Lockheed Martin Corporation
1195 Sarasota Center Boulevard
Sarasota, Florida 34240
Telephone 240-676-5392

June 24, 2015 **VIA OVERNIGHT CARRIER**

Mr. James R. Carroll
Program Administrator
Land Restoration Program
Land Management Administration
Maryland Department of the Environment
1800 Washington Road, Suite 625
Baltimore, Maryland 21230

Re: Transmittal of the Technical Memorandum Addendum to the Greater Strawberry Point Supplemental Soil and Groundwater Characterization Report: Soil-Vapor Sampling Summary Report, Martin State Airport, 701 Wilson Point Road, Middle River, Maryland

Dear Mr. Carroll:

For your use and reference, please find enclosed two hard copies with CDs of the above-referenced document. This technical memorandum summarizes the soil-vapor characterization activities for the Greater Strawberry Point area at Martin State Airport in Middle River, Maryland. Soil-vapor was sampled around the existing maintenance building at recognized environmental condition No. 7 at Greater Strawberry Point in January 2015.

If you have any questions or require any additional information please contact me by phone at 240-676-5392, or via e-mail at paul.calligan@lmco.com.

Sincerely,

Paul E. Calligan

Paul E. Calligan, P.G.
Project Lead, Environmental Remediation
Lockheed Martin Corporation

cc: (via email without enclosure)
Anuradha Mohanty, MDE
Christine Kline, Lockheed Martin
Norm Varney, Lockheed Martin
Michael Martin, Tetra Tech

cc: (via shipping courier; with enclosures)
Mark Williams, Maryland Aviation Administration
Al Pollard, Martin State Airport
Wayne Pennell, Martin State Airport

cc: (via mail with CD enclosure)
Jann Richardson, Lockheed Martin

Technical Memorandum Addendum to the Greater Strawberry Point Supplemental Soil and Groundwater Characterization Report: Soil-Vapor Sampling Summary Report, Martin State Airport 701 Wilson Point Road Middle River, Maryland

Prepared for:

Lockheed Martin Corporation

Prepared by:

Tetra Tech, Inc.

June 2015

Michael Martin, P.G.
Regional Manager

Anthony Apanavage, P.G.
Project Manager

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

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ACRONYMS

AGI	Amplified Geochemical Imaging, LLC (Elkton, Maryland)
BTEX	benzene, toluene, ethylbenzene, and xylene
DPT	direct-push technology
GSP	Greater Strawberry Point
IDW	investigation-derived waste
MDE	Maryland Department of the Environment
MSA	Martin State Airport
PCE	tetrachloroethene
QA/QC	quality assurance/quality control
REC	recognized environmental condition
SCS	United States Soil Conservation Service
TCE	trichloroethene
TD/GC/MS	thermal desorption/gas chromatography/mass selective-detection
TPH	total petroleum hydrocarbon
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
VAS	vertical aquifer-sampling
VOC	volatile organic compound

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Executive Summary

On behalf of Lockheed Martin Corporation (Lockheed Martin), Tetra Tech, Inc. (Tetra Tech) has prepared this technical memorandum to summarize soil-vapor characterization activities for the Greater Strawberry Point (GSP) area of Martin State Airport (MSA) (formerly known as Glenn L. Martin Airport) in Baltimore County, Maryland (Figure 1). Soil-vapor was sampled around the existing maintenance building at recognized environmental condition (REC) No. 7 (REC #7) at Greater Strawberry Point in January 2015.

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Section 1
Introduction

This memorandum presents the results of the January 2015 soil-gas sampling at the GSP portion of MSA in Middle River, Maryland. This work was performed in accordance with the December 2014 letter work-plan (Tetra Tech, 2014a) issued as an addendum to the January 2014 *Greater Strawberry Point Area Supplemental Soil, Groundwater, and Soil Gas Characterization Work Plan (Revision 1)* (Tetra Tech, 2014b). Figure 1 shows the location of GSP within MSA.

In 2014, soil and groundwater characterization was conducted to further define the extent of previously identified soil and groundwater impacts at recognized environmental conditions (RECs) #7, #8, #9, and #10 at GSP. Characterization in 2014 included soil borings, groundwater sampling, and groundwater profiling by means of direct-push technology (DPT) vertical aquifer-sampling (VAS). Soil gas sampling was planned as part of the 2014 characterization program, to assess soil gas for trichloroethene (TCE) in areas where TCE had previously been detected in groundwater around the airport maintenance building (REC #7). Specifically, TCE was detected at concentrations exceeding the Maryland Department of the Environment (MDE) groundwater standard (5 micrograms per liter [µg/L]) in wells GSP-MW-7 (110 µg/L in 2012), and GSP MW 16 (17 µg/L and 13 µg/L in 2012 and 2014, respectively) (Tetra Tech, 2013; Tetra Tech, 2015). Figure 2 shows REC #7, #8, and #9, the maintenance building, and groundwater monitoring wells in this area.

Soil-gas sampling was initially proposed using a direct-push technology (DPT) rig and Summa canisters in accordance with the "Direct-Push Installation for Active Soil-Vapor Sampling and Monitoring (Post-Run Tubing Method)" described in *Technical Bulletin MK 3098* (Geoprobe® Systems, 2006). However, saturated subsurface conditions and shallow groundwater in this area rendered active soil-vapor sampling ineffective during multiple attempts to collect soil gas samples as had been originally proposed. The project team therefore opted instead to collect passive soil-gas samples using a Gore® Sorber survey, under the letter work-plan (Tetra Tech, 2014a).

The Gore® Sorbers can be used in moist or saturated conditions, however, the soil's moisture content will affect the sampler in soil by restricting the pore spaces available for soil gas to move through the soil. The higher the moisture content in the soil, the lower the actual signal captured by the sampler. Higher moisture factors result in a higher correction factor to get the correct, actual, soil gas concentration. Soil types based on the United States Soil Conservation Service (SCS) soil textures, and associated default porosity values, are also used as input parameters in the analytical calculations, based on the level of moisture in the soil. The sampling methodology and results of the passive soil vapor survey are summarized below.

Section 2
Field Activities

Before beginning intrusive work, the area was cleared of utilities, in accordance with the May 1, 2014 Lockheed Martin *Remediation Contractor's ESH Handbook, Revision 2* (Lockheed Martin, 2014). All required permits and access agreements were obtained before the work began. The utility clearance report is in Attachment A. Soil-gas was passively sampled on January 9-15, 2015 at 16 locations around the maintenance building. A Geoprobe™ direct-push technology rig made shallow borings at each location down to approximately three feet below ground surface, or the estimated depth to groundwater. (During the March 2014 groundwater sampling in nearby monitoring wells, depth to groundwater ranged from 2.7–4 feet below ground surface.) On January 9, 2015, Gore® Sorber passive soil-gas-samplers (hereafter "sorbers") were installed at approximately 2.5 feet below grade to screen for the possibility of volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) in the soil and shallow groundwater. Sorber locations are shown in Figure 3.

A sorber was inserted into each borehole using a stainless-steel insertion rod. The top end of each sorber was connected to a laboratory-supplied airtight cork with string. After each sorber had been inserted into the borehole, the stainless-steel rod was removed, decontaminated, and used at the next sampling location. The cork was tamped flush with the surface to seal the boring opening from the atmosphere. The cork provided an airtight seal, preventing above ground air from entering the soil-gas boring and diluting the sorber-mass analysis. The sorbers remained in place for five days, and were removed on January 15, 2015. One sorber (GSP-SG-15) was lost and could not be analyzed because the boring collapsed during the exposure period; therefore, the laboratory analyzed only 15 sorbers.

Upon retrieving the sorbers from the subsurface, they were placed in the laboratory-supplied shipping vials, sealed, and submitted to Amplified Geochemical Imaging (AGI), LLC of Elkton, Maryland for chemical analyses. Boxes containing the sorbers and laboratory-supplied trip blanks

were shipped to the laboratory along with the chain of custody forms, installation logs, and insertion rods. Each borehole was backfilled with a bentonite and asphalt surface patch.

