E+00	1.16E+00	1.16E+00	4.05E+00	3.49E+01	2.9E-01	3.3E-02
HEXAVALENT CHROMIUM	1.60E+00	7.49E-01	0.00E+00	1.09E-01	1.09E-01	NV	NV	#VALUE!	#VALUE!
LEAD	1.37E+03	7.60E-01	0.00E+00	1.10E-01	1.10E-01	1.63E+00	4.46E+01	6.8E-02	2.5E-03
MERCURY	3.50E+00	4.80E-01	0.00E+00	6.97E-02	6.97E-02	6.40E-03	6.40E-02	1.1E+01	1.1E+00
NICKEL	7.04E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.71E+00	1.86E+01	0.0E+00	0.0E+00
SELENIUM	2.60E+00	2.72E+00	0.00E+00	3.95E-01	3.95E-01	2.90E-01	8.19E-01	1.4E+00	4.8E-01
SILVER	3.72E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E+00	6.05E+01	0.0E+00	0.0E+00
ZINC	1.30E+03	3.92E+01	0.00E+00	5.69E+00	5.69E+00	6.61E+01	1.71E+02	8.6E-02	3.3E-02
DIBUTYLTIN	5.00E-03	5.00E-02	0.00E+00	7.26E-03	7.26E-03	6.76E+00	1.69E+01	1.1E-03	4.3E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.360E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.975E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	0.000E+00	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-12

KINGFISHER - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
1,2-DICHLOROBENZENE	2.60E-01	4.87E-01	0.00E+00	6.09E-02	6.09E-02	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	1.40E-01	2.62E-01	0.00E+00	3.28E-02	3.28E-02	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	3.29E-01	1.79E-01	0.00E+00	2.24E-02	2.24E-02	2.00E+00	2.00E+01	1.1E-02	1.1E-03
ACENAPHTHYLENE	1.16E-01	6.29E-02	0.00E+00	7.87E-03	7.87E-03	2.00E+00	2.00E+01	3.9E-03	3.9E-04
ANTHRACENE	3.81E-01	2.07E-01	0.00E+00	2.59E-02	2.59E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
BENZO(A)ANTHRACENE	8.50E-01	4.62E-01	0.00E+00	5.78E-02	5.78E-02	2.00E+00	2.00E+01	2.9E-02	2.9E-03
BENZO(A)PYRENE	8.07E-01	4.39E-01	0.00E+00	5.48E-02	5.48E-02	2.00E+00	2.00E+01	2.7E-02	2.7E-03
BENZO(B)FLUORANTHENE	1.02E+00	5.52E-01	0.00E+00	6.90E-02	6.90E-02	2.00E+00	2.00E+01	3.5E-02	3.5E-03
BENZO(G,H,I)PERYLENE	6.17E-01	3.35E-01	0.00E+00	4.19E-02	4.19E-02	2.00E+00	2.00E+01	2.1E-02	2.1E-03
BENZO(K)FLUORANTHENE	5.17E-01	2.81E-01	0.00E+00	3.52E-02	3.52E-02	2.00E+00	2.00E+01	1.8E-02	1.8E-03
CHRYSENE	9.28E-01	5.04E-01	0.00E+00	6.30E-02	6.30E-02	2.00E+00	2.00E+01	3.2E-02	3.2E-03
DIBENZO(A,H)ANTHRACENE	3.50E-01	1.90E-01	0.00E+00	2.38E-02	2.38E-02	2.00E+00	2.00E+01	1.2E-02	1.2E-03
FLUORANTHENE	1.36E+00	7.41E-01	0.00E+00	9.26E-02	9.26E-02	2.00E+00	2.00E+01	4.6E-02	4.6E-03
FLUORENE	3.16E-01	1.72E-01	0.00E+00	2.14E-02	2.14E-02	2.00E+00	2.00E+01	1.1E-02	1.1E-03
INDENO(1,2,3-CD)PYRENE	5.92E-01	3.22E-01	0.00E+00	4.02E-02	4.02E-02	2.00E+00	2.00E+01	2.0E-02	2.0E-03
PHENANTHRENE	8.60E-01	4.67E-01	0.00E+00	5.84E-02	5.84E-02	2.00E+00	2.00E+01	2.9E-02	2.9E-03
PYRENE	1.76E+00	9.57E-01	0.00E+00	1.20E-01	1.20E-01	2.00E+00	2.00E+01	6.0E-02	6.0E-03
PCBs									
AROCLOR-1248	7.48E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NV	NV	#VALUE!	#VALUE!
AROCLOR-1260	5.78E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01	1.80E+00	0.0E+00	0.0E+00
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	1.64E-01	1.64E-01	1.80E-01	1.80E+00	9.1E-01	9.1E-02
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	2.29E-02	2.29E-02	1.80E-01	1.80E+00	1.3E-01	1.3E-02
TOTAL AROCLOR	6.13E-01	1.50E+00	0.00E+00	1.87E-01	1.87E-01	1.80E-01	1.80E+00	1.0E+00	1.0E-01
Metals									
ARSENIC	7.04E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E+00	4.51E+00	0.0E+00	0.0E+00
CADMIUM	2.02E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00	6.35E+00	0.0E+00	0.0E+00
CHROMIUM	2.93E+02	6.35E-01	0.00E+00	7.94E-02	7.94E-02	2.66E+00	1.56E+01	3.0E-02	5.1E-03
COPPER	7.01E+01	4.15E+00	0.00E+00	5.19E-01	5.19E-01	4.05E+00	3.49E+01	1.3E-01	1.5E-02
HEXAVALENT CHROMIUM	7.65E-01	7.65E-02	0.00E+00	9.56E-03	9.56E-03	NV	NV	#VALUE!	#VALUE!
LEAD	1.31E+02	3.83E-01	0.00E+00	4.78E-02	4.78E-02	1.63E+00	4.46E+01	2.9E-02	1.1E-03
MERCURY	5.16E-01	1.98E-01	0.00E+00	2.47E-02	2.47E-02	6.40E-03	6.40E-02	3.9E+00	3.9E-01
NICKEL	3.42E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.71E+00	1.86E+01	0.0E+00	0.0E+00
SELENIUM	1.22E+00	1.83E+00	0.00E+00	2.28E-01	2.28E-01	2.90E-01	8.19E-01	7.9E-01	2.8E-01
SILVER	4.83E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E+00	6.05E+01	0.0E+00	0.0E+00
ZINC	2.93E+02	3.12E+01	0.00E+00	3.89E+00	3.89E+00	6.61E+01	1.71E+02	5.9E-02	2.3E-02
DIBUTYLTIN	2.75E-03	2.75E-02	0.00E+00	3.44E-03	3.44E-03	6.76E+00	1.69E+01	5.1E-04	2.0E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.473E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.842E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	0.000E+00	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	6.000E-01	km-radius	Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-13

GREEN HERON - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed. Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
1,2-DICHLOROBENZENE	2.60E-01	4.87E-01	2.08E-03	7.55E-02	7.76E-02	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	1.80E-01	3.37E-01	1.44E-03	5.23E-02	5.37E-02	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	2.40E+00	1.30E+00	1.92E-02	2.02E-01	2.21E-01	2.00E+00	2.00E+01	1.1E-01	1.1E-02
ACENAPHTHYLENE	2.80E-01	1.52E-01	2.24E-03	2.36E-02	2.58E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
ANTHRACENE	4.40E+00	2.39E+00	3.52E-02	3.71E-01	4.06E-01	2.00E+00	2.00E+01	2.0E-01	2.0E-02
BENZO(A)ANTHRACENE	1.20E+01	6.52E+00	9.60E-02	1.01E+00	1.11E+00	2.00E+00	2.00E+01	5.5E-01	5.5E-02
BENZO(A)PYRENE	9.00E+00	4.89E+00	7.20E-02	7.58E-01	8.30E-01	2.00E+00	2.00E+01	4.2E-01	4.2E-02
BENZO(B)FLUORANTHENE	1.00E+01	5.44E+00	8.00E-02	8.43E-01	9.23E-01	2.00E+00	2.00E+01	4.6E-01	4.6E-02
BENZO(G,H,I)PERYLENE	4.80E+00	2.61E+00	3.84E-02	4.04E-01	4.43E-01	2.00E+00	2.00E+01	2.2E-01	2.2E-02
BENZO(K)FLUORANTHENE	7.30E+00	3.97E+00	5.84E-02	6.15E-01	6.74E-01	2.00E+00	2.00E+01	3.4E-01	3.4E-02
CHRYSENE	1.20E+01	6.52E+00	9.60E-02	1.01E+00	1.11E+00	2.00E+00	2.00E+01	5.5E-01	5.5E-02
DIBENZO(A,H)ANTHRACENE	7.90E-01	4.29E-01	6.32E-03	6.66E-02	7.29E-02	2.00E+00	2.00E+01	3.6E-02	3.6E-03
FLUORANTHENE	2.00E+01	1.09E+01	1.60E-01	1.69E+00	1.85E+00	2.00E+00	2.00E+01	9.2E-01	9.2E-02
FLUORENE	2.00E+00	1.09E+00	1.60E-02	1.69E-01	1.85E-01	2.00E+00	2.00E+01	9.2E-02	9.2E-03
INDENO(1,2,3-CD)PYRENE	5.60E+00	3.04E+00	4.48E-02	4.72E-01	5.17E-01	2.00E+00	2.00E+01	2.6E-01	2.6E-02
PHENANTHRENE	1.50E+01	8.15E+00	1.20E-01	1.26E+00	1.38E+00	2.00E+00	2.00E+01	6.9E-01	6.9E-02
PYRENE	2.40E+01	1.30E+01	1.92E-01	2.02E+00	2.21E+00	2.00E+00	2.00E+01	1.1E+00	1.1E-01
PCBs									
AROCLOR-1248	2.30E+00	0.00E+00	1.84E-02	0.00E+00	1.84E-02	NV	NV	#VALUE!	#VALUE!
AROCLOR-1260	1.40E+01	0.00E+00	1.12E-01	0.00E+00	1.12E-01	1.80E-01	1.80E+00	6.2E-01	6.2E-02
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	9.30E-01	9.30E-01	1.80E-01	1.80E+00	5.2E+00	5.2E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	8.06E-02	8.06E-02	1.80E-01	1.80E+00	4.5E-01	4.5E-02
TOTAL AROCLOR	1.40E+01	6.52E+00	1.12E-01	1.01E+00	1.12E+00	1.80E-01	1.80E+00	6.2E+00	6.2E-01
Metals									
ARSENIC	1.26E+01	0.00E+00	1.01E-01	0.00E+00	1.01E-01	2.24E+00	4.51E+00	4.5E-02	2.2E-02
CADMIUM	3.06E+02	0.00E+00	2.45E+00	0.00E+00	2.45E+00	1.47E+00	6.35E+00	1.7E+00	3.9E-01
CHROMIUM	2.46E+03	1.64E+00	1.97E+01	2.54E-01	1.99E+01	2.66E+00	1.56E+01	7.5E+00	1.3E+00
COPPER	1.78E+02	8.00E+00	1.42E+00	1.24E+00	2.66E+00	4.05E+00	3.49E+01	6.6E-01	7.6E-02
HEXAVALENT CHROMIUM	1.60E+00	7.49E-01	1.28E-02	1.16E-01	1.29E-01	NV	NV	#VALUE!	#VALUE!
LEAD	1.37E+03	7.60E-01	1.10E+01	1.18E-01	1.11E+01	1.63E+00	4.46E+01	6.8E+00	2.5E-01
MERCURY	3.50E+00	4.80E-01	2.80E-02	7.44E-02	1.02E-01	6.40E-03	6.40E-02	1.6E+01	1.6E+00
NICKEL	7.04E+01	0.00E+00	5.63E-01	0.00E+00	5.63E-01	6.71E+00	1.86E+01	8.4E-02	3.0E-02
SELENIUM	2.60E+00	2.72E+00	2.08E-02	4.22E-01	4.42E-01	2.90E-01	8.19E-01	1.5E+00	5.4E-01
SILVER	3.72E+01	0.00E+00	2.98E-01	0.00E+00	2.98E-01	2.02E+00	6.05E+01	1.5E-01	4.9E-03
ZINC	1.30E+03	3.92E+01	1.04E+01	6.08E+00	1.65E+01	6.61E+01	1.71E+02	2.5E-01	9.6E-02
DIBUTYLTIN	5.00E-03	5.00E-02	4.00E-05	7.75E-03	7.79E-03	6.76E+00	1.69E+01	1.2E-03	4.6E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.000E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	3.100E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	1.600E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-14