All investigation-derived waste (IDW) (e.g., excess soil cuttings and decontamination water) was collected in U.S. Department of Transportation (USDOT)-approved 55-gallon steel drums. These drums were properly labeled and moved to an approved central staging area on MSA for chemical and physical characterization. IDW was then disposed of off-site at an approved waste disposal facility, in accordance with the work plan. Documentation pertaining to IDW is in Attachment B.

Information recorded for each sample includes soil type, soil moisture conditions, the time each sorber was installed, and each sorber's time of retrieval. Accurate recordkeeping for this specialized type of sampling provided the laboratory with the exposure period, which is used to calculate vapor concentrations. The predominant soil type in the soil gas borings was a sandy clay, corresponding to a standard porosity of 0.39, which was used in soil-gas-concentration calculations for all samples. Soil moisture is another variable used in the formula to calculate concentrations. A soil moisture content of 73% water-filled voids (or 28.5% moisture, by volume) was applied to the concentration calculations for all samples. The sorbers were retrieved, placed undisturbed in sealed shipping jars, and placed in a container for overnight shipment to AGI laboratories. A copy of the chain of custody is in Attachment C.

Section 3
Results

This section summarizes the analytical procedures the samples underwent, data validation steps, the chemical analytical results, and interpretation of these results.

3.1 SAMPLE ANALYSIS

Samples were analyzed by method SPG WI 0292 (a method modified and developed for the sampling medium used) for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH), which provided both mass and concentration data (soil gas concentrations in micrograms per sampler and micrograms per cubic meter [$\mu g/m^3$]). The method is an adsorbent analysis by thermal desorption/gas chromatography/mass selective-detection (TD/GC/MS), following United States Environmental Protection Agency (USEPA) 8260C quality assurance where applicable. Two trip blanks were analyzed by the same methods as quality assurance samples.

3.2 DATA VALIDATION

Upon receipt from the laboratory, chemical data were entered into a sample database and evaluated against risk-based criteria or standards. Data were validated for all quality assurance/quality control (QA/QC) parameters (including accuracy, precision, completeness, and comparability), in accordance with USEPA Region 3 Level M2 protocols for organic compounds. These QA/QC parameters were specifically evaluated by holding-time analysis, calibration analysis, laboratory and field-blank contamination, field-duplicate precision, and review of detection limits. This validation is based on *USEPA Region III Modifications to the National Functional Guidelines for Data Review* (USEPA, 1994) and the specifics of the analytical method used. The validation report is in Attachment D.

3.3 SOIL GAS RESULTS

AGI laboratories compiled the soil gas data as mass (micrograms) per sample for each constituent (Attachment C). Table C-1 in Attachment C presents all of the soil gas chemical analytical results, including analytes detected and those not detected. Tetra Tech provided recommendations to AGI

laboratories based on the soil-gas (mass per sample and volumetric) results reported regarding which soil gas constituents should be included in a concentration mapping report. Attachment E contains the soil-gas-concentration contours (mapping) report.

Sorber results indicate a relative abundance of contaminants in the subsurface soil gas. Results are reported as the mass (i.e., micrograms) of compounds adsorbed in the module over the in-ground measuring period. A detected contaminant-mass might have originated from a combination of sources, such as soil, groundwater, or free product (i.e., petroleum or solvent product); however, the contaminant-source media might not be readily identified by the sorber results alone.

The laboratory analytical results are summarized in Table 1. Several VOCs were detected in the soil-gas samples, including TCE, tetrachloroethene (PCE) and carbon tetrachloride, and petroleum-related VOCs (including naphthalene, octane, trimethylbenzene, and benzene, toluene, ethylbenzene, and xylene [BTEX]). In general, the greatest concentrations of VOCs and TPH were detected in sample GSP-SG-01, collected about 25 feet north of the northern corner of the maintenance building. All concentrations detected were of petroleum-related constituents; no chlorinated VOCs were reported. Concentrations of TPH and VOCs were also higher relative to other sampling results in soil gas samples collected around the southwest side of the maintenance building (e.g., GSP-SG-10, GSP-SG-11, GSP-SG-12, and GSP-SG-13). TCE was detected in only four soil gas samples, with the greatest concentration calculated at GSP-SG-12 (western side of the building). PCE was detected at seven soil-gas sampling locations, with the greatest concentration calculated at GSP-SG-14 (also on the western side of the building).

Toluene and m,p-xylene were the most frequently detected BTEX constituents, detected in all soil gas samples. Benzene was detected less frequently (in 13 samples) and ethylbenzene was detected in 11 samples. Sampling location GSP-SG-11 had the highest relative detected concentrations of benzene (5,760 $\mu g/m^3$) and toluene (3,530 $\mu g/m^3$). Sampling location GSP-SG-13 had the highest relative concentrations of ethylbenzene (592 $\mu g/m^3$) and total xylenes (1,842 $\mu g/m^3$). Sampling location GSP-SG-11 had the greatest overall concentration of BTEX (10,938 $\mu g/m^3$). Calculated benzene concentrations range from 528 $\mu g/m^3$ (GSP SG-02) to 5,760 $\mu g/m^3$ (GSP-SG-11). Toluene concentrations (calculated) range from 82.8 $\mu g/m^3$ (GSP-SG-03) to 3,530 $\mu g/m^3$ (GSP-SG-11). Calculated ethylbenzene concentrations range from 29 $\mu g/m^3$ (GSP-SG-09) to

592 μg/m^3 (GSP-SG-13). Calculated total xylenes concentrations range from 24.3 μg/m^3 (GSP-SG-16) to 2,313 μg/m^3 (GSP-SG-13).

The fuel constituent octane was detected in all samples, with concentrations ranging from 60.6 μg/m^3 (GSP-SG-03) to 14,900 μg/m^3 (GSP-SG-01). Another fuel constituent, 2-methylnaphthalene, was detected in 10 samples, with the greatest concentration (480 μg/m^3) calculated in the sample from GSP-SG-01. TPH was also detected in all samples, at estimated concentrations between 2,400 μg/m^3 (GSP-SG-16) and 485,000 μg/m^3 (GSP-SG-01). The laboratory noted that the presence of non-target compounds in the sample from GSP-SG-02 might have interfered with the calculated TPH result for this sample.

The maps on pages 4–8 of Attachment E show the interpreted spatial distribution of benzene, BTEX, TPH, PCE, and TCE, respectively (calculated concentrations), based on the Gore® Sorber results. These maps show that the greatest concentrations of BTEX, PCE, and TCE were detected in the area southwest of the maintenance building near existing groundwater monitoring well GSP-MW-12. The relative BTEX/VOC/TPH masses in the passive soil-gas samples suggest that the source of the contamination might be attributable to a combination of weathered fuel (e.g., gasoline, diesel, or jet fuel) and chlorinated VOCs (e.g., solvents) that might be in groundwater and/or capillary-zone soils. Given the relative masses of octane and undecane in the passive soil-gas samples, diesel or jet fuel cannot be ruled out in the sampled area, particularly at sampling location GSP-SG-01. The VOC source cannot readily be determined based on the soil gas results.

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Section 4
References

1. Geoprobe® Systems, 2006. "Direct-Push Installation for Active Soil-Vapor Sampling and Monitoring (Post-Run Tubing Method)." *Technical Bulletin MK 3098*. May.

2. Lockheed Martin Corporation (Lockheed Martin), 2014. *Energy, Environment, Safety, and Health (EESH) Remediation Waste Management Procedure No: EROP-03, Revision 2*, effective May 1.

3. Tetra Tech, Inc. (Tetra Tech), 2013. *Supplemental Soil and Groundwater Characterization Report, Greater Strawberry Point, Martin State Airport: Middle River, Maryland*. Consultant's report prepared by Tetra Tech, Inc. for Lockheed Martin Corporation, Bethesda, Maryland. June.

4. Tetra Tech, Inc. (Tetra Tech), 2014a. Letter work-plan: "Soil-Vapor Sampling Using Gore® Sorbers, Greater Strawberry Point, Martin State Airport, Middle River, Maryland."

5. Tetra Tech, Inc. (Tetra Tech), 2014b. *Greater Strawberry Point Area Supplemental Soil, Groundwater, and Soil-Gas Characterization Work Plan, Martin State Airport: Middle River, Maryland*. Consultant's report prepared by Tetra Tech, Inc. for Lockheed Martin Corporation, Bethesda, Maryland. January.