GREEN HERON - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
1,2-DICHLOROBENZENE	2.60E-01	4.87E-01	1.84E-03	6.90E-02	7.08E-02	NV	NV	#VALUE!	#VALUE!
1,4-DICHLOROBENZENE	1.40E-01	2.62E-01	9.91E-04	3.71E-02	3.81E-02	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	3.29E-01	1.79E-01	2.33E-03	2.53E-02	2.76E-02	2.00E+00	2.00E+01	1.4E-02	1.4E-03
ACENAPHTHYLENE	1.16E-01	6.29E-02	8.19E-04	8.91E-03	9.73E-03	2.00E+00	2.00E+01	4.9E-03	4.9E-04
ANTHRACENE	3.81E-01	2.07E-01	2.69E-03	2.93E-02	3.20E-02	2.00E+00	2.00E+01	1.6E-02	1.6E-03
BENZO(A)ANTHRACENE	8.50E-01	4.62E-01	6.01E-03	6.54E-02	7.14E-02	2.00E+00	2.00E+01	3.6E-02	3.6E-03
BENZO(A)PYRENE	8.07E-01	4.39E-01	5.71E-03	6.21E-02	6.78E-02	2.00E+00	2.00E+01	3.4E-02	3.4E-03
BENZO(B)FLUORANTHENE	1.02E+00	5.52E-01	7.19E-03	7.81E-02	8.53E-02	2.00E+00	2.00E+01	4.3E-02	4.3E-03
BENZO(G,H,I)PERYLENE	6.17E-01	3.35E-01	4.36E-03	4.74E-02	5.18E-02	2.00E+00	2.00E+01	2.6E-02	2.6E-03
BENZO(K)FLUORANTHENE	5.17E-01	2.81E-01	3.66E-03	3.98E-02	4.35E-02	2.00E+00	2.00E+01	2.2E-02	2.2E-03
CHRYSENE	9.28E-01	5.04E-01	6.56E-03	7.14E-02	7.79E-02	2.00E+00	2.00E+01	3.9E-02	3.9E-03
DIBENZO(A,H)ANTHRACENE	3.50E-01	1.90E-01	2.47E-03	2.69E-02	2.94E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
FLUORANTHENE	1.36E+00	7.41E-01	9.64E-03	1.05E-01	1.14E-01	2.00E+00	2.00E+01	5.7E-02	5.7E-03
FLUORENE	3.16E-01	1.72E-01	2.23E-03	2.43E-02	2.65E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
INDENO(1,2,3-CD)PYRENE	5.92E-01	3.22E-01	4.19E-03	4.55E-02	4.97E-02	2.00E+00	2.00E+01	2.5E-02	2.5E-03
PHENANTHRENE	8.60E-01	4.67E-01	6.08E-03	6.61E-02	7.22E-02	2.00E+00	2.00E+01	3.6E-02	3.6E-03
PYRENE	1.76E+00	9.57E-01	1.25E-02	1.35E-01	1.48E-01	2.00E+00	2.00E+01	7.4E-02	7.4E-03
PCBs									
AROCLOR-1248	7.48E-02	0.00E+00	5.29E-04	0.00E+00	5.29E-04	NV	NV	#VALUE!	#VALUE!
AROCLOR-1260	5.78E-01	0.00E+00	4.09E-03	0.00E+00	4.09E-03	1.80E-01	1.80E+00	2.3E-02	2.3E-03
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	1.86E-01	1.86E-01	1.80E-01	1.80E+00	1.0E+00	1.0E-01
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	2.59E-02	2.59E-02	1.80E-01	1.80E+00	1.4E-01	1.4E-02
TOTAL AROCLOR	6.13E-01	1.50E+00	4.34E-03	2.12E-01	2.16E-01	1.80E-01	1.80E+00	1.2E+00	1.2E-01
Metals									
ARSENIC	7.04E+00	0.00E+00	4.98E-02	0.00E+00	4.98E-02	2.24E+00	4.51E+00	2.2E-02	1.1E-02
CADMIUM	2.02E+01	0.00E+00	1.43E-01	0.00E+00	1.43E-01	1.47E+00	6.35E+00	9.7E-02	2.2E-02
CHROMIUM	2.93E+02	6.35E-01	2.07E+00	8.99E-02	2.16E+00	2.66E+00	1.56E+01	8.1E-01	1.4E-01
COPPER	7.01E+01	4.15E+00	4.96E-01	5.87E-01	1.08E+00	4.05E+00	3.49E+01	2.7E-01	3.1E-02
HEXAVALENT CHROMIUM	7.65E-01	7.65E-02	5.41E-03	1.08E-02	1.62E-02	NV	NV	#VALUE!	#VALUE!
LEAD	1.31E+02	3.83E-01	9.29E-01	5.41E-02	9.83E-01	1.63E+00	4.46E+01	6.0E-01	2.2E-02
MERCURY	5.16E-01	1.98E-01	3.65E-03	2.79E-02	3.16E-02	6.40E-03	6.40E-02	4.9E+00	4.9E-01
NICKEL	3.42E+01	0.00E+00	2.42E-01	0.00E+00	2.42E-01	6.71E+00	1.86E+01	3.6E-02	1.3E-02
SELENIUM	1.22E+00	1.83E+00	8.67E-03	2.58E-01	2.67E-01	2.90E-01	8.19E-01	9.2E-01	3.3E-01
SILVER	4.83E+00	0.00E+00	3.42E-02	0.00E+00	3.42E-02	2.02E+00	6.05E+01	1.7E-02	5.7E-04
ZINC	2.93E+02	3.12E+01	2.07E+00	4.41E+00	6.48E+00	6.61E+01	1.71E+02	9.8E-02	3.8E-02
DIBUTYLTIN	2.75E-03	2.75E-02	1.95E-05	3.89E-03	3.91E-03	6.76E+00	1.69E+01	5.8E-04	2.3E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.120E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	3.000E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	1.500E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)		km-radius	Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-15

MINK - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
1,2-DICHLOROBENZENE	2.60E-01	4.87E-01	2.70E-03	5.38E-02	5.65E-02	1.20E+02	1.20E+03	4.7E-04	4.7E-05
1,4-DICHLOROBENZENE	1.80E-01	3.37E-01	1.87E-03	3.72E-02	3.91E-02	3.00E+01	3.00E+02	1.3E-03	1.3E-04
ACENAPHTHENE	2.40E+00	1.30E+00	2.49E-02	1.44E-01	1.69E-01	6.56E+01	3.56E+02	2.6E-03	4.7E-04
ACENAPHTHYLENE	2.80E-01	1.52E-01	2.90E-03	1.68E-02	1.97E-02	6.56E+01	3.56E+02	3.0E-04	5.5E-05
ANTHRACENE	4.40E+00	2.39E+00	4.56E-02	2.64E-01	3.09E-01	6.56E+01	3.56E+02	4.7E-03	8.7E-04
BENZO(A)ANTHRACENE	1.20E+01	6.52E+00	1.24E-01	7.20E-01	8.44E-01	6.15E-01	3.84E+01	1.4E+00	2.2E-02
BENZO(A)PYRENE	9.00E+00	4.89E+00	9.33E-02	5.40E-01	6.33E-01	6.15E-01	3.84E+01	1.0E+00	1.6E-02
BENZO(B)FLUORANTHENE	1.00E+01	5.44E+00	1.04E-01	6.00E-01	7.03E-01	6.15E-01	3.84E+01	1.1E+00	1.8E-02
BENZO(G,H,I)PERYLENE	4.80E+00	2.61E+00	4.98E-02	2.88E-01	3.38E-01	6.15E-01	3.84E+01	5.5E-01	8.8E-03
BENZO(K)FLUORANTHENE	7.30E+00	3.97E+00	7.57E-02	4.38E-01	5.13E-01	6.15E-01	3.84E+01	8.3E-01	1.3E-02
CHRYSENE	1.20E+01	6.52E+00	1.24E-01	7.20E-01	8.44E-01	6.15E-01	3.84E+01	1.4E+00	2.2E-02
DIBENZO(A,H)ANTHRACENE	7.90E-01	4.29E-01	8.19E-03	4.74E-02	5.56E-02	6.15E-01	3.84E+01	9.0E-02	1.4E-03
FLUORANTHENE	2.00E+01	1.09E+01	2.07E-01	1.20E+00	1.41E+00	6.56E+01	3.56E+02	2.1E-02	4.0E-03
FLUORENE	2.00E+00	1.09E+00	2.07E-02	1.20E-01	1.41E-01	6.56E+01	3.56E+02	2.1E-03	4.0E-04
INDENO(1,2,3-CD)PYRENE	5.60E+00	3.04E+00	5.81E-02	3.36E-01	3.94E-01	6.15E-01	3.84E+01	6.4E-01	1.0E-02
PHENANTHRENE	1.50E+01	8.15E+00	1.56E-01	9.00E-01	1.06E+00	6.56E+01	3.56E+02	1.6E-02	3.0E-03
PYRENE	2.40E+01	1.30E+01	2.49E-01	1.44E+00	1.69E+00	6.15E-01	3.84E+01	2.7E+00	4.4E-02
PCBs									
AROCLOR-1248	2.30E+00	0.00E+00	2.38E-02	0.00E+00	2.38E-02	1.00E-02	1.00E-01	2.4E+00	2.4E-01
AROCLOR-1260	1.40E+01	0.00E+00	1.45E-01	0.00E+00	1.45E-01	6.80E-02	6.80E-01	2.1E+00	2.1E-01
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	6.62E-01	6.62E-01	6.80E-02	6.80E-01	9.7E+00	9.7E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	5.74E-02	5.74E-02	6.80E-02	6.80E-01	8.4E-01	8.4E-02
TOTAL AROCLOR	1.40E+01	6.52E+00	1.45E-01	7.19E-01	8.64E-01	6.80E-02	6.80E-01	1.3E+01	1.3E+00
Metals									
ARSENIC	1.26E+01	0.00E+00	1.31E-01	0.00E+00	1.31E-01	1.04E+00	4.55E+00	1.3E-01	2.9E-02
CADMIUM	3.06E+02	0.00E+00	3.17E+00	0.00E+00	3.17E+00	7.70E-01	6.90E+00	4.1E+00	4.6E-01
CHROMIUM	2.46E+03	1.64E+00	2.55E+01	1.81E-01	2.57E+01	2.40E+00	5.82E+01	1.1E+01	4.4E-01
COPPER	1.78E+02	8.00E+00	1.85E+00	8.83E-01	2.73E+00	5.60E+00	8.27E+01	4.9E-01	3.3E-02
HEXAVALENT CHROMIUM	1.60E+00	7.49E-01	1.66E-02	8.26E-02	9.92E-02	9.24E+00	3.84E+01	1.1E-02	2.6E-03
LEAD	1.37E+03	7.60E-01	1.42E+01	8.38E-02	1.43E+01	4.70E+00	1.86E+02	3.0E+00	7.7E-02
MERCURY	3.50E+00	4.80E-01	3.63E-02	5.30E-02	8.92E-02	3.20E-02	1.60E-01	2.8E+00	5.6E-01
NICKEL	7.04E+01	0.00E+00	7.30E-01	0.00E+00	7.30E-01	1.70E+00	1.48E+01	4.3E-01	4.9E-02
SELENIUM	2.60E+00	2.72E+00	2.70E-02	3.00E-01	3.27E-01	1.43E-01	6.61E-01	2.3E+00	4.9E-01
SILVER	3.72E+01	0.00E+00	3.86E-01	0.00E+00	3.86E-01	6.02E+00	1.19E+02	6.4E-02	3.3E-03
ZINC	1.30E+03	3.92E+01	1.35E+01	4.32E+00	1.78E+01	7.54E+01	2.98E+02	2.4E-01	6.0E-02
DIBUTYLTIN	5.00E-03	5.00E-02	5.18E-05	5.52E-03	5.57E-03	2.34E+01	3.50E+01	2.4E-04	1.6E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	5.50E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	6.07E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	5.70E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-16