6. Tetra Tech, Inc. (Tetra Tech), 2015. *Greater Strawberry Point Area Supplemental Soil and Groundwater Characterization Report, Martin State Airport: Middle River, Maryland*. Consultant's report prepared by Tetra Tech, Inc. for Lockheed Martin Corporation, Bethesda, Maryland. January.

7. United Stated Environmental Protection Agency (USEPA) Region 3, 1994. *Region III Modifications to the National Functional Guidelines for Organic Data Review*. September.

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FIGURES

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

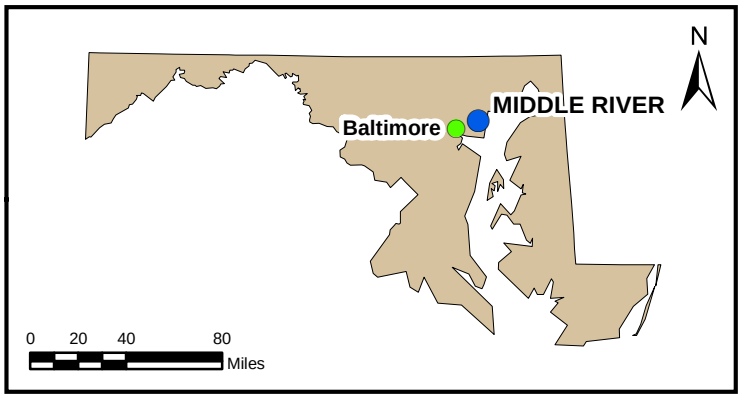


FIGURE 1

MARTIN STATE AIRPORT AND SURROUNDING FEATURES

Lockheed Martin, Martin State Airport
Middle River, Maryland

DATE MODIFIED: 08/21/14	CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Lockheed_MSA\MapDocs\MXD\msa_sitemap_may2014.mxd)
08/21/14 -- JEE

FIGURE 2

GREATER STRAWBERRY POINT
RECS #7, 8, 9 AREAS

LEGEND

- Groundwater Well (2011)
- Oil Filled Operational Equipment
- Drum Storage
- MSA Inlets
- MSA Manholes
- NPDES Outfalls
- Sediment Basin
- Historic Structures
- MTN Tanks
- REC
- Current Structures
- Trench Drain
- Sanitary MH
- MTN Wells Pipes
- Sanitary Pipes
- Storm Pipes
- Gas
- Sanitary Line
- Storm
- Water
- Electricity
- Telephone Line
- Electrical Utilities

MSA = Martin State Airport
MTN = Main Terminal
NPDES = National Pollutant and Discharge Elimination System
REC = Recognized Environmental Condition

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

Lockheed Martin, Martin State Airport
Middle River, Maryland

0 30 60 Feet

N

DATE MODIFIED: 03/30/15

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Lockheed_MSA\MapDocs\MXD\rec7_8_wells_mar2015.mxd)
03/30/15 -- JEE

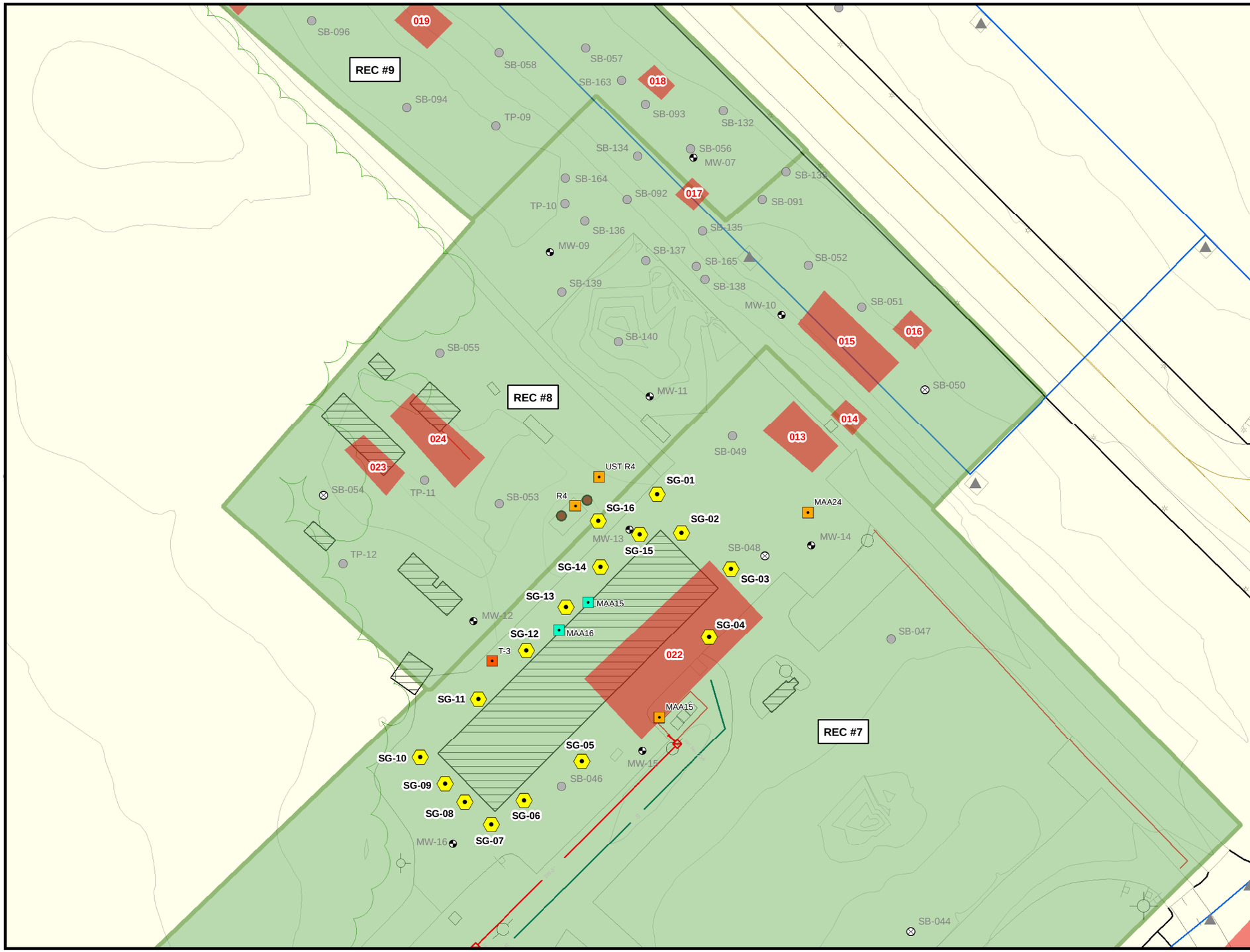


FIGURE 3

SOIL GAS SAMPLING LOCATIONS
(REC #7)
GREATER STRAWBERRY POINT

LEGEND

- Soil Gas Location
- Previous Soil Boring (SB) - 2010-2014
- Abandoned Soil Boring
- Groundwater Well (2011)
- Oil Filled Operational Equipment
- Drum Storage
- MSA Inlets
- MSA Manholes
- NPDES Outfalls
- Sediment Basin
- Historic Structures
- MTN Tanks
- REC
- Current Structures
- Trench Drain
- Sanitary Manhole
- MTN Wells Pipes
- Sanitary Pipes
- Storm Pipes
- Gas
- Sanitary Line
- Storm
- Water
- Electricity
- Telephone Line
- Electrical Utilities

MSA = Martin State Airport
MTN = Main Terminal
MW = Monitoring Well
NPDES = National Pollutant and Discharge Elimination System
REC = Recognized Environmental Condition

Note: Refer to Figure 2-2 for details of historic structures

Lockheed Martin, Martin State Airport
Middle River, Maryland

0 35 70 Feet

N

DATE MODIFIED: 03/20/15

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Lockheed_MSA\MapDocs\MXD\rec7_8_soil_gas_locs_dec2014.mxd)
03/20/15 -- JEE

ATTACHMENT A
UTILITY CLEARANCE REPORT

Final Report
Geophysical Survey
Utility/Structure Clearance for 16 Soil Gas Locations
Greater Strawberry Point Area
Middle River, MD
Enviroscan Reference Number 121436

Prepared For: Tetra Tech NUS, Inc.
Prepared By: Enviroscan, Inc.
February 5, 2015

1051 Columbia Avenue ● Lancaster, PA 17603 ● 717.396.8922 ● Fax 717.396.8746 ● email@enviroscan.com ● www.enviroscan.com

February 5, 2015

Mr. Tony Apanavage
Tetra Tech NUS, Inc.
20251 Century Boulevard
Suite 200
Germantown, MD 20874-7114

RE: Geophysical Survey
Utility/Structure Clearance for 16 Soil Gas Locations
Greater Strawberry Point Area
Middle River, MD
Enviroscan Reference Number 121436

Dear Mr. Apanavage:

Pursuant to our phone discussions in December 2014, Enviroscan, Inc. has conducted a multi-technique geophysical survey at the above-referenced site. The fieldwork was performed on January 5, 2015. The purpose of the survey was to perform utility clearance for 16 proposed soil gas locations. This is the third round of utility clearance for these locations. The client indicated that they are having difficulty finding a method of sampling that will work for the damp sub-asphalt situation.

Methods

The utility survey was completed using standard and/or routinely accepted practices of the geophysical industry and equipment representing the best available technology, including:

- a Radiodetection RD8000 Multi-Frequency pipe and cable tracer;
- a Radiodetection C.A.T. and Genny pipe and cable locator/tracer;
- a Fisher TW-6 electromagnetic (EM) pipe and cable locator/tracer;
- a GSSI SIR-2000 ground penetrating radar (GPR) system.

The principles of these techniques are detailed below.

RD8000

Utility tracing was conducted using a Radiodetection RD8000 digital cable and pipe tracer. The transmitter can be directly coupled to exposed portions of a metallic pipe, cable, or wire or indirectly (inductively) to a subsurface metallic utility of known location/orientation. The transmitter remains stationary and energizes the metallic utility at a frequency selected by the operator (512 Hz, 8 kHz, 33 kHz, or 65 kHz), which is received at the ground surface by the digital locator. When the transmitter is directly coupled to the metallic utility, the digital receiver can also calculate the depth of the utility to an accuracy of ±10% of the actual depth of the utility. Please note the close proximity to bends in the traced line or poor signal strength can result in erroneous depth estimations.

C.A.T. and Genny

The survey areas were also scanned with a Radiodetection C.A.T. and Genny pipe and cable locator and tracer. In Power mode, the C.A.T. detects the 50 to 60 Hertz (Hz) electromagnetic field generated by live power cables and other metallic utilities to which a live line is grounded. In Radio mode, the C.A.T. detects buried conductors (cables or metallic pipes) as they conduct and re-transmit commercial broadcast radio energy. In Genny mode, the C.A.T. detects signal generated by the Genny transmitter. The Genny transmitter can be coupled directly (conductively) to exposed portions of a metallic pipe, cable, or wire or inductively to a subsurface metallic utility with known location and orientation.

TW-6

In order to detect unknown utilities, Enviroscan employed a Fisher TW-6 pipe and cable locator and tracer. In pipe and cable search mode, the TW-6 is essentially a deep-sensing metal detector that detects any highly electrically conductive materials (e.g. metals) by creating an electromagnetic field with a transmitting coil. A receiving coil at a fixed separation from the transmitter measures the field strength. As the instrument is swept along the ground surface, subsurface metallic bodies distort the transmitted field. The change in field strength/orientation is sensed by the receiver, setting off an audible alarm and/or causing deflection of an analog meter. The TW-6 can nominally detect a 2-inch metal pipe to a depth of 8 feet and a 10-inch metal pipe to a depth of 14 feet.

In pipe and cable tracing mode, the TW-6 transmitter can be coupled directly (conductively) to exposed portions of a metallic pipe, cable, or wire or inductively to a subsurface metallic utility with known location and orientation. The transmitter remains stationary and energizes or excites the metallic utility to be traced with an 81.92-kilohertz signal that can be traced at the ground surface using the mobile TW-6 receiver wand or probe.

GPR

GPR systems produce cross-sectional images of subsurface features and layers by continuously emitting pulses of radar-frequency energy from a scanning antenna as it is towed along a survey profile. The radar pulses are reflected by interfaces between materials with differing dielectric properties. The reflections return to the antenna and are displayed on a video monitor as a continuous cross section in real time. Since the electrical properties of metal are distinctly different from soil and backfill materials, metallic pipes and other structures commonly produce dramatic and characteristic reflections. Fiberglass, plastic, concrete, and terra-cotta pipes and structures also produce recognizable, but less dramatic reflections. Scanning was performed using a GSSI SIR-2000 GPR controller with an internal hard drive and a color display, and both a high-frequency, high-resolution 500 megaHertz (MHz) antenna or transducer, and a lower frequency deep-penetrating 200 MHz transducer.

Results Summary

The utility clearance survey results are depicted in Figure 1. The mapped utilities located during the survey are overlain on a base map of the site. Several of the borings were moved in prior surveys in this area. The boring locations have been marked with paint and a metal nail for future reference. Please note that several new unknown utilities have been delineated on this mobilization. Enviroscan acquired a new GPR system with a lower frequency antenna than previously used at this site. The lower frequency allows the GPR system to penetrate below the reinforced concrete common around the maintenance building perimeter.

Limitations

The above-referenced geophysical survey was completed using standard and/or routinely accepted practices of the geophysical industry and equipment representing the best available technology. Enviroscan does not accept responsibility for survey limitations due to inherent technological limitations or unforeseen site-specific conditions. However, we make every effort to identify and notify the client of such limitations or conditions. In particular, please note the following specific limitations and recommendations:

- Enviroscan's field markings should be considered accurate to within approximately +/-18 inches for single lines. In contrast, since electromagnetic tracing of duct banks provides only a centerline, the bank itself may extend for 2 to 3 feet beyond the marked trace.

- The completion of this survey does not relieve any party of applicable legal obligations to notify the appropriate One-Call center prior to digging or drilling.

As always, we appreciate this opportunity to have worked with you. If you have any questions, please do not hesitate to contact me.

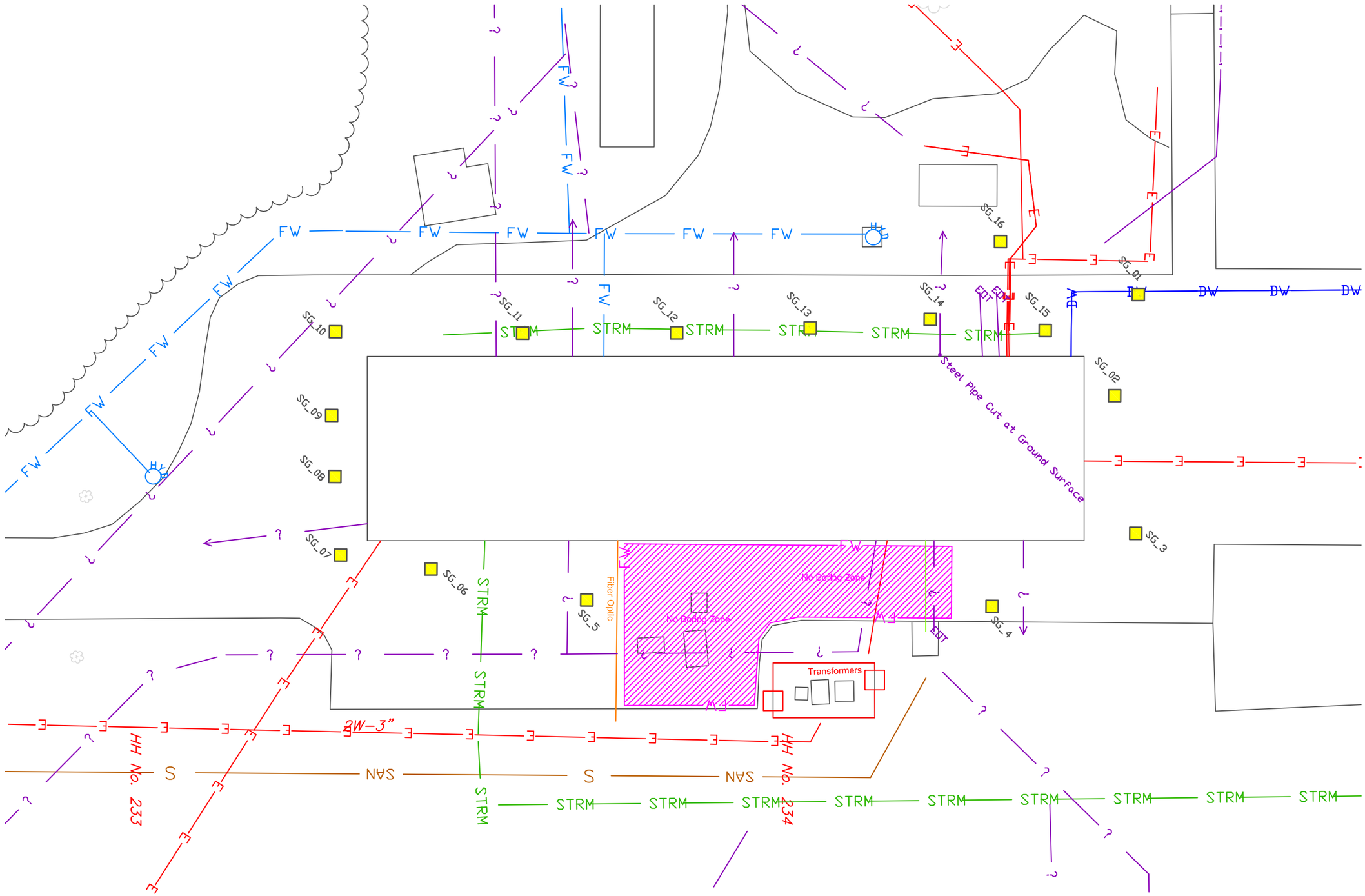
Sincerely,
Enviroscan, Inc.