MINK - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>6-18")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
1,2-DICHLOROBENZENE	2.60E-01	4.87E-01	9.98E-04	1.99E-02	2.09E-02	1.20E+02	1.20E+03	1.7E-04	1.7E-05
1,4-DICHLOROBENZENE	1.40E-01	2.62E-01	5.37E-04	1.07E-02	1.13E-02	3.00E+01	3.00E+02	3.8E-04	3.8E-05
ACENAPHTHENE	3.29E-01	1.79E-01	1.26E-03	7.30E-03	8.57E-03	6.56E+01	3.56E+02	1.3E-04	2.4E-05
ACENAPHTHYLENE	1.16E-01	6.29E-02	4.44E-04	2.57E-03	3.01E-03	6.56E+01	3.56E+02	4.6E-05	8.5E-06
ANTHRACENE	3.81E-01	2.07E-01	1.46E-03	8.45E-03	9.91E-03	6.56E+01	3.56E+02	1.5E-04	2.8E-05
BENZO(A)ANTHRACENE	8.50E-01	4.62E-01	3.26E-03	1.89E-02	2.21E-02	6.15E-01	3.84E+01	3.6E-02	5.8E-04
BENZO(A)PYRENE	8.07E-01	4.39E-01	3.10E-03	1.79E-02	2.10E-02	6.15E-01	3.84E+01	3.4E-02	5.5E-04
BENZO(B)FLUORANTHENE	1.02E+00	5.52E-01	3.90E-03	2.25E-02	2.64E-02	6.15E-01	3.84E+01	4.3E-02	6.9E-04
BENZO(G,H,I)PERYLENE	6.17E-01	3.35E-01	2.37E-03	1.37E-02	1.61E-02	6.15E-01	3.84E+01	2.6E-02	4.2E-04
BENZO(K)FLUORANTHENE	5.17E-01	2.81E-01	1.99E-03	1.15E-02	1.35E-02	6.15E-01	3.84E+01	2.2E-02	3.5E-04
CHRYSENE	9.28E-01	5.04E-01	3.56E-03	2.06E-02	2.42E-02	6.15E-01	3.84E+01	3.9E-02	6.3E-04
DIBENZO(A,H)ANTHRACENE	3.50E-01	1.90E-01	1.34E-03	7.76E-03	9.10E-03	6.15E-01	3.84E+01	1.5E-02	2.4E-04
FLUORANTHENE	1.36E+00	7.41E-01	5.23E-03	3.02E-02	3.55E-02	6.56E+01	3.56E+02	5.4E-04	1.0E-04
FLUORENE	3.16E-01	1.72E-01	1.21E-03	7.00E-03	8.22E-03	6.56E+01	3.56E+02	1.3E-04	2.3E-05
INDENO(1,2,3-CD)PYRENE	5.92E-01	3.22E-01	2.27E-03	1.31E-02	1.54E-02	6.15E-01	3.84E+01	2.5E-02	4.0E-04
PHENANTHRENE	8.60E-01	4.67E-01	3.30E-03	1.91E-02	2.24E-02	6.56E+01	3.56E+02	3.4E-04	6.3E-05
PYRENE	1.76E+00	9.57E-01	6.76E-03	3.91E-02	4.58E-02	6.15E-01	3.84E+01	7.5E-02	1.2E-03
PCBs									
AROCLOR-1248	7.48E-02	0.00E+00	2.87E-04	0.00E+00	2.87E-04	1.00E-02	1.00E-01	2.9E-02	2.9E-03
AROCLOR-1260	5.78E-01	0.00E+00	2.22E-03	0.00E+00	2.22E-03	6.80E-02	6.80E-01	3.3E-02	3.3E-03
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	5.37E-02	5.37E-02	6.80E-02	6.80E-01	7.9E-01	7.9E-02
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	7.47E-03	7.47E-03	6.80E-02	6.80E-01	1.1E-01	1.1E-02
TOTAL AROCLOR	6.13E-01	1.50E+00	2.35E-03	6.12E-02	6.35E-02	6.80E-02	6.80E-01	9.3E-01	9.3E-02
Metals									
ARSENIC	7.04E+00	0.00E+00	2.70E-02	0.00E+00	2.70E-02	1.04E+00	4.55E+00	2.6E-02	5.9E-03
CADMIUM	2.02E+01	0.00E+00	7.75E-02	0.00E+00	7.75E-02	7.70E-01	6.90E+00	1.0E-01	1.1E-02
CHROMIUM	2.93E+02	6.35E-01	1.13E+00	2.59E-02	1.15E+00	2.40E+00	5.82E+01	4.8E-01	2.0E-02
COPPER	7.01E+01	4.15E+00	2.69E-01	1.69E-01	4.39E-01	5.60E+00	8.27E+01	7.8E-02	5.3E-03
HEXAVALENT CHROMIUM	7.65E-01	7.65E-02	2.94E-03	3.12E-03	6.06E-03	9.24E+00	3.84E+01	6.6E-04	1.6E-04
LEAD	1.31E+02	3.83E-01	5.04E-01	1.56E-02	5.19E-01	4.70E+00	1.86E+02	1.1E-01	2.8E-03
MERCURY	5.16E-01	1.98E-01	1.98E-03	8.06E-03	1.00E-02	3.20E-02	1.60E-01	3.1E-01	6.3E-02
NICKEL	3.42E+01	0.00E+00	1.31E-01	0.00E+00	1.31E-01	1.70E+00	1.48E+01	7.7E-02	8.9E-03
SELENIUM	1.22E+00	1.83E+00	4.70E-03	7.45E-02	7.92E-02	1.43E-01	6.61E-01	5.5E-01	1.2E-01
SILVER	4.83E+00	0.00E+00	1.86E-02	0.00E+00	1.86E-02	6.02E+00	1.19E+02	3.1E-03	1.6E-04
ZINC	2.93E+02	3.12E+01	1.12E+00	1.27E+00	2.40E+00	7.54E+01	2.98E+02	3.2E-02	8.0E-03
DIBUTYLTIN	2.75E-03	2.75E-02	1.06E-05	1.12E-03	1.13E-03	2.34E+01	3.50E+01	4.8E-05	3.2E-05

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.10E+00	kg
Food Ingestion Rate = (If)	4.50E-02	kg/day
Sediment Ingestion Rate = (Is)	4.23E-03	kg/day
Home Range = (HR)	1.558E+03	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Total Dose = Dose (sediment) + Dose (fish)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
#VALUE! = Value not able to be calculated
NV = Value not available

TABLE C-17

KINGFISHER - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed. Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
ACENAPHTHENE	1.10E+01	6.11E+00	0.00E+00	8.87E-01	8.87E-01	2.00E+00	2.00E+01	4.4E-01	4.4E-02
ACENAPHTHYLENE	4.60E-01	2.55E-01	0.00E+00	3.71E-02	3.71E-02	2.00E+00	2.00E+01	1.9E-02	1.9E-03
ANTHRACENE	1.90E+01	1.06E+01	0.00E+00	1.53E+00	1.53E+00	2.00E+00	2.00E+01	7.7E-01	7.7E-02
BENZO(A)ANTHRACENE	3.80E+01	2.11E+01	0.00E+00	3.06E+00	3.06E+00	2.00E+00	2.00E+01	1.5E+00	1.5E-01
BENZO(A)PYRENE	3.00E+01	1.67E+01	0.00E+00	2.42E+00	2.42E+00	2.00E+00	2.00E+01	1.2E+00	1.2E-01
BENZO(B)FLUORANTHENE	3.10E+01	1.72E+01	0.00E+00	2.50E+00	2.50E+00	2.00E+00	2.00E+01	1.3E+00	1.3E-01
BENZO(G,H,I)PERYLENE	1.10E+01	6.11E+00	0.00E+00	8.87E-01	8.87E-01	2.00E+00	2.00E+01	4.4E-01	4.4E-02
BENZO(K)FLUORANTHENE	2.50E+01	1.39E+01	0.00E+00	2.02E+00	2.02E+00	2.00E+00	2.00E+01	1.0E+00	1.0E-01
CHRYSENE	3.70E+01	2.05E+01	0.00E+00	2.98E+00	2.98E+00	2.00E+00	2.00E+01	1.5E+00	1.5E-01
DIBENZO(A,H)ANTHRACENE	1.40E+00	7.78E-01	0.00E+00	1.13E-01	1.13E-01	2.00E+00	2.00E+01	5.6E-02	5.6E-03
FLUORANTHENE	7.80E+01	4.33E+01	0.00E+00	6.29E+00	6.29E+00	2.00E+00	2.00E+01	3.1E+00	3.1E-01
FLUORENE	1.00E+01	5.55E+00	0.00E+00	8.07E-01	8.07E-01	2.00E+00	2.00E+01	4.0E-01	4.0E-02
INDENO(1,2,3-CD)PYRENE	1.20E+01	6.66E+00	0.00E+00	9.68E-01	9.68E-01	2.00E+00	2.00E+01	4.8E-01	4.8E-02
PHENANTHRENE	7.60E+01	4.22E+01	0.00E+00	6.13E+00	6.13E+00	2.00E+00	2.00E+01	3.1E+00	3.1E-01
PYRENE	7.60E+01	4.22E+01	0.00E+00	6.13E+00	6.13E+00	2.00E+00	2.00E+01	3.1E+00	3.1E-01
PCBs									
AROCLOR-1248	4.30E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NV	NV	#VALUE!	#VALUE!
AROCLOR-1260	1.30E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01	1.80E+00	0.0E+00	0.0E+00
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	8.71E-01	8.71E-01	1.80E-01	1.80E+00	4.8E+00	4.8E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	7.55E-02	7.55E-02	1.80E-01	1.80E+00	4.2E-01	4.2E-02
TOTAL AROCLOR	1.30E+00	6.52E+00	0.00E+00	9.47E-01	9.47E-01	1.80E-01	1.80E+00	5.3E+00	5.3E-01
Metals									
ARSENIC	1.23E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E+00	4.51E+00	0.0E+00	0.0E+00
CADMIUM	2.96E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00	6.35E+00	0.0E+00	0.0E+00
CHROMIUM	2.06E+03	1.64E+00	0.00E+00	2.38E-01	2.38E-01	2.66E+00	1.56E+01	9.0E-02	1.5E-02
COPPER	1.47E+02	8.00E+00	0.00E+00	1.16E+00	1.16E+00	4.05E+00	3.49E+01	2.9E-01	3.3E-02
LEAD	3.16E+02	7.60E-01	0.00E+00	1.10E-01	1.10E-01	1.63E+00	4.46E+01	6.8E-02	2.5E-03
MERCURY	6.10E+00	4.80E-01	0.00E+00	6.97E-02	6.97E-02	6.40E-03	6.40E-02	1.1E+01	1.1E+00
NICKEL	6.62E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.71E+00	1.86E+01	0.0E+00	0.0E+00
SELENIUM	2.80E+00	2.72E+00	0.00E+00	3.95E-01	3.95E-01	2.90E-01	8.19E-01	1.4E+00	4.8E-01
SILVER	5.58E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E+00	6.05E+01	0.0E+00	0.0E+00
ZINC	2.98E+03	3.92E+01	0.00E+00	5.69E+00	5.69E+00	6.61E+01	1.71E+02	8.6E-02	3.3E-02
DIBUTYLTIN	8.50E-03	8.50E-02	0.00E+00	1.23E-02	1.23E-02	6.76E+00	1.69E+01	1.8E-03	7.3E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.360E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.975E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	0.000E+00	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-18

KINGFISHER - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Dose (mg/kg/d) from: Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	Hazard Quotients LOAEL
Semivolatile Organics									
ACENAPHTHENE	4.40E-01	2.44E-01	0.00E+00	3.06E-02	3.06E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
ACENAPHTHYLENE	2.57E-01	1.43E-01	0.00E+00	1.78E-02	1.78E-02	2.00E+00	2.00E+01	8.9E-03	8.9E-04
ANTHRACENE	6.13E-01	3.41E-01	0.00E+00	4.26E-02	4.26E-02	2.00E+00	2.00E+01	2.1E-02	2.1E-03
BENZO(A)ANTHRACENE	1.30E+00	7.22E-01	0.00E+00	9.03E-02	9.03E-02	2.00E+00	2.00E+01	4.5E-02	4.5E-03
BENZO(A)PYRENE	1.19E+00	6.61E-01	0.00E+00	8.26E-02	8.26E-02	2.00E+00	2.00E+01	4.1E-02	4.1E-03
BENZO(B)FLUORANTHENE	1.49E+00	8.28E-01	0.00E+00	1.03E-01	1.03E-01	2.00E+00	2.00E+01	5.2E-02	5.2E-03
BENZO(G,H,I)PERYLENE	7.35E-01	4.08E-01	0.00E+00	5.11E-02	5.11E-02	2.00E+00	2.00E+01	2.6E-02	2.6E-03
BENZO(K)FLUORANTHENE	7.42E-01	4.12E-01	0.00E+00	5.15E-02	5.15E-02	2.00E+00	2.00E+01	2.6E-02	2.6E-03
CHRYSENE	1.41E+00	7.85E-01	0.00E+00	9.81E-02	9.81E-02	2.00E+00	2.00E+01	4.9E-02	4.9E-03
DIBENZO(A,H)ANTHRACENE	3.31E-01	1.84E-01	0.00E+00	2.30E-02	2.30E-02	2.00E+00	2.00E+01	1.2E-02	1.2E-03
FLUORANTHENE	2.50E+00	1.39E+00	0.00E+00	1.73E-01	1.73E-01	2.00E+00	2.00E+01	8.7E-02	8.7E-03
FLUORENE	4.16E-01	2.31E-01	0.00E+00	2.89E-02	2.89E-02	2.00E+00	2.00E+01	1.4E-02	1.4E-03
INDENO(1,2,3-CD)PYRENE	7.19E-01	3.99E-01	0.00E+00	4.99E-02	4.99E-02	2.00E+00	2.00E+01	2.5E-02	2.5E-03
PHENANTHRENE	1.86E+00	1.03E+00	0.00E+00	1.29E-01	1.29E-01	2.00E+00	2.00E+01	6.5E-02	6.5E-03
PYRENE	2.70E+00	1.50E+00	0.00E+00	1.88E-01	1.88E-01	2.00E+00	2.00E+01	9.4E-02	9.4E-03
PCBs									
AROCLOR-1248	8.31E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NV	NV	#VALUE!	#VALUE!
AROCLOR-1260	1.51E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01	1.80E+00	0.0E+00	0.0E+00
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	1.64E-01	1.64E-01	1.80E-01	1.80E+00	9.1E-01	9.1E-02
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	2.29E-02	2.29E-02	1.80E-01	1.80E+00	1.3E-01	1.3E-02
TOTAL AROCLOR	1.49E-01	1.50E+00	0.00E+00	1.87E-01	1.87E-01	1.80E-01	1.80E+00	1.0E+00	1.0E-01
Metals									
ARSENIC	6.23E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E+00	4.51E+00	0.0E+00	0.0E+00
CADMIUM	1.98E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00	6.35E+00	0.0E+00	0.0E+00
CHROMIUM	3.09E+02	6.35E-01	0.00E+00	7.94E-02	7.94E-02	2.66E+00	1.56E+01	3.0E-02	5.1E-03
COPPER	4.75E+01	4.15E+00	0.00E+00	5.19E-01	5.19E-01	4.05E+00	3.49E+01	1.3E-01	1.5E-02
LEAD	8.94E+01	3.83E-01	0.00E+00	4.78E-02	4.78E-02	1.63E+00	4.46E+01	2.9E-02	1.1E-03
MERCURY	8.22E-01	1.98E-01	0.00E+00	2.47E-02	2.47E-02	6.40E-03	6.40E-02	3.9E+00	3.9E-01
NICKEL	3.05E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.71E+00	1.86E+01	0.0E+00	0.0E+00
SELENIUM	1.15E+00	1.83E+00	0.00E+00	2.28E-01	2.28E-01	2.90E-01	8.19E-01	7.9E-01	2.8E-01
SILVER	7.81E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E+00	6.05E+01	0.0E+00	0.0E+00
ZINC	2.88E+02	3.12E+01	0.00E+00	3.89E+00	3.89E+00	6.61E+01	1.71E+02	5.9E-02	2.3E-02
DIBUTYLTIN	5.13E-03	5.13E-02	0.00E+00	6.42E-03	6.42E-03	6.76E+00	1.69E+01	9.5E-04	3.8E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.473E-01	kg
Food Ingestion Rate = (If)	1.842E-02	kg/day
Sediment Ingestion Rate = (Is)	0.000E+00	kg/day
Home Range = (HR)	6.000E-01	km-radius
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Total Dose = Dose (sediment) + Dose (fish)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
#VALUE! = Value not able to be calculated
NV = Value not available