William E. Steinhart III, M.Sc., P.G.
Principal Geophysicist

Technical Review By:
Enviroscan, Inc.

Felicia Kegel Bechtel, M.Sc., P.G.
President

enc.: Figure 1: Utility Survey Results Maintenance Building



The information depicted on this drawing represents survey results on the date surveyed and can only be considered to be indicative of the general conditions existing on that survey date.

Coordinates in Maryland State Plane (feet) NAD-83 Datum.

0 40 80
Scale in Feet

Prepared by:

Enviroscan, Inc.
1051 Columbia Avenue
Lancaster, PA
(717) 396-8922

Utility Survey Results Maintenance Building

Greater Strawberry Point Utility Survey

Martin State Airport
Middle River, MD

Figure: 1

Project Number	Survey Date	Drawn by:
121436	01/05/15	WES
Original Scale	Revision/Issue	Approved by:
1" = 30'	02/02/2015	FKB

ATTACHMENT B
INVESTIGATION-DERIVED WASTE RECORDS

Site Address: 701 Wilson Point Road
Baltimore,MD 21220

SC PPW 12/1/2008
WORK ORDER NO BT1500789450-001

DOCUMENT NO. 839109

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services Inc — VEHICLE ID # 5425

EPA ID # MAD039322250 — TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 — VEHICLE ID #

EPA ID # — TRANS. 2 PHONE

DESIGNATED FACILITY Spring Grove Resource Recovery Inc	SHIPPER Lockheed Martin ATTN:Mike Musheno
FACILITY EPA ID # OHD000816629	SHIPPER EPA ID # MDR000518760
ADDRESS 4879 Spring Grove Avenue	ADDRESS 195 Chesapeake Park Plaza
CITY Cincinnati STATE OH ZIP 45232	CITY Baltimore STATE MD ZIP 21220

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
001	DM		A. NON D.O.T. REGULATED, (NON-HAZ WATER)	40	P
001	DM		~~B. NON D.O.T. REGULATED, (SOIL)~~	~~40~~	~~P~~
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS EMERGENCY PHONE #: (800) 483-3716 GENERATOR: Lockheed Martin
A.CH673564 1X55DM
~~B.CH673563 1X55DM~~

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

SHIPPER	PRINT Michael Musheno	SIGN	DATE 3-4-15
TRANSPORTER 1	PRINT Brad Hasko	SIGN	DATE 3-4-15
TRANSPORTER 2	PRINT	SIGN	DATE
RECEIVED BY	PRINT	SIGN	DATE

Waste Identifcation and Classification Form

Remediation Project Martin State Airport Greater Strawberry Pt

State Generated MD

Description of Waste

Generic Name Decontamination Water

Solid, Liquid, Gas Liquid

Additional Info.

Date of Waste Generation 1/9/2015

Ongoing (Y/N)? N

Description of Process Generating Waste

One drum of decontamination water from Greater Straberry Point soil gas investigation.

Listed Waste ? (Y/N) N

F,K, P or U Codes

Justification for Waste Classification (attached supporting documentation)

Waste characterization sample collected, profiled as nonhazardous. Drum will be removed from the site March 4th, 2015.

Form completed by Tony Apanavage

Date 2/26/2015

ATTACHMENT C
AGI CONCENTRATION REPORT

AMPLIFIED GEOCHEMICAL IMAGING, LLC

Laboratory Report

Site: Greater Strawberry Point Area

Prepared for:

TETRA TECH, INC.
20251 CENTURY BOULEVARD SUITE 200
GERMANTOWN, MARYLAND
UNITED STATES

Prepared on:
January 28, 2015

Project Summary and Objective

Amplified Geochemical Imaging, LLC. (AGI) provided the AGI Environmental Survey used at:

Greater Strawberry Point Area

The service provided by AGI included delivery of the required quantity of AGI Universal Samplers, analysis by the method described below for the requested organic compounds, reporting of the data, and contour mapping (as needed).

This report includes results for only the samples noted under the Laboratory Sample Report section. If contour maps are part of the project deliverable, the maps will be prepared and issued under a separate report cover, upon receipt of a usable sitemap (electronic) and compound choices for contouring.

Written/submitted by:

Jim E Whetzel

Project Manager

Reviewed/approved by:

Jay W Hodny

Project Manager

Analytical data approved by:

Fatima Niazi

Chemist

Quality Assurance Statement

The AGI Laboratory, at Amplified Geochemical Imaging's facility in Elkton, MD USA, operates under the guidelines of its ISO Standard 17025 DoD ELAP accreditation, and its Quality Assurance Manual, Operating Procedures, and Methods (SPG-SOP-0462).

For this project, the analytical method, results, and observations reported do [ ] do not [√] fall within the scope of AGI's ISO 17025 accreditation.

Screening/Concentration Method

The AGI Universal Samplers are analyzed at AGI's fixed laboratory using thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) instrumentation following U.S. EPA Method 8260 (SPG-WI-0292) which includes the following:

- **BFB Tuning Frequency:** A BFB tune is analyzed at the start of each analytical run and after every 30 samples.
- **Initial Calibration:** A minimum of a five point calibration curve is analyzed prior to the analysis of samples.
- **Linearity of Target Compounds:** If the RSD of any target analyte is less than or equal to 25% then average response factor can be used for quantitation. If the RSD exceeds 25% for a target compound a regression equation can be used for quantitation.
- **Continuing Calibration Verification:** After every 10 samples, and at the end of each analytical batch, and a second-source Reference Standard is analyzed near the mid point of the calibration curve. The acceptance criteria for all target analytes in the reference standards are +/- 50% of the true value.
- **Method Blank:** Analyzed prior to the analysis of field samples and every 30 samples.

Note: Analyte levels reported for the field-deployed AGI Universal Samplers that exceed trip and method blank levels, and/or the reporting limit, are more likely to have originated from on-site sources.

Media Sampled:	SOIL GAS
Chemist - sample analysis:	Kelly J Stringham
Chemist - data processor:	Kelly J Stringham
Chemist - data review:	Fatima Niazi

Method deviations: None.

Please note that data file names ending with R are rerun samples using the second pair of sorbers, in which the original results were not reported. Data file names ending in D are duplicate analysis results for the second set of sorbers from the same sampler, and are reported.

Additional Report Information

- Comments
- Laboratory Sample Report
- Chain of Custody
- Installation and Retrieval Log
- Analytical Results and Key
- Concentration Calculation Method Summary)
- Total Ion Chromatograms

Project Specific Comments

Sample 753460 was found to have significant levels of non-fuel non-target compounds that contributed to the TPH value reported.

Survey period [1]	The AGI Samplers were deployed on January 9, 2015 and retrieved on January 15, 2015.		
Tamper seal intact:	Yes		
Date received:	1/16/2015 10:35 AM	By:	Darlene Yellowdy
COC returned:	Yes		

Comments:

A file copy of the original Chain of Custody was provided to the client to use with returned samples. The form was completed by Tetra Tech and emailed back to AGI, signed and included in the report.

1 - Installation start to end of retrieval, as reported. See installation and retrieval log for individual deployment and retrieval dates and times (i.e., sampler exposure time).

General Comments

Analytical QA/QC

Laboratory instrumentation consists of gas chromatographs equipped with mass selective detectors, coupled with automated thermal desorption units. Sample preparation involves cutting the tip off the bottom of the AGI Universal Sampler, and transferring one or more "sorbers" to a thermal desorption tube for analysis. The insertion/retrieval cord prevents soil, water and other interferences from coming in contact with the adsorbent. No further sample preparation is required. Any replicate sorbers not consumed in the initial analysis will be discarded fifteen (15) days from the date of the laboratory report.

Data are archived and stored in a secure manner as per AGI's Quality Assurance program (SPG-SOP-0462).

Total petroleum hydrocarbons (TPH), gasoline-range petroleum hydrocarbons (GRPH), and/or diesel range petroleum hydrocarbons (DRPH), when reported, are calculated using the area under the peaks observed in m/z 55 and 57 selected ion chromatograms. Quantitation of the mass values was performed using the response factor for a specific alkane (present in the calibration standards). TPH values include the entire chromatogram and provide estimates for aliphatic hydrocarbon ranges of C4 to C20. GRPH and DRPH include only the relevant regions of the chromatograms and provide estimates for C4 to C10 and C10 to C20 aliphatic hydrocarbons, respectively.

Trip blanks were provided to document potential exposures that were not part of the signal of interest (e.g., impact during sampler shipment, installation and/or retrieval, and storage). The trip blanks are identically manufactured and packaged AGI Universal Samplers to those samplers deployed in the field . The trip blanks remain unopened during all phases of the project. Levels reported on the trip blanks may indicate potential impact to the samplers other than the contaminant source of interest.

Unresolved peak envelopes (UPEs) are represented as a series of compound peaks clustered together around a central gas chromatograph elution time in the total ion chromatogram. UPEs may be indicative of complex fluid mixtures. UPEs observed early in the chromatograms are considered to indicate presence of more volatile fluids, while UPEs observed later in the chromatogram may indicate the presence of less volatile fluids. Multiple UPEs may indicate the presence of multiple complex fluids.

Total ion chromatograms (TICs) are included in the Attachments. The eight-digit serial number of each sampler is incorporated in the TIC identification (e.g., 12345678.D represents AGI Universal Sampler 12345678).

Soil Gas Sampling

For soil gas sampling, the AGI Environmental Survey reports mass levels migrating through the open pore spaces of the soil and diffusing through the sampler membrane for sorption by the engineered, hydrophobic adsorbents, housed within the membrane tube. During the migration of the soil gas away from the source to the AGI Universal Sampler, the vapors are subject to a variety of attenuation factors. The soil gas masses reported on the samplers compare favorably with the concentrations reported in the soil or groundwater (e.g., where soil gas levels are reported at greater levels to other sampled locations on the site, the matrix data should reveal the same pattern, and vice versa). However, due to a variety of factors, a perfect comparison between matrix data and soil gas levels can rarely be achieved.

Soil gas concentrations (µg/m3) are calculated following the method described in the Additional Report Information section.

Soil gas signals reported by this method cannot be correlated specifically to soil adsorbed, groundwater, and /or free-phase contamination. The soil gas signal reported from each AGI Universal Sampler can evolve from all of these sources. Differentiation between soil and groundwater contamination can only be achieved with prior knowledge of the site history (i.e., the site is known to have groundwater contamination only).

Air Sampling

For indoor, outdoor, and crawlspace air sampling, the AGI Environmental Survey reports mass levels present in the air and diffusing through the sampler membrane for sorption by the engineered adsorbents housed within the membrane tube.

Air concentrations (µg/m3) are calculated following the method described in the Additional Report Information section.

Groundwater and Sediment Porewater Sampling

For groundwater and sediment porewater sampling, the AGI Environmental Survey reports the mass levels of compounds present in the water which, when coming in contact with the sampler membrane, partitions out of solution, and diffuses through the sampler membrane for sorption by the engineered adsorbents.

Water concentrations (µg/L) are calculated using the quantified mass, exposure period and the compound specific uptake rate. The rates were measured under controlled experimental conditions. The uptake rates are corrected for water pressure (depth of the AGI Universal Sampler below the water table), water temperature and the aquifer flow rate. For sediment porewater, the uptake rate is corrected for the reduced volume of water in the sediment, by multiplying the uptake rate by the pore water fraction.

LABORATORY SAMPLE REPORT

Project: ENV 01281 **Site Name: Greater Strawberry Point Area** **Module Type: SPG0008**

Module ID	Sample Type	Field ID
00753459	FIELD_SAMPLE	SG-01
00753460	FIELD_SAMPLE	SG-02
00753461	FIELD_SAMPLE	SG-03
00753462	FIELD_SAMPLE	SG-04
00753463	FIELD_SAMPLE	SG-05
00753464	FIELD_SAMPLE	SG-06
00753465	FIELD_SAMPLE	SG-07
00753466	FIELD_SAMPLE	SG-08
00753467	FIELD_SAMPLE	SG-09
00753468	FIELD_SAMPLE	SG-10
00753469	FIELD_SAMPLE	SG-11
00753470	FIELD_SAMPLE	SG-12
00753471	FIELD_SAMPLE	SG-13
00753472	FIELD_SAMPLE	SG-14
00753473	FIELD_SAMPLE	SG-16
00753474	LOST	SG-15
00753475	TRIP_BLANK	TB-011415A
00753476	TRIP_BLANK	TB-011415B

Total # "FIELD SAMPLES"	Total # "TRIP BLANKS"	Total # "UNUSED"	Total # "LOST"
15	**2**	**0**	**1**

Duplicate samples: 0

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AGI Universal Passive Sampler Chain of Custody
Soil gas and/or Air Sampling

Production Order #: 01281

Customer Name: Tetra Tech
Address: 20251 CENTURY BOULEVARD
SUITE 200

GERMANTOWN, MARYLAND 20874
USA

Site Name: Greater Strawberry Point Area
Site Address:

Project Manager: Tony Apanavage

Serial # of Samplers Shipped
00753459 - 00753476

# of Samplers for Installation	16.00	# of Trip Blanks	2
Total Samplers Shipped	18.00	Pieces	
Total Samplers Received	18	Pieces	
Total Samplers Installed	16	Pieces	

Serial # of Trip Blanks (Client Decides)

00753475	00753476	GEOLOGY: SILTY SAND

COPY

Prepared By: Lisa Boette
Verified By: Darlene Lloyd

Installation Method: (Circle those that apply)
Slide Hammer Hammer Drill Auger
Other DPT

Installation Performed By:
Name: T. APANAVAGE
Company: TETRA TECH

Retrieval Performed By:
Name: T. APANAVAGE / S. CAMPBELL
Company: TETRA TECH

Installation Start Date / Time: 1/9/15 0900
Installation Complete Date / Time: 1/9/15 1130

Retrieval Start Date / Time: 1/14/15 0815
Retrieval Complete Date / Time: 1/14/15 1015

Total Samplers Retrieved: 15
Total Samplers Lost In Field: 1
Total Unused Samplers Returned: 0

Relinquished By Lisa Boette	Date/Time 12-15-14 10:00	**Received By:**	Date/Time
Company: AGI		**Company:**	
Relinquished By [signature]	Date/Time 1/15/15 1300	**Received By:** Darlene Lloyd	Date/Time 1/16/15 10:35AM
Company: TETRATECH		**Company:** AGI	