TABLE C-19

GREEN HERON - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed. Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
ACENAPHTHENE	1.10E+01	6.11E+00	8.80E-02	9.47E-01	1.03E+00	2.00E+00	2.00E+01	5.2E-01	5.2E-02
ACENAPHTHYLENE	4.60E-01	2.55E-01	3.68E-03	3.96E-02	4.33E-02	2.00E+00	2.00E+01	2.2E-02	2.2E-03
ANTHRACENE	1.90E+01	1.06E+01	1.52E-01	1.64E+00	1.79E+00	2.00E+00	2.00E+01	8.9E-01	8.9E-02
BENZO(A)ANTHRACENE	3.80E+01	2.11E+01	3.04E-01	3.27E+00	3.58E+00	2.00E+00	2.00E+01	1.8E+00	1.8E-01
BENZO(A)PYRENE	3.00E+01	1.67E+01	2.40E-01	2.58E+00	2.82E+00	2.00E+00	2.00E+01	1.4E+00	1.4E-01
BENZO(B)FLUORANTHENE	3.10E+01	1.72E+01	2.48E-01	2.67E+00	2.92E+00	2.00E+00	2.00E+01	1.5E+00	1.5E-01
BENZO(G,H,I)PERYLENE	1.10E+01	6.11E+00	8.80E-02	9.47E-01	1.03E+00	2.00E+00	2.00E+01	5.2E-01	5.2E-02
BENZO(K)FLUORANTHENE	2.50E+01	1.39E+01	2.00E-01	2.15E+00	2.35E+00	2.00E+00	2.00E+01	1.2E+00	1.2E-01
CHRYSENE	3.70E+01	2.05E+01	2.96E-01	3.19E+00	3.48E+00	2.00E+00	2.00E+01	1.7E+00	1.7E-01
DIBENZO(A,H)ANTHRACENE	1.40E+00	7.78E-01	1.12E-02	1.21E-01	1.32E-01	2.00E+00	2.00E+01	6.6E-02	6.6E-03
FLUORANTHENE	7.80E+01	4.33E+01	6.24E-01	6.71E+00	7.34E+00	2.00E+00	2.00E+01	3.7E+00	3.7E-01
FLUORENE	1.00E+01	5.55E+00	8.00E-02	8.61E-01	9.41E-01	2.00E+00	2.00E+01	4.7E-01	4.7E-02
INDENO(1,2,3-CD)PYRENE	1.20E+01	6.66E+00	9.60E-02	1.03E+00	1.13E+00	2.00E+00	2.00E+01	5.6E-01	5.6E-02
PHENANTHRENE	7.60E+01	4.22E+01	6.08E-01	6.54E+00	7.15E+00	2.00E+00	2.00E+01	3.6E+00	3.6E-01
PYRENE	7.60E+01	4.22E+01	6.08E-01	6.54E+00	7.15E+00	2.00E+00	2.00E+01	3.6E+00	3.6E-01
PCBs									
AROCLOR-1248	4.30E-01	0.00E+00	3.44E-03	0.00E+00	3.44E-03	NV	NV	#VALUE!	#VALUE!
AROCLOR-1260	1.30E+00	0.00E+00	1.04E-02	0.00E+00	1.04E-02	1.80E-01	1.80E+00	5.8E-02	5.8E-03
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	9.30E-01	9.30E-01	1.80E-01	1.80E+00	5.2E+00	5.2E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	8.06E-02	8.06E-02	1.80E-01	1.80E+00	4.5E-01	4.5E-02
TOTAL AROCLOR	1.30E+00	6.52E+00	1.04E-02	1.01E+00	1.02E+00	1.80E-01	1.80E+00	5.7E+00	5.7E-01
Metals									
ARSENIC	1.23E+01	0.00E+00	9.84E-02	0.00E+00	9.84E-02	2.24E+00	4.51E+00	4.4E-02	2.2E-02
CADMIUM	2.96E+02	0.00E+00	2.37E+00	0.00E+00	2.37E+00	1.47E+00	6.35E+00	1.6E+00	3.7E-01
CHROMIUM	2.06E+03	1.64E+00	1.65E+01	2.54E-01	1.67E+01	2.66E+00	1.56E+01	6.3E+00	1.1E+00
COPPER	1.47E+02	8.00E+00	1.18E+00	1.24E+00	2.42E+00	4.05E+00	3.49E+01	6.0E-01	6.9E-02
LEAD	3.16E+02	7.60E-01	2.53E+00	1.18E-01	2.65E+00	1.63E+00	4.46E+01	1.6E+00	5.9E-02
MERCURY	6.10E+00	4.80E-01	4.88E-02	7.44E-02	1.23E-01	6.40E-03	6.40E-02	1.9E+01	1.9E+00
NICKEL	6.62E+01	0.00E+00	5.30E-01	0.00E+00	5.30E-01	6.71E+00	1.86E+01	7.9E-02	2.9E-02
SELENIUM	2.80E+00	2.72E+00	2.24E-02	4.22E-01	4.44E-01	2.90E-01	8.19E-01	1.5E+00	5.4E-01
SILVER	5.58E+01	0.00E+00	4.46E-01	0.00E+00	4.46E-01	2.02E+00	6.05E+01	2.2E-01	7.4E-03
ZINC	2.98E+03	3.92E+01	2.38E+01	6.08E+00	2.99E+01	6.61E+01	1.71E+02	4.5E-01	1.7E-01
DIBUTYLTIN	8.50E-03	8.50E-02	6.80E-05	1.32E-02	1.32E-02	6.76E+00	1.69E+01	2.0E-03	7.8E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.000E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	3.100E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Water Ingestion Rate = (Iw)	2.200E-02	L/day	Dose (water) = (Cw * Iw)(H)/BW	
Sediment Ingestion Rate = (Is)	1.600E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-20

GREEN HERON - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Dose (mg/kg/d) from: Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	Hazard Quotients LOAEL
Semivolatile Organics									
ACENAPHTHENE	4.40E-01	2.44E-01	3.11E-03	3.46E-02	3.77E-02	2.00E+00	2.00E+01	1.9E-02	1.9E-03
ACENAPHTHYLENE	2.57E-01	1.43E-01	1.82E-03	2.02E-02	2.20E-02	2.00E+00	2.00E+01	1.1E-02	1.1E-03
ANTHRACENE	6.13E-01	3.41E-01	4.34E-03	4.82E-02	5.25E-02	2.00E+00	2.00E+01	2.6E-02	2.6E-03
BENZO(A)ANTHRACENE	1.30E+00	7.22E-01	9.20E-03	1.02E-01	1.11E-01	2.00E+00	2.00E+01	5.6E-02	5.6E-03
BENZO(A)PYRENE	1.19E+00	6.61E-01	8.42E-03	9.36E-02	1.02E-01	2.00E+00	2.00E+01	5.1E-02	5.1E-03
BENZO(B)FLUORANTHENE	1.49E+00	8.28E-01	1.05E-02	1.17E-01	1.28E-01	2.00E+00	2.00E+01	6.4E-02	6.4E-03
BENZO(G,H,I)PERYLENE	7.35E-01	4.08E-01	5.20E-03	5.78E-02	6.30E-02	2.00E+00	2.00E+01	3.2E-02	3.2E-03
BENZO(K)FLUORANTHENE	7.42E-01	4.12E-01	5.25E-03	5.83E-02	6.35E-02	2.00E+00	2.00E+01	3.2E-02	3.2E-03
CHRYSENE	1.41E+00	7.85E-01	1.00E-02	1.11E-01	1.21E-01	2.00E+00	2.00E+01	6.1E-02	6.1E-03
DIBENZO(A,H)ANTHRACENE	3.31E-01	1.84E-01	2.35E-03	2.60E-02	2.84E-02	2.00E+00	2.00E+01	1.4E-02	1.4E-03
FLUORANTHENE	2.50E+00	1.39E+00	1.77E-02	1.96E-01	2.14E-01	2.00E+00	2.00E+01	1.1E-01	1.1E-02
FLUORENE	4.16E-01	2.31E-01	2.94E-03	3.27E-02	3.56E-02	2.00E+00	2.00E+01	1.8E-02	1.8E-03
INDENO(1,2,3-CD)PYRENE	7.19E-01	3.99E-01	5.08E-03	5.65E-02	6.16E-02	2.00E+00	2.00E+01	3.1E-02	3.1E-03
PHENANTHRENE	1.86E+00	1.03E+00	1.32E-02	1.46E-01	1.60E-01	2.00E+00	2.00E+01	8.0E-02	8.0E-03
PYRENE	2.70E+00	1.50E+00	1.91E-02	2.12E-01	2.32E-01	2.00E+00	2.00E+01	1.2E-01	1.2E-02
PCBs									
AROCLOR-1248	8.31E-02	0.00E+00	5.88E-04	0.00E+00	5.88E-04	NV	NV	#VALUE!	#VALUE!
AROCLOR-1260	1.51E-01	0.00E+00	1.07E-03	0.00E+00	1.07E-03	1.80E-01	1.80E+00	5.9E-03	5.9E-04
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	1.86E-01	1.86E-01	1.80E-01	1.80E+00	1.0E+00	1.0E-01
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	2.59E-02	2.59E-02	1.80E-01	1.80E+00	1.4E-01	1.4E-02
TOTAL AROCLOR	1.49E-01	1.50E+00	1.05E-03	2.12E-01	2.13E-01	1.80E-01	1.80E+00	1.2E+00	1.2E-01
Metals									
ARSENIC	6.23E+00	0.00E+00	4.41E-02	0.00E+00	4.41E-02	2.24E+00	4.51E+00	2.0E-02	9.8E-03
CADMIUM	1.98E+01	0.00E+00	1.40E-01	0.00E+00	1.40E-01	1.47E+00	6.35E+00	9.6E-02	2.2E-02
CHROMIUM	3.09E+02	6.35E-01	2.19E+00	8.99E-02	2.28E+00	2.66E+00	1.56E+01	8.6E-01	1.5E-01
COPPER	4.75E+01	4.15E+00	3.36E-01	5.87E-01	9.24E-01	4.05E+00	3.49E+01	2.3E-01	2.6E-02
LEAD	8.94E+01	3.83E-01	6.33E-01	5.41E-02	6.87E-01	1.63E+00	4.46E+01	4.2E-01	1.5E-02
MERCURY	8.22E-01	1.98E-01	5.82E-03	2.79E-02	3.38E-02	6.40E-03	6.40E-02	5.3E+00	5.3E-01
NICKEL	3.05E+01	0.00E+00	2.16E-01	0.00E+00	2.16E-01	6.71E+00	1.86E+01	3.2E-02	1.2E-02
SELENIUM	1.15E+00	1.83E+00	8.15E-03	2.58E-01	2.66E-01	2.90E-01	8.19E-01	9.2E-01	3.3E-01
SILVER	7.81E+00	0.00E+00	5.52E-02	0.00E+00	5.52E-02	2.02E+00	6.05E+01	2.7E-02	9.1E-04
ZINC	2.88E+02	3.12E+01	2.04E+00	4.41E+00	6.44E+00	6.61E+01	1.71E+02	9.7E-02	3.8E-02
DIBUTYLTIN	5.13E-03	5.13E-02	3.63E-05	7.26E-03	7.30E-03	6.76E+00	1.69E+01	1.1E-03	4.3E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.120E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	3.000E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Water Ingestion Rate = (Iw)	2.100E-02	L/day	Dose (water) = (Cw * Iw)(H)/BW	
Sediment Ingestion Rate = (Is)	1.500E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)		km-radius	Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-21

MINK - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
ACENAPHTHENE	1.10E+01	6.11E+00	1.14E-01	6.74E-01	7.88E-01	6.56E+01	3.56E+02	1.2E-02	2.2E-03
ACENAPHTHYLENE	4.60E-01	2.55E-01	4.77E-03	2.82E-02	3.30E-02	6.56E+01	3.56E+02	5.0E-04	9.3E-05
ANTHRACENE	1.90E+01	1.06E+01	1.97E-01	1.16E+00	1.36E+00	6.56E+01	3.56E+02	2.1E-02	3.8E-03
BENZO(A)ANTHRACENE	3.80E+01	2.11E+01	3.94E-01	2.33E+00	2.72E+00	6.15E-01	3.84E+01	4.4E+00	7.1E-02
BENZO(A)PYRENE	3.00E+01	1.67E+01	3.11E-01	1.84E+00	2.15E+00	6.15E-01	3.84E+01	3.5E+00	5.6E-02
BENZO(B)FLUORANTHENE	3.10E+01	1.72E+01	3.21E-01	1.90E+00	2.22E+00	6.15E-01	3.84E+01	3.6E+00	5.8E-02
BENZO(G,H,I)PERYLENE	1.10E+01	6.11E+00	1.14E-01	6.74E-01	7.88E-01	6.15E-01	3.84E+01	1.3E+00	2.1E-02
BENZO(K)FLUORANTHENE	2.50E+01	1.39E+01	2.59E-01	1.53E+00	1.79E+00	6.15E-01	3.84E+01	2.9E+00	4.7E-02
CHRYSENE	3.70E+01	2.05E+01	3.84E-01	2.27E+00	2.65E+00	6.15E-01	3.84E+01	4.3E+00	6.9E-02
DIBENZO(A,H)ANTHRACENE	1.40E+00	7.78E-01	1.45E-02	8.58E-02	1.00E-01	6.15E-01	3.84E+01	1.6E-01	2.6E-03
FLUORANTHENE	7.80E+01	4.33E+01	8.09E-01	4.78E+00	5.59E+00	6.56E+01	3.56E+02	8.5E-02	1.6E-02
FLUORENE	1.00E+01	5.55E+00	1.04E-01	6.13E-01	7.16E-01	6.56E+01	3.56E+02	1.1E-02	2.0E-03
INDENO(1,2,3-CD)PYRENE	1.20E+01	6.66E+00	1.24E-01	7.35E-01	8.60E-01	6.15E-01	3.84E+01	1.4E+00	2.2E-02
PHENANTHRENE	7.60E+01	4.22E+01	7.88E-01	4.66E+00	5.44E+00	6.56E+01	3.56E+02	8.3E-02	1.5E-02
PYRENE	7.60E+01	4.22E+01	7.88E-01	4.66E+00	5.44E+00	6.15E-01	3.84E+01	8.9E+00	1.4E-01
PCBs									
AROCLOR-1248	4.30E-01	0.00E+00	4.46E-03	0.00E+00	4.46E-03	1.00E-02	1.00E-01	4.5E-01	4.5E-02
AROCLOR-1260	1.30E+00	0.00E+00	1.35E-02	0.00E+00	1.35E-02	6.80E-02	6.80E-01	2.0E-01	2.0E-02
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	6.62E-01	6.62E-01	6.80E-02	6.80E-01	9.7E+00	9.7E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	5.74E-02	5.74E-02	6.80E-02	6.80E-01	8.4E-01	8.4E-02
TOTAL AROCLOR	1.30E+00	6.52E+00	1.35E-02	7.19E-01	7.33E-01	6.80E-02	6.80E-01	1.1E+01	1.1E+00
Metals									
ARSENIC	1.23E+01	0.00E+00	1.28E-01	0.00E+00	1.28E-01	1.04E+00	4.55E+00	1.2E-01	2.8E-02
CADMIUM	2.96E+02	0.00E+00	3.07E+00	0.00E+00	3.07E+00	7.70E-01	6.90E+00	4.0E+00	4.4E-01
CHROMIUM	2.06E+03	1.64E+00	2.14E+01	1.81E-01	2.15E+01	2.40E+00	5.82E+01	9.0E+00	3.7E-01
COPPER	1.47E+02	8.00E+00	1.52E+00	8.83E-01	2.41E+00	5.60E+00	8.27E+01	4.3E-01	2.9E-02
LEAD	3.16E+02	7.60E-01	3.28E+00	8.38E-02	3.36E+00	4.70E+00	1.86E+02	7.2E-01	1.8E-02
MERCURY	6.10E+00	4.80E-01	6.33E-02	5.30E-02	1.16E-01	3.20E-02	1.60E-01	3.6E+00	7.3E-01
NICKEL	6.62E+01	0.00E+00	6.86E-01	0.00E+00	6.86E-01	1.70E+00	1.48E+01	4.0E-01	4.6E-02
SELENIUM	2.80E+00	2.72E+00	2.90E-02	3.00E-01	3.29E-01	1.43E-01	6.61E-01	2.3E+00	5.0E-01
SILVER	5.58E+01	0.00E+00	5.79E-01	0.00E+00	5.79E-01	6.02E+00	1.19E+02	9.6E-02	4.9E-03
ZINC	2.98E+03	3.92E+01	3.09E+01	4.32E+00	3.52E+01	7.54E+01	2.98E+02	4.7E-01	1.2E-01
DIBUTYLTIN	8.50E-03	8.50E-02	8.81E-05	9.38E-03	9.46E-03	2.34E+01	3.50E+01	4.0E-04	2.7E-04

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	5.50E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	6.07E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	5.70E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-22

MINK - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>18-30")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
ACENAPHTHENE	4.40E-01	2.44E-01	1.69E-03	9.98E-03	1.17E-02	6.56E+01	3.56E+02	1.8E-04	3.3E-05
ACENAPHTHYLENE	2.57E-01	1.43E-01	9.87E-04	5.83E-03	6.82E-03	6.56E+01	3.56E+02	1.0E-04	1.9E-05
ANTHRACENE	6.13E-01	3.41E-01	2.35E-03	1.39E-02	1.63E-02	6.56E+01	3.56E+02	2.5E-04	4.6E-05
BENZO(A)ANTHRACENE	1.30E+00	7.22E-01	4.99E-03	2.95E-02	3.45E-02	6.15E-01	3.84E+01	5.6E-02	9.0E-04
BENZO(A)PYRENE	1.19E+00	6.61E-01	4.57E-03	2.70E-02	3.16E-02	6.15E-01	3.84E+01	5.1E-02	8.2E-04
BENZO(B)FLUORANTHENE	1.49E+00	8.28E-01	5.72E-03	3.38E-02	3.95E-02	6.15E-01	3.84E+01	6.4E-02	1.0E-03
BENZO(G,H,I)PERYLENE	7.35E-01	4.08E-01	2.82E-03	1.67E-02	1.95E-02	6.15E-01	3.84E+01	3.2E-02	5.1E-04
BENZO(K)FLUORANTHENE	7.42E-01	4.12E-01	2.85E-03	1.68E-02	1.97E-02	6.15E-01	3.84E+01	3.2E-02	5.1E-04
CHRYSENE	1.41E+00	7.85E-01	5.43E-03	3.21E-02	3.75E-02	6.15E-01	3.84E+01	6.1E-02	9.8E-04
DIBENZO(A,H)ANTHRACENE	3.31E-01	1.84E-01	1.27E-03	7.52E-03	8.79E-03	6.15E-01	3.84E+01	1.4E-02	2.3E-04
FLUORANTHENE	2.50E+00	1.39E+00	9.58E-03	5.66E-02	6.62E-02	6.56E+01	3.56E+02	1.0E-03	1.9E-04
FLUORENE	4.16E-01	2.31E-01	1.60E-03	9.43E-03	1.10E-02	6.56E+01	3.56E+02	1.7E-04	3.1E-05
INDENO(1,2,3-CD)PYRENE	7.19E-01	3.99E-01	2.76E-03	1.63E-02	1.91E-02	6.15E-01	3.84E+01	3.1E-02	5.0E-04
PHENANTHRENE	1.86E+00	1.03E+00	7.15E-03	4.22E-02	4.94E-02	6.56E+01	3.56E+02	7.5E-04	1.4E-04
PYRENE	2.70E+00	1.50E+00	1.04E-02	6.13E-02	7.17E-02	6.15E-01	3.84E+01	1.2E-01	1.9E-03
PCBs									
AROCLOR-1248	8.31E-02	0.00E+00	3.19E-04	0.00E+00	3.19E-04	1.00E-02	1.00E-01	3.2E-02	3.2E-03
AROCLOR-1260	1.51E-01	0.00E+00	5.79E-04	0.00E+00	5.79E-04	6.80E-02	6.80E-01	8.5E-03	8.5E-04
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	5.37E-02	5.37E-02	6.80E-02	6.80E-01	7.9E-01	7.9E-02
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	7.47E-03	7.47E-03	6.80E-02	6.80E-01	1.1E-01	1.1E-02
TOTAL AROCLOR	1.49E-01	1.50E+00	5.71E-04	6.12E-02	6.17E-02	6.80E-02	6.80E-01	9.1E-01	9.1E-02
Metals									
ARSENIC	6.23E+00	0.00E+00	2.39E-02	0.00E+00	2.39E-02	1.04E+00	4.55E+00	2.3E-02	5.3E-03
CADMIUM	1.98E+01	0.00E+00	7.62E-02	0.00E+00	7.62E-02	7.70E-01	6.90E+00	9.9E-02	1.1E-02
CHROMIUM	3.09E+02	6.35E-01	1.19E+00	2.59E-02	1.21E+00	2.40E+00	5.82E+01	5.0E-01	2.1E-02
COPPER	4.75E+01	4.15E+00	1.83E-01	1.69E-01	3.52E-01	5.60E+00	8.27E+01	6.3E-02	4.3E-03
LEAD	8.94E+01	3.83E-01	3.43E-01	1.56E-02	3.59E-01	4.70E+00	1.86E+02	7.6E-02	1.9E-03
MERCURY	8.22E-01	1.98E-01	3.16E-03	8.06E-03	1.12E-02	3.20E-02	1.60E-01	3.5E-01	7.0E-02
NICKEL	3.05E+01	0.00E+00	1.17E-01	0.00E+00	1.17E-01	1.70E+00	1.48E+01	6.9E-02	7.9E-03
SELENIUM	1.15E+00	1.83E+00	4.42E-03	7.45E-02	7.89E-02	1.43E-01	6.61E-01	5.5E-01	1.2E-01
SILVER	7.81E+00	0.00E+00	3.00E-02	0.00E+00	3.00E-02	6.02E+00	1.19E+02	5.0E-03	2.5E-04
ZINC	2.88E+02	3.12E+01	1.10E+00	1.27E+00	2.38E+00	7.54E+01	2.98E+02	3.2E-02	8.0E-03
DIBUTYLTIN	5.13E-03	5.13E-02	1.97E-05	2.10E-03	2.12E-03	2.34E+01	3.50E+01	9.0E-05	6.0E-05

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.10E+00	kg
Food Ingestion Rate = (If)	4.50E-02	kg/day
Sediment Ingestion Rate = (Is)	4.23E-03	kg/day
Home Range = (HR)	1.56E+03	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Total Dose = Dose (sediment) + Dose (fish)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
#VALUE! = Value not able to be calculated
NV = Value not available