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Newark, DE USA 19702-3335
ph: 302-266-2428

AGI Project No. ENV 01281
Site Name: Greater Strawberry Point Area
Site Location:

Company Name: Tetra Tech
Location:
Samples collected by:

AGI Soil Gas Sampling
Installation & Retrieval Log

*** Optional or as needed**

SAMPLER SERIAL NO.	FIELD ID* (e.g., arbitrary, US EPA)	SAMPLE TYPE (Field Sample, Trip Blank, Field Blank, etc.)	INSTALLATION DATE & TIME MM/DD/YYYY HH:MM (24 Hour) ex. 12/27/2000 13:00	RETRIEVAL DATE & TIME MM/DD/YYYY HH:MM (24 Hour) ex. 12/30/2000 13:00	OBSERVATIONS/COMMENTS* (e.g., sample depth, location description, missing, pulled from hole, etc. - as needed)	SAMPLE ENVIRONMENT* (e.g., grass, bare soil, through slab)
00753459	SG-01	FIELD_SAMPLE	1/9/15 9:00	1/14/15 8:15	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753460	SG-02	FIELD_SAMPLE	1/9/15 9:10	1/14/15 8:25	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753461	SG-03	FIELD_SAMPLE	1/9/15 9:20	1/14/15 8:35	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753462	SG-04	FIELD_SAMPLE	1/9/15 9:30	1/14/15 8:40	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753463	SG-05	FIELD_SAMPLE	1/9/15 9:40	1/14/15 8:50	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753464	SG-06	FIELD_SAMPLE	1/9/15 9:50	1/14/15 9:00	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753465	SG-07	FIELD_SAMPLE	1/9/15 10:00	1/14/15 9:05	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753466	SG-08	FIELD_SAMPLE	1/9/15 10:10	1/14/15 9:15	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753467	SG-09	FIELD_SAMPLE	1/9/15 10:20	1/14/15 9:25	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753468	SG-10	FIELD_SAMPLE	1/9/15 10:30	1/14/15 9:35	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753469	SG-11	FIELD_SAMPLE	1/9/15 10:40	1/14/15 9:45	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753470	SG-12	FIELD_SAMPLE	1/9/15 10:50	1/14/15 9:50	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753471	SG-13	FIELD_SAMPLE	1/9/15 11:00	1/14/15 10:00	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753472	SG-14	FIELD_SAMPLE	1/9/15 11:10	1/14/15 10:05	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753473	SG-16	FIELD_SAMPLE	1/9/15 11:20	1/14/15 10:15	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	grass
00753474	SG-15	FIELD_SAMPLE	1/9/15 11:30		**SAMPLE LOST, HOLE CAVED IN**-installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753475	TB-011415A	TRIP_BLANK	1/9/15 8:00	1/14/15 12:00	trip blank	trip blank
00753476	TB-011415B	TRIP_BLANK	1/9/15 8:30	1/14/15 12:30	trip blank	trip blank

SPG-FCD-8929 Soil Gas R5

AGI Soil Gas Sampling
Installation & Retrieval Log

* Optional or as needed

	YES / NO			AT MINIMUM PROVIDE SOIL TYPE						
SAMPLER SERIAL NO.	EVIDENCE OF LIQUID PETROLEUM HYDROCARBONS?	ODOR ?	WATER IN INSTALLATION HOLE?	SOIL TYPE AT MODULE DEPTH (clay, loamy sand etc.)	TOTAL SOIL POROSITY AT MODULE DEPTH* (total volume of pores/total volume)	WATER FILLED SOIL POROSITY AT MODULE DEPTH* (volume of water/volume of pores)	PROJECTED COORDINATES X (EASTING)	PROJECTED COORDINATES Y (NORTHING)	COORDINATE SYSTEM* (e.g., UTM Zone, Stateplane, etc.)	COORDINATE DATUM* (e.g., WGS 84)
00753459	No	No	Yes	SANDY_CLAY						
00753460	No	No	No	SANDY_CLAY						
00753461	No	No	No	SANDY_CLAY						
00753462	No	No	No	SANDY_CLAY						
00753463	No	No	Yes	SANDY_CLAY						
00753464	No	No	Yes	SANDY_CLAY						
00753465	No	No	Yes	SANDY_CLAY						
00753466	No	No	Yes	SANDY_CLAY						
00753467	No	No	No	SANDY_CLAY						
00753468	No	No	No	SANDY_CLAY						
00753469	No	No	No	SANDY_CLAY						
00753470	No	No	No	SANDY_CLAY						
00753471	No	No	No	SANDY_CLAY						
00753472	No	No	No	SANDY_CLAY						
00753473	No	No	No	SANDY_CLAY						
00753474	No	No	No	SANDY_CLAY						
00753475	No	No								
00753476	No	No								

SPG-FCD-8929 Soil Gas R5

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753459 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-01 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:00:00AM
Retrieval Date: 1/14/2015 8:15:00AM Date Analyzed: 1/22/2015 12:47:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.07**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.67**	**0.02**
Octane	**111-65-9**	**7.54**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.10**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.48**	**0.02**
o-Xylene	**95-47-6**	**0.31**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**6.91**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**2.48**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**36.58**	**0.05**
Naphthalene	**91-20-3**	**0.54**	**0.05**
Tridecane	**629-50-5**	**6.39**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.57**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	**629-62-9**	**0.09**	**0.05**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753459 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-01 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 9:00:00AM

Retrieval Date: 1/14/2015 8:15:00AM Date Analyzed: 1/22/2015 12:47:00PM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	0.55	0.05
Fluorene	86-73-7	0.43	0.05
TPH		754.20	0.50
BTEX		1.62	0.02

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753460 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-02 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:10:00AM
Retrieval Date: 1/14/2015 8:25:00AM Date Analyzed: 1/23/2015 11:54:00AM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.02**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.06**	**0.02**
Octane	**111-65-9**	**0.03**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	**108-38-3/106-42-3**	**0.02**	**0.02**
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.07**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753460 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-02 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 9:10:00AM

Retrieval Date: 1/14/2015 8:25:00AM Date Analyzed: 1/23/2015 11:54:00AM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**5.15**	**0.50**
BTEX		**0.10**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753461 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-03 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:20:00AM
Retrieval Date: 1/14/2015 8:35:00AM Date Analyzed: 1/23/2015 1:08:00AM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.03**	**0.02**
Octane	**111-65-9**	**0.02**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	**108-38-3/106-42-3**	**0.03**	**0.02**
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753461 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-03 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 9:20:00AM

Retrieval Date: 1/14/2015 8:35:00AM Date Analyzed: 1/23/2015 1:08:00AM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**2.98**	**0.50**
BTEX		**0.07**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753462 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-04 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:30:00AM
Retrieval Date: 1/14/2015 8:40:00AM Date Analyzed: 1/22/2015 3:52:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.08**	**0.02**
Octane	**111-65-9**	**0.05**	**0.02**
Tetrachloroethene	**127-18-4**	**0.03**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.04**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.14**	**0.02**
o-Xylene	**95-47-6**	**0.06**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	**95-63-6**	**0.02**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.05**	**0.05**
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753462 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-04
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:30:00AM
Retrieval Date: 1/14/2015 8:40:00AM
Date Analyzed: 1/22/2015 3:52:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**3.80**	**0.50**
BTEX		**0.31**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753463 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-05 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:40:00AM
Retrieval Date: 1/14/2015 8:50:00AM Date Analyzed: 1/22/2015 2:50:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.03**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	**79-01-6**	**0.07**	**0.02**
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.13**	**0.02**
Octane	**111-65-9**	**0.29**	**0.02**
Tetrachloroethene	**127-18-4**	**0.89**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.04**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.12**	**0.02**
o-Xylene	**95-47-6**	**0.06**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.03**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.09**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.25**	**0.05**
Naphthalene	**91-20-3**	**0.05**	**0.05**
Tridecane	**629-50-5**	**0.13**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.11**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753463 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-05 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 9:40:00AM