TABLE C-23

KINGFISHER - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>30-52")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed. Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
ACENAPHTHENE	1.30E-01	1.59E-01	0.00E+00	2.31E-02	2.31E-02	2.00E+00	2.00E+01	1.2E-02	1.2E-03
ACENAPHTHYLENE	5.80E-02	7.09E-02	0.00E+00	1.03E-02	1.03E-02	2.00E+00	2.00E+01	5.1E-03	5.1E-04
ANTHRACENE	1.10E-01	1.34E-01	0.00E+00	1.95E-02	1.95E-02	2.00E+00	2.00E+01	9.8E-03	9.8E-04
BENZO(A)ANTHRACENE	1.90E-01	2.32E-01	0.00E+00	3.37E-02	3.37E-02	2.00E+00	2.00E+01	1.7E-02	1.7E-03
BENZO(A)PYRENE	1.70E-01	2.08E-01	0.00E+00	3.02E-02	3.02E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
BENZO(B)FLUORANTHENE	3.10E-01	3.79E-01	0.00E+00	5.50E-02	5.50E-02	2.00E+00	2.00E+01	2.8E-02	2.8E-03
BENZO(G,H,I)PERYLENE	1.70E-01	2.08E-01	0.00E+00	3.02E-02	3.02E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
BENZO(K)FLUORANTHENE	2.00E-01	2.44E-01	0.00E+00	3.55E-02	3.55E-02	2.00E+00	2.00E+01	1.8E-02	1.8E-03
CHRYSENE	2.20E-01	2.69E-01	0.00E+00	3.90E-02	3.90E-02	2.00E+00	2.00E+01	2.0E-02	2.0E-03
DIBENZO(A,H)ANTHRACENE	8.30E-02	1.01E-01	0.00E+00	1.47E-02	1.47E-02	2.00E+00	2.00E+01	7.4E-03	7.4E-04
FLUORANTHENE	4.30E-01	5.25E-01	0.00E+00	7.63E-02	7.63E-02	2.00E+00	2.00E+01	3.8E-02	3.8E-03
FLUORENE	1.80E-01	2.20E-01	0.00E+00	3.19E-02	3.19E-02	2.00E+00	2.00E+01	1.6E-02	1.6E-03
INDENO(1,2,3-CD)PYRENE	1.60E-01	1.95E-01	0.00E+00	2.84E-02	2.84E-02	2.00E+00	2.00E+01	1.4E-02	1.4E-03
PHENANTHRENE	7.00E-01	8.55E-01	0.00E+00	1.24E-01	1.24E-01	2.00E+00	2.00E+01	6.2E-02	6.2E-03
PYRENE	4.80E-01	5.86E-01	0.00E+00	8.52E-02	8.52E-02	2.00E+00	2.00E+01	4.3E-02	4.3E-03
PCBs									
AROCLOR-1260	1.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01	1.80E+00	0.0E+00	0.0E+00
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	8.71E-01	8.71E-01	1.80E-01	1.80E+00	4.8E+00	4.8E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	7.55E-02	7.55E-02	1.80E-01	1.80E+00	4.2E-01	4.2E-02
TOTAL AROCLOR	1.20E-01	6.52E+00	0.00E+00	9.47E-01	9.47E-01	1.80E-01	1.80E+00	5.3E+00	5.3E-01
Metals									
ARSENIC	3.59E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E+00	4.51E+00	0.0E+00	0.0E+00
CADMIUM	3.36E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00	6.35E+00	0.0E+00	0.0E+00
CHROMIUM	5.97E+02	1.64E+00	0.00E+00	2.38E-01	2.38E-01	2.66E+00	1.56E+01	9.0E-02	1.5E-02
COPPER	8.41E+01	8.00E+00	0.00E+00	1.16E+00	1.16E+00	4.05E+00	3.49E+01	2.9E-01	3.3E-02
LEAD	1.63E+02	7.60E-01	0.00E+00	1.10E-01	1.10E-01	1.63E+00	4.46E+01	6.8E-02	2.5E-03
MERCURY	1.50E+00	4.80E-01	0.00E+00	6.97E-02	6.97E-02	6.40E-03	6.40E-02	1.1E+01	1.1E+00
NICKEL	1.03E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.71E+00	1.86E+01	0.0E+00	0.0E+00
SELENIUM	2.10E+00	2.72E+00	0.00E+00	3.95E-01	3.95E-01	2.90E-01	8.19E-01	1.4E+00	4.8E-01
SILVER	9.10E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E+00	6.05E+01	0.0E+00	0.0E+00
ZINC	4.37E+03	3.92E+01	0.00E+00	5.69E+00	5.69E+00	6.61E+01	1.71E+02	8.6E-02	3.3E-02

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.360E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.975E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	0.000E+00	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-24

KINGFISHER - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>30-52")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Dose (mg/kg/d) from: Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	Hazard Quotients LOAEL
Semivolatile Organics									
ACENAPHTHENE	2.77E-02	3.38E-02	0.00E+00	4.22E-03	4.22E-03	2.00E+00	2.00E+01	2.1E-03	2.1E-04
ACENAPHTHYLENE	2.21E-02	2.71E-02	0.00E+00	3.38E-03	3.38E-03	2.00E+00	2.00E+01	1.7E-03	1.7E-04
ANTHRACENE	3.39E-02	4.14E-02	0.00E+00	5.17E-03	5.17E-03	2.00E+00	2.00E+01	2.6E-03	2.6E-04
BENZO(A)ANTHRACENE	1.79E-01	2.19E-01	0.00E+00	2.73E-02	2.73E-02	2.00E+00	2.00E+01	1.4E-02	1.4E-03
BENZO(A)PYRENE	7.86E-02	9.61E-02	0.00E+00	1.20E-02	1.20E-02	2.00E+00	2.00E+01	6.0E-03	6.0E-04
BENZO(B)FLUORANTHENE	1.87E-01	2.28E-01	0.00E+00	2.86E-02	2.86E-02	2.00E+00	2.00E+01	1.4E-02	1.4E-03
BENZO(G,H,I)PERYLENE	9.76E-02	1.19E-01	0.00E+00	1.49E-02	1.49E-02	2.00E+00	2.00E+01	7.5E-03	7.5E-04
BENZO(K)FLUORANTHENE	1.58E-01	1.93E-01	0.00E+00	2.42E-02	2.42E-02	2.00E+00	2.00E+01	1.2E-02	1.2E-03
CHRYSENE	1.72E-01	2.10E-01	0.00E+00	2.62E-02	2.62E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
DIBENZO(A,H)ANTHRACENE	5.90E-02	7.21E-02	0.00E+00	9.01E-03	9.01E-03	2.00E+00	2.00E+01	4.5E-03	4.5E-04
FLUORANTHENE	1.91E-01	2.33E-01	0.00E+00	2.91E-02	2.91E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
FLUORENE	1.63E-01	1.99E-01	0.00E+00	2.49E-02	2.49E-02	2.00E+00	2.00E+01	1.2E-02	1.2E-03
INDENO(1,2,3-CD)PYRENE	1.01E-01	1.24E-01	0.00E+00	1.54E-02	1.54E-02	2.00E+00	2.00E+01	7.7E-03	7.7E-04
PHENANTHRENE	1.83E-01	2.23E-01	0.00E+00	2.79E-02	2.79E-02	2.00E+00	2.00E+01	1.4E-02	1.4E-03
PYRENE	2.02E-01	2.46E-01	0.00E+00	3.08E-02	3.08E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
PCBs									
AROCLOR-1260	1.38E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01	1.80E+00	0.0E+00	0.0E+00
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	1.64E-01	1.64E-01	1.80E-01	1.80E+00	9.1E-01	9.1E-02
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	2.29E-02	2.29E-02	1.80E-01	1.80E+00	1.3E-01	1.3E-02
TOTAL AROCLOR	5.22E-03	1.50E+00	0.00E+00	1.87E-01	1.87E-01	1.80E-01	1.80E+00	1.0E+00	1.0E-01
Metals									
ARSENIC	5.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E+00	4.51E+00	0.0E+00	0.0E+00
CADMIUM	2.39E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00	6.35E+00	0.0E+00	0.0E+00
CHROMIUM	5.97E+01	6.35E-01	0.00E+00	7.94E-02	7.94E-02	2.66E+00	1.56E+01	3.0E-02	5.1E-03
COPPER	1.89E+01	4.15E+00	0.00E+00	5.19E-01	5.19E-01	4.05E+00	3.49E+01	1.3E-01	1.5E-02
LEAD	1.89E+01	3.83E-01	0.00E+00	4.78E-02	4.78E-02	1.63E+00	4.46E+01	2.9E-02	1.1E-03
MERCURY	9.51E-02	1.98E-01	0.00E+00	2.47E-02	2.47E-02	6.40E-03	6.40E-02	3.9E+00	3.9E-01
NICKEL	2.17E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.71E+00	1.86E+01	0.0E+00	0.0E+00
SELENIUM	7.99E-01	1.83E+00	0.00E+00	2.28E-01	2.28E-01	2.90E-01	8.19E-01	7.9E-01	2.8E-01
SILVER	9.05E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E+00	6.05E+01	0.0E+00	0.0E+00
ZINC	1.59E+02	3.12E+01	0.00E+00	3.89E+00	3.89E+00	6.61E+01	1.71E+02	5.9E-02	2.3E-02

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.473E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.842E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	0.000E+00	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	6.000E-01	km-radius	Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-25

GREEN HERON - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>30-52")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed. Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Dose (mg/kg/d) from: Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	Hazard Quotients LOAEL
Semivolatile Organics									
ACENAPHTHENE	1.30E-01	1.59E-01	1.04E-03	2.46E-02	2.57E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
ACENAPHTHYLENE	5.80E-02	7.09E-02	4.64E-04	1.10E-02	1.14E-02	2.00E+00	2.00E+01	5.7E-03	5.7E-04
ANTHRACENE	1.10E-01	1.34E-01	8.80E-04	2.08E-02	2.17E-02	2.00E+00	2.00E+01	1.1E-02	1.1E-03
BENZO(A)ANTHRACENE	1.90E-01	2.32E-01	1.52E-03	3.60E-02	3.75E-02	2.00E+00	2.00E+01	1.9E-02	1.9E-03
BENZO(A)PYRENE	1.70E-01	2.08E-01	1.36E-03	3.22E-02	3.36E-02	2.00E+00	2.00E+01	1.7E-02	1.7E-03
BENZO(B)FLUORANTHENE	3.10E-01	3.79E-01	2.48E-03	5.87E-02	6.12E-02	2.00E+00	2.00E+01	3.1E-02	3.1E-03
BENZO(G,H,I)PERYLENE	1.70E-01	2.08E-01	1.36E-03	3.22E-02	3.36E-02	2.00E+00	2.00E+01	1.7E-02	1.7E-03
BENZO(K)FLUORANTHENE	2.00E-01	2.44E-01	1.60E-03	3.79E-02	3.95E-02	2.00E+00	2.00E+01	2.0E-02	2.0E-03
CHRYSENE	2.20E-01	2.69E-01	1.76E-03	4.17E-02	4.34E-02	2.00E+00	2.00E+01	2.2E-02	2.2E-03
DIBENZO(A,H)ANTHRACENE	8.30E-02	1.01E-01	6.64E-04	1.57E-02	1.64E-02	2.00E+00	2.00E+01	8.2E-03	8.2E-04
FLUORANTHENE	4.30E-01	5.25E-01	3.44E-03	8.14E-02	8.49E-02	2.00E+00	2.00E+01	4.2E-02	4.2E-03
FLUORENE	1.80E-01	2.20E-01	1.44E-03	3.41E-02	3.55E-02	2.00E+00	2.00E+01	1.8E-02	1.8E-03
INDENO(1,2,3-CD)PYRENE	1.60E-01	1.95E-01	1.28E-03	3.03E-02	3.16E-02	2.00E+00	2.00E+01	1.6E-02	1.6E-03
PHENANTHRENE	7.00E-01	8.55E-01	5.60E-03	1.33E-01	1.38E-01	2.00E+00	2.00E+01	6.9E-02	6.9E-03
PYRENE	4.80E-01	5.86E-01	3.84E-03	9.09E-02	9.47E-02	2.00E+00	2.00E+01	4.7E-02	4.7E-03
PCBs									
AROCLOR-1260	1.20E-01	0.00E+00	9.60E-04	0.00E+00	9.60E-04	1.80E-01	1.80E+00	5.3E-03	5.3E-04
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	9.30E-01	9.30E-01	1.80E-01	1.80E+00	5.2E+00	5.2E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	8.06E-02	8.06E-02	1.80E-01	1.80E+00	4.5E-01	4.5E-02
TOTAL AROCLOR	1.20E-01	6.52E+00	9.60E-04	1.01E+00	1.01E+00	1.80E-01	1.80E+00	5.6E+00	5.6E-01
Metals									
ARSENIC	3.59E+01	0.00E+00	2.87E-01	0.00E+00	2.87E-01	2.24E+00	4.51E+00	1.3E-01	6.4E-02
CADMIUM	3.36E+01	0.00E+00	2.69E-01	0.00E+00	2.69E-01	1.47E+00	6.35E+00	1.8E-01	4.2E-02
CHROMIUM	5.97E+02	1.64E+00	4.78E+00	2.54E-01	5.03E+00	2.66E+00	1.56E+01	1.9E+00	3.2E-01
COPPER	8.41E+01	8.00E+00	6.73E-01	1.24E+00	1.91E+00	4.05E+00	3.49E+01	4.7E-01	5.5E-02
LEAD	1.63E+02	7.60E-01	1.30E+00	1.18E-01	1.42E+00	1.63E+00	4.46E+01	8.7E-01	3.2E-02
MERCURY	1.50E+00	4.80E-01	1.20E-02	7.44E-02	8.64E-02	6.40E-03	6.40E-02	1.4E+01	1.4E+00
NICKEL	1.03E+02	0.00E+00	8.24E-01	0.00E+00	8.24E-01	6.71E+00	1.86E+01	1.2E-01	4.4E-02
SELENIUM	2.10E+00	2.72E+00	1.68E-02	4.22E-01	4.38E-01	2.90E-01	8.19E-01	1.5E+00	5.4E-01
SILVER	9.10E+00	0.00E+00	7.28E-02	0.00E+00	7.28E-02	2.02E+00	6.05E+01	3.6E-02	1.2E-03
ZINC	4.37E+03	3.92E+01	3.50E+01	6.08E+00	4.10E+01	6.61E+01	1.71E+02	6.2E-01	2.4E-01

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.000E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	3.100E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	1.600E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-26

GREEN HERON - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>30-52")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Dose (mg/kg/d) from: Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	Hazard Quotients LOAEL
Semivolatile Organics									
ACENAPHTHENE	2.77E-02	3.38E-02	1.96E-04	4.78E-03	4.98E-03	2.00E+00	2.00E+01	2.5E-03	2.5E-04
ACENAPHTHYLENE	2.21E-02	2.71E-02	1.57E-04	3.83E-03	3.99E-03	2.00E+00	2.00E+01	2.0E-03	2.0E-04
ANTHRACENE	3.39E-02	4.14E-02	2.40E-04	5.86E-03	6.09E-03	2.00E+00	2.00E+01	3.0E-03	3.0E-04
BENZO(A)ANTHRACENE	1.79E-01	2.19E-01	1.27E-03	3.10E-02	3.22E-02	2.00E+00	2.00E+01	1.6E-02	1.6E-03
BENZO(A)PYRENE	7.86E-02	9.61E-02	5.56E-04	1.36E-02	1.42E-02	2.00E+00	2.00E+01	7.1E-03	7.1E-04
BENZO(B)FLUORANTHENE	1.87E-01	2.28E-01	1.32E-03	3.23E-02	3.36E-02	2.00E+00	2.00E+01	1.7E-02	1.7E-03
BENZO(G,H,I)PERYLENE	9.76E-02	1.19E-01	6.91E-04	1.69E-02	1.76E-02	2.00E+00	2.00E+01	8.8E-03	8.8E-04
BENZO(K)FLUORANTHENE	1.58E-01	1.93E-01	1.12E-03	2.74E-02	2.85E-02	2.00E+00	2.00E+01	1.4E-02	1.4E-03
CHRYSENE	1.72E-01	2.10E-01	1.21E-03	2.97E-02	3.09E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
DIBENZO(A,H)ANTHRACENE	5.90E-02	7.21E-02	4.17E-04	1.02E-02	1.06E-02	2.00E+00	2.00E+01	5.3E-03	5.3E-04
FLUORANTHENE	1.91E-01	2.33E-01	1.35E-03	3.30E-02	3.43E-02	2.00E+00	2.00E+01	1.7E-02	1.7E-03
FLUORENE	1.63E-01	1.99E-01	1.15E-03	2.82E-02	2.93E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
INDENO(1,2,3-CD)PYRENE	1.01E-01	1.24E-01	7.15E-04	1.75E-02	1.82E-02	2.00E+00	2.00E+01	9.1E-03	9.1E-04
PHENANTHRENE	1.83E-01	2.23E-01	1.29E-03	3.16E-02	3.29E-02	2.00E+00	2.00E+01	1.6E-02	1.6E-03
PYRENE	2.02E-01	2.46E-01	1.43E-03	3.49E-02	3.63E-02	2.00E+00	2.00E+01	1.8E-02	1.8E-03
PCBs									
AROCLOR-1260	1.38E-02	0.00E+00	9.76E-05	0.00E+00	9.76E-05	1.80E-01	1.80E+00	5.4E-04	5.4E-05
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	1.86E-01	1.86E-01	1.80E-01	1.80E+00	1.0E+00	1.0E-01
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	2.59E-02	2.59E-02	1.80E-01	1.80E+00	1.4E-01	1.4E-02
TOTAL AROCLOR	5.22E-03	1.50E+00	3.69E-05	2.12E-01	2.12E-01	1.80E-01	1.80E+00	1.2E+00	1.2E-01
Metals									
ARSENIC	5.19E+00	0.00E+00	3.67E-02	0.00E+00	3.67E-02	2.24E+00	4.51E+00	1.6E-02	8.1E-03
CADMIUM	2.39E+00	0.00E+00	1.69E-02	0.00E+00	1.69E-02	1.47E+00	6.35E+00	1.2E-02	2.7E-03
CHROMIUM	5.97E+01	6.35E-01	4.22E-01	8.99E-02	5.12E-01	2.66E+00	1.56E+01	1.9E-01	3.3E-02
COPPER	1.89E+01	4.15E+00	1.34E-01	5.87E-01	7.21E-01	4.05E+00	3.49E+01	1.8E-01	2.1E-02
LEAD	1.89E+01	3.83E-01	1.34E-01	5.41E-02	1.88E-01	1.63E+00	4.46E+01	1.2E-01	4.2E-03
MERCURY	9.51E-02	1.98E-01	6.73E-04	2.79E-02	2.86E-02	6.40E-03	6.40E-02	4.5E+00	4.5E-01
NICKEL	2.17E+01	0.00E+00	1.53E-01	0.00E+00	1.53E-01	6.71E+00	1.86E+01	2.3E-02	8.3E-03
SELENIUM	7.99E-01	1.83E+00	5.65E-03	2.58E-01	2.64E-01	2.90E-01	8.19E-01	9.1E-01	3.2E-01
SILVER	9.05E-01	0.00E+00	6.41E-03	0.00E+00	6.41E-03	2.02E+00	6.05E+01	3.2E-03	1.1E-04
ZINC	1.59E+02	3.12E+01	1.13E+00	4.41E+00	5.54E+00	6.61E+01	1.71E+02	8.4E-02	3.2E-02

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.120E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	3.000E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	1.500E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)		km-radius	Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-27

MINK - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>30-52")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Chemical	Max Sed Conc. (mg/kg)	Max Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
ACENAPHTHENE	1.30E-01	1.59E-01	1.35E-03	1.75E-02	1.89E-02	6.56E+01	3.56E+02	2.9E-04	5.3E-05
ACENAPHTHYLENE	5.80E-02	7.09E-02	6.01E-04	7.82E-03	8.42E-03	6.56E+01	3.56E+02	1.3E-04	2.4E-05
ANTHRACENE	1.10E-01	1.34E-01	1.14E-03	1.48E-02	1.60E-02	6.56E+01	3.56E+02	2.4E-04	4.5E-05
BENZO(A)ANTHRACENE	1.90E-01	2.32E-01	1.97E-03	2.56E-02	2.76E-02	6.15E-01	3.84E+01	4.5E-02	7.2E-04
BENZO(A)PYRENE	1.70E-01	2.08E-01	1.76E-03	2.29E-02	2.47E-02	6.15E-01	3.84E+01	4.0E-02	6.4E-04
BENZO(B)FLUORANTHENE	3.10E-01	3.79E-01	3.21E-03	4.18E-02	4.50E-02	6.15E-01	3.84E+01	7.3E-02	1.2E-03
BENZO(G,H,I)PERYLENE	1.70E-01	2.08E-01	1.76E-03	2.29E-02	2.47E-02	6.15E-01	3.84E+01	4.0E-02	6.4E-04
BENZO(K)FLUORANTHENE	2.00E-01	2.44E-01	2.07E-03	2.70E-02	2.90E-02	6.15E-01	3.84E+01	4.7E-02	7.6E-04
CHRYSENE	2.20E-01	2.69E-01	2.28E-03	2.97E-02	3.19E-02	6.15E-01	3.84E+01	5.2E-02	8.3E-04
DIBENZO(A,H)ANTHRACENE	8.30E-02	1.01E-01	8.61E-04	1.12E-02	1.20E-02	6.15E-01	3.84E+01	2.0E-02	3.1E-04
FLUORANTHENE	4.30E-01	5.25E-01	4.46E-03	5.80E-02	6.24E-02	6.56E+01	3.56E+02	9.5E-04	1.8E-04
FLUORENE	1.80E-01	2.20E-01	1.87E-03	2.43E-02	2.61E-02	6.56E+01	3.56E+02	4.0E-04	7.3E-05
INDENO(1,2,3-CD)PYRENE	1.60E-01	1.95E-01	1.66E-03	2.16E-02	2.32E-02	6.15E-01	3.84E+01	3.8E-02	6.0E-04
PHENANTHRENE	7.00E-01	8.55E-01	7.26E-03	9.43E-02	1.02E-01	6.56E+01	3.56E+02	1.5E-03	2.9E-04
PYRENE	4.80E-01	5.86E-01	4.98E-03	6.47E-02	6.97E-02	6.15E-01	3.84E+01	1.1E-01	1.8E-03
PCBs									
AROCLOR-1260	1.20E-01	0.00E+00	1.24E-03	0.00E+00	1.24E-03	6.80E-02	6.80E-01	1.8E-02	1.8E-03
AROCLOR-1262	0.00E+00	6.00E+00	0.00E+00	6.62E-01	6.62E-01	6.80E-02	6.80E-01	9.7E+00	9.7E-01
AROCLOR-1268	0.00E+00	5.20E-01	0.00E+00	5.74E-02	5.74E-02	6.80E-02	6.80E-01	8.4E-01	8.4E-02
TOTAL AROCLOR	1.20E-01	6.52E+00	1.24E-03	7.19E-01	7.20E-01	6.80E-02	6.80E-01	1.1E+01	1.1E+00
Metals									
ARSENIC	3.59E+01	0.00E+00	3.72E-01	0.00E+00	3.72E-01	1.04E+00	4.55E+00	3.6E-01	8.2E-02
CADMIUM	3.36E+01	0.00E+00	3.48E-01	0.00E+00	3.48E-01	7.70E-01	6.90E+00	4.5E-01	5.0E-02
CHROMIUM	5.97E+02	1.64E+00	6.19E+00	1.81E-01	6.37E+00	2.40E+00	5.82E+01	2.7E+00	1.1E-01
COPPER	8.41E+01	8.00E+00	8.72E-01	8.83E-01	1.75E+00	5.60E+00	8.27E+01	3.1E-01	2.1E-02
LEAD	1.63E+02	7.60E-01	1.69E+00	8.38E-02	1.77E+00	4.70E+00	1.86E+02	3.8E-01	9.5E-03
MERCURY	1.50E+00	4.80E-01	1.56E-02	5.30E-02	6.85E-02	3.20E-02	1.60E-01	2.1E+00	4.3E-01
NICKEL	1.03E+02	0.00E+00	1.07E+00	0.00E+00	1.07E+00	1.70E+00	1.48E+01	6.3E-01	7.2E-02
SELENIUM	2.10E+00	2.72E+00	2.18E-02	3.00E-01	3.22E-01	1.43E-01	6.61E-01	2.3E+00	4.9E-01
SILVER	9.10E+00	0.00E+00	9.44E-02	0.00E+00	9.44E-02	6.02E+00	1.19E+02	1.6E-02	8.0E-04
ZINC	4.37E+03	3.92E+01	4.53E+01	4.32E+00	4.96E+01	7.54E+01	2.98E+02	6.6E-01	1.7E-01

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	5.50E-01	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	6.07E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	5.70E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

TABLE C-28

MINK - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SUBSURFACE SEDIMENT (>30-52")
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

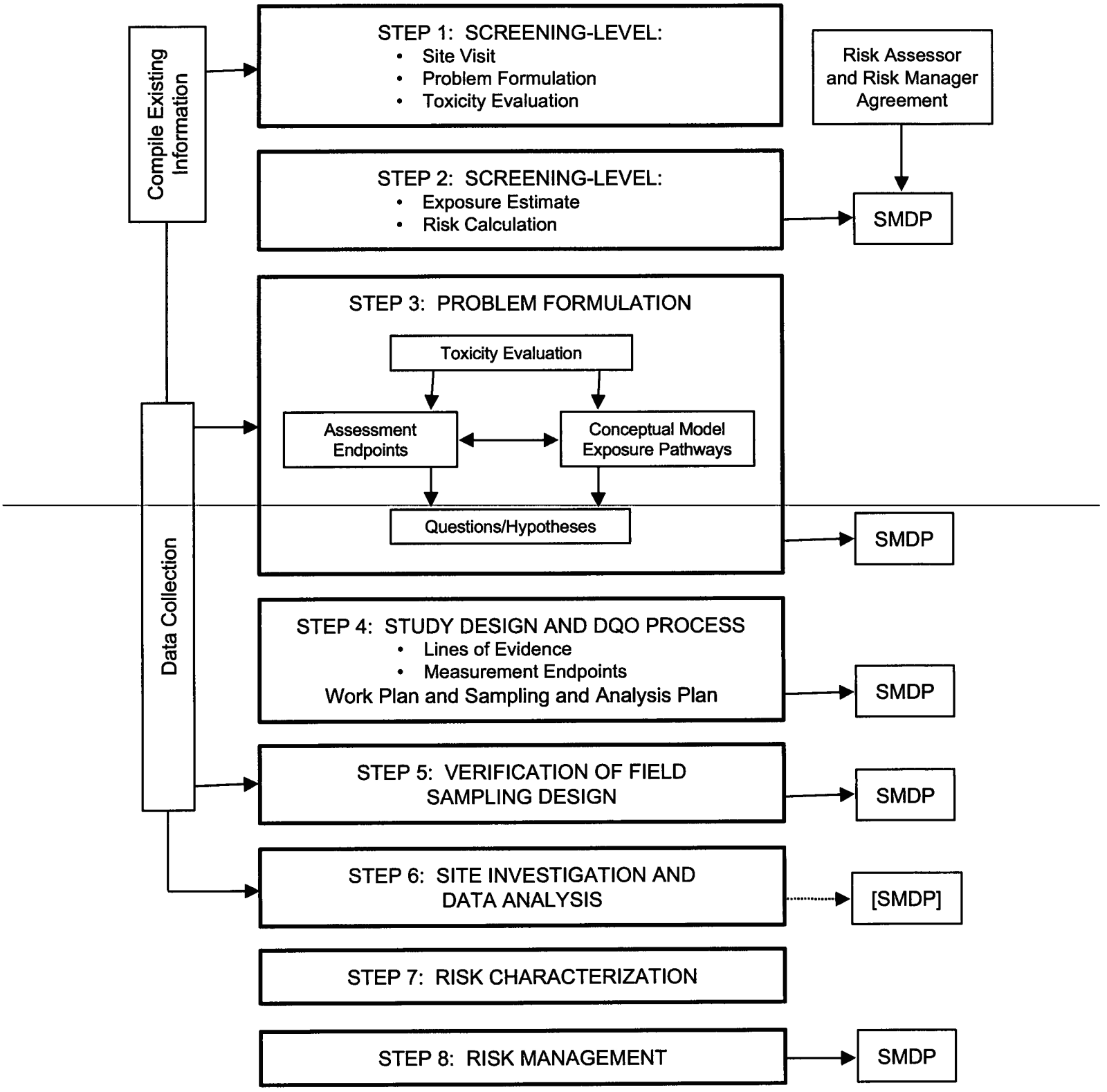
Chemical	Avg Sediment Conc. (mg/kg)	Avg Fish Conc. (mg/kg)	Dose (mg/kg/d) from:		Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients	
			Sediment	Fish				NOAEL	LOAEL
Semivolatile Organics									
ACENAPHTHENE	2.77E-02	3.38E-02	1.06E-04	1.38E-03	1.49E-03	6.56E+01	3.56E+02	2.3E-05	4.2E-06
ACENAPHTHYLENE	2.21E-02	2.71E-02	8.50E-05	1.10E-03	1.19E-03	6.56E+01	3.56E+02	1.8E-05	3.3E-06
ANTHRACENE	3.39E-02	4.14E-02	1.30E-04	1.69E-03	1.82E-03	6.56E+01	3.56E+02	2.8E-05	5.1E-06
BENZO(A)ANTHRACENE	1.79E-01	2.19E-01	6.87E-04	8.93E-03	9.62E-03	6.15E-01	3.84E+01	1.6E-02	2.5E-04
BENZO(A)PYRENE	7.86E-02	9.61E-02	3.02E-04	3.92E-03	4.22E-03	6.15E-01	3.84E+01	6.9E-03	1.1E-04
BENZO(B)FLUORANTHENE	1.87E-01	2.28E-01	7.18E-04	9.33E-03	1.00E-02	6.15E-01	3.84E+01	1.6E-02	2.6E-04
BENZO(G,H,I)PERYLENE	9.76E-02	1.19E-01	3.75E-04	4.87E-03	5.25E-03	6.15E-01	3.84E+01	8.5E-03	1.4E-04
BENZO(K)FLUORANTHENE	1.58E-01	1.93E-01	6.07E-04	7.89E-03	8.50E-03	6.15E-01	3.84E+01	1.4E-02	2.2E-04
CHRYSENE	1.72E-01	2.10E-01	6.58E-04	8.56E-03	9.22E-03	6.15E-01	3.84E+01	1.5E-02	2.4E-04
DIBENZO(A,H)ANTHRACENE	5.90E-02	7.21E-02	2.26E-04	2.94E-03	3.17E-03	6.15E-01	3.84E+01	5.2E-03	8.3E-05
FLUORANTHENE	1.91E-01	2.33E-01	7.32E-04	9.52E-03	1.03E-02	6.56E+01	3.56E+02	1.6E-04	2.9E-05
FLUORENE	1.63E-01	1.99E-01	6.25E-04	8.13E-03	8.75E-03	6.56E+01	3.56E+02	1.3E-04	2.5E-05
INDENO(1,2,3-CD)PYRENE	1.01E-01	1.24E-01	3.88E-04	5.04E-03	5.43E-03	6.15E-01	3.84E+01	8.8E-03	1.4E-04
PHENANTHRENE	1.83E-01	2.23E-01	7.01E-04	9.12E-03	9.82E-03	6.56E+01	3.56E+02	1.5E-04	2.8E-05
PYRENE	2.02E-01	2.46E-01	7.74E-04	1.01E-02	1.08E-02	6.15E-01	3.84E+01	1.8E-02	2.8E-04
PCBs									
AROCLOR-1260	1.38E-02	0.00E+00	5.30E-05	0.00E+00	5.30E-05	6.80E-02	6.80E-01	7.8E-04	7.8E-05
AROCLOR-1262	0.00E+00	1.32E+00	0.00E+00	5.37E-02	5.37E-02	6.80E-02	6.80E-01	7.9E-01	7.9E-02
AROCLOR-1268	0.00E+00	1.83E-01	0.00E+00	7.47E-03	7.47E-03	6.80E-02	6.80E-01	1.1E-01	1.1E-02
TOTAL AROCLOR	5.22E-03	1.50E+00	2.00E-05	6.12E-02	6.12E-02	6.80E-02	6.80E-01	9.0E-01	9.0E-02
Metals									
ARSENIC	5.19E+00	0.00E+00	1.99E-02	0.00E+00	1.99E-02	1.04E+00	4.55E+00	1.9E-02	4.4E-03
CADMIUM	2.39E+00	0.00E+00	9.19E-03	0.00E+00	9.19E-03	7.70E-01	6.90E+00	1.2E-02	1.3E-03
CHROMIUM	5.97E+01	6.35E-01	2.29E-01	2.59E-02	2.55E-01	2.40E+00	5.82E+01	1.1E-01	4.4E-03
COPPER	1.89E+01	4.15E+00	7.26E-02	1.69E-01	2.42E-01	5.60E+00	8.27E+01	4.3E-02	2.9E-03
LEAD	1.89E+01	3.83E-01	7.27E-02	1.56E-02	8.83E-02	4.70E+00	1.86E+02	1.9E-02	4.7E-04
MERCURY	9.51E-02	1.98E-01	3.65E-04	8.06E-03	8.43E-03	3.20E-02	1.60E-01	2.6E-01	5.3E-02
NICKEL	2.17E+01	0.00E+00	8.31E-02	0.00E+00	8.31E-02	1.70E+00	1.48E+01	4.9E-02	5.6E-03
SELENIUM	7.99E-01	1.83E+00	3.07E-03	7.45E-02	7.76E-02	1.43E-01	6.61E-01	5.4E-01	1.2E-01
SILVER	9.05E-01	0.00E+00	3.47E-03	0.00E+00	3.47E-03	6.02E+00	1.19E+02	5.8E-04	2.9E-05
ZINC	1.59E+02	3.12E+01	6.12E-01	1.27E+00	1.88E+00	7.54E+01	2.98E+02	2.5E-02	6.3E-03

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.10E+00	kg	Dose (sediment) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	4.50E-02	kg/day	Dose (fish) = (Cf * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Sediment Ingestion Rate = (Is)	4.23E-03	kg/day	Cf = Contaminant concentration in fish	NOAEL = No Observed Adverse Effects Concentration
Home Range = (HR)	1.56E+03	acres	Cs = Contaminant concentration in sediment	Sed = Sediment
Contaminated Area = (CA)	Assume equal to home range		Total Dose = Dose (sediment) + Dose (fish)	#VALUE! = Value not able to be calculated
			H=CA/HR (Assume = to 1)	NV = Value not available

USEPA, 1997

EXHIBIT I-2
Eight-step Ecological Risk Assessment Process for Superfund



USEPA, 1998

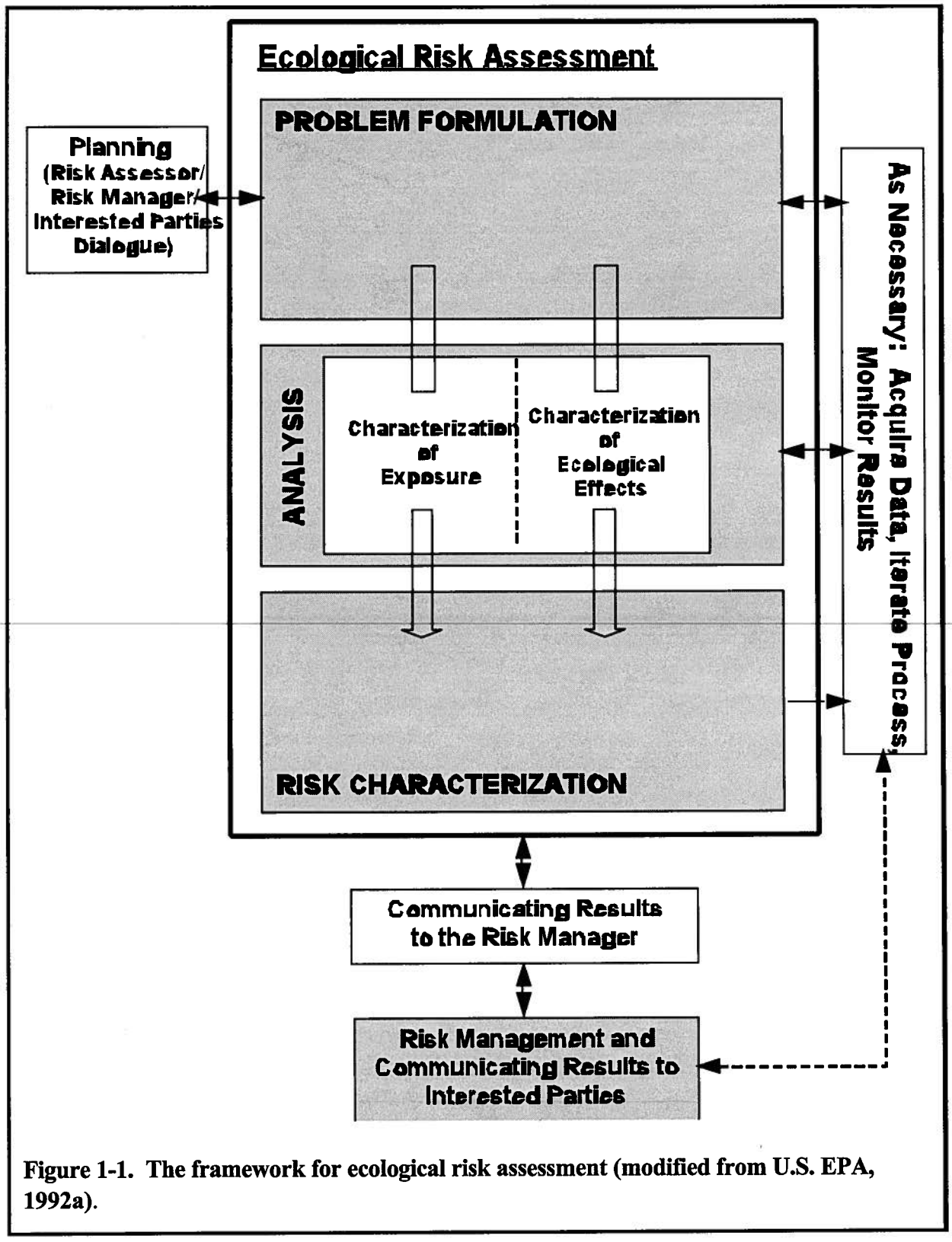


Figure 1-1. The framework for ecological risk assessment (modified from U.S. EPA, 1992a).

APPENDIX C REFERENCES
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