Retrieval Date: 1/14/2015 8:50:00AM Date Analyzed: 1/22/2015 2:50:00PM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**10.77**	**0.50**
BTEX		**0.37**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753464 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-06 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:50:00AM
Retrieval Date: 1/14/2015 9:00:00AM Date Analyzed: 1/22/2015 6:58:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.04**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.10**	**0.02**
Octane	**111-65-9**	**0.13**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.03**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.10**	**0.02**
o-Xylene	**95-47-6**	**0.05**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.03**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.09**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.14**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.06**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.09**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753464 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-06 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 9:50:00AM

Retrieval Date: 1/14/2015 9:00:00AM Date Analyzed: 1/22/2015 6:58:00PM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**7.67**	**0.50**
BTEX		**0.32**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753465 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-07 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:00:00AM
Retrieval Date: 1/14/2015 9:05:00AM Date Analyzed: 1/22/2015 11:04:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.04**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.21**	**0.02**
Octane	**111-65-9**	**0.09**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	**108-38-3/106-42-3**	**0.03**	**0.02**
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	**95-63-6**	**0.03**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.09**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.12**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.06**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753465 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-07
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:00:00AM
Retrieval Date: 1/14/2015 9:05:00AM
Date Analyzed: 1/22/2015 11:04:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**8.46**	**0.50**
BTEX		**0.28**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753466 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-08 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:10:00AM
Retrieval Date: 1/14/2015 9:15:00AM Date Analyzed: 1/23/2015 12:56:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.05**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.11**	**0.02**
Octane	**111-65-9**	**0.23**	**0.02**
Tetrachloroethene	**127-18-4**	**0.45**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.03**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.10**	**0.02**
o-Xylene	**95-47-6**	**0.05**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.03**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.09**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.23**	**0.05**
Naphthalene	**91-20-3**	**0.06**	**0.05**
Tridecane	**629-50-5**	**0.07**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.13**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753466 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-08
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:10:00AM
Retrieval Date: 1/14/2015 9:15:00AM
Date Analyzed: 1/23/2015 12:56:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**12.75**	**0.50**
BTEX		**0.34**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753467 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-09 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:20:00AM
Retrieval Date: 1/14/2015 9:25:00AM Date Analyzed: 1/22/2015 11:45:00AM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.04**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.09**	**0.02**
Octane	**111-65-9**	**0.16**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.02**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.07**	**0.02**
o-Xylene	**95-47-6**	**0.03**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	**95-63-6**	**0.07**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.24**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.18**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.09**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753467 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-09
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:20:00AM
Retrieval Date: 1/14/2015 9:25:00AM
Date Analyzed: 1/22/2015 11:45:00AM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**10.35**	**0.50**
BTEX		**0.25**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753468 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-10 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:30:00AM
Retrieval Date: 1/14/2015 9:35:00AM Date Analyzed: 1/23/2015 10:52:00AM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.09**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	**79-01-6**	**0.02**	**0.02**
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.38**	**0.02**
Octane	**111-65-9**	**0.30**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.06**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.16**	**0.02**
o-Xylene	**95-47-6**	**0.08**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.03**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.11**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.37**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.19**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.06**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753468 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-10 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 10:30:00AM

Retrieval Date: 1/14/2015 9:35:00AM Date Analyzed: 1/23/2015 10:52:00AM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**12.59**	**0.50**
BTEX		**0.76**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753469 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-11 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:40:00AM
Retrieval Date: 1/14/2015 9:45:00AM Date Analyzed: 1/23/2015 4:02:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.44**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	**79-01-6**	**0.06**	**0.02**
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**1.75**	**0.02**
Octane	**111-65-9**	**2.14**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.32**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.76**	**0.02**
o-Xylene	**95-47-6**	**0.37**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.07**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.23**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**1.36**	**0.05**
Naphthalene	**91-20-3**	**0.07**	**0.05**
Tridecane	**629-50-5**	**0.74**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.08**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	**629-62-9**	**0.07**	**0.05**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753469 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-11 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 10:40:00AM

Retrieval Date: 1/14/2015 9:45:00AM Date Analyzed: 1/23/2015 4:02:00PM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**176.63**	**0.50**
BTEX		**3.63**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753470 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-12 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:50:00AM
Retrieval Date: 1/14/2015 9:50:00AM Date Analyzed: 1/23/2015 12:06:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	**67-66-3**	**0.08**	**0.02**
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.04**	**0.02**
Carbon Tetrachloride	**56-23-5**	**0.04**	**0.02**
Trichloroethene	**79-01-6**	**2.82**	**0.02**
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.19**	**0.02**
Octane	**111-65-9**	**0.11**	**0.02**
Tetrachloroethene	**127-18-4**	**0.73**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.03**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.06**	**0.02**
o-Xylene	**95-47-6**	**0.03**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	**95-63-6**	**0.04**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.25**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.15**	**0.05**
2-Methylnaphthalene	91-57-6	0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753470 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-12
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:50:00AM
Retrieval Date: 1/14/2015 9:50:00AM
Date Analyzed: 1/23/2015 12:06:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**12.90**	**0.50**
BTEX		**0.35**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753471 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-13 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 11:00:00AM
Retrieval Date: 1/14/2015 10:00:00AM Date Analyzed: 1/22/2015 5:56:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	**67-66-3**	**0.26**	**0.02**
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.04**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.13**	**0.02**
Octane	**111-65-9**	**0.49**	**0.02**
Tetrachloroethene	**127-18-4**	**0.20**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.54**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**1.71**	**0.02**
o-Xylene	**95-47-6**	**0.40**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	0.02	0.02
1,2,4-Trimethylbenzene	**95-63-6**	**0.08**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.15**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753471 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-13 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 11:00:00AM

Retrieval Date: 1/14/2015 10:00:00AM Date Analyzed: 1/22/2015 5:56:00PM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**11.01**	**0.50**
BTEX		**2.81**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753472 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-14 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 11:10:00AM
Retrieval Date: 1/14/2015 10:05:00AM Date Analyzed: 1/22/2015 4:54:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	**67-66-3**	**0.80**	**0.02**
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.03**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.28**	**0.02**
Octane	**111-65-9**	**0.09**	**0.02**
Tetrachloroethene	**127-18-4**	**1.39**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.06**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.23**	**0.02**
o-Xylene	**95-47-6**	**0.12**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.07**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.13**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.11**	**0.05**
Naphthalene	**91-20-3**	**0.05**	**0.05**
Tridecane	**629-50-5**	**0.08**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.09**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753472 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-14
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 11:10:00AM
Retrieval Date: 1/14/2015 10:05:00AM
Date Analyzed: 1/22/2015 4:54:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**8.67**	**0.50**
BTEX		**0.71**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753473 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-16 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 11:20:00AM
Retrieval Date: 1/14/2015 10:15:00AM Date Analyzed: 1/22/2015 7:59:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	**67-66-3**	**4.13**	**0.02**
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.03**	**0.02**
Carbon Tetrachloride	**56-23-5**	**0.05**	**0.02**
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.05**	**0.02**
Octane	**111-65-9**	**0.05**	**0.02**
Tetrachloroethene	**127-18-4**	**0.17**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	**108-38-3/106-42-3**	**0.02**	**0.02**
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753473 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-16 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 11:20:00AM

Retrieval Date: 1/14/2015 10:15:00AM Date Analyzed: 1/22/2015 7:59:00PM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**3.02**	**0.50**
BTEX		**0.11**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753475 TRIP_BLANK Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: TB-011415A Porosity: Water Filled Voids:
Installation Date: 1/9/2015 8:00:00AM
Retrieval Date: 1/14/2015 12:00:00PM Date Analyzed: 1/22/2015 9:01:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	<0.02	0.02
Octane	111-65-9	<0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	<0.02	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753475 TRIP_BLANK Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: TB-011415A Porosity: Water Filled Voids:

Installation Date: 1/9/2015 8:00:00AM

Retrieval Date: 1/14/2015 12:00:00PM Date Analyzed: 1/22/2015 9:01:00PM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		<0.50	0.50
BTEX		<0.02	0.02

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753476 TRIP_BLANK Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: TB-011415B Porosity: Water Filled Voids:
Installation Date: 1/9/2015 8:30:00AM
Retrieval Date: 1/14/2015 12:30:00PM Date Analyzed: 1/22/2015 1:49:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	<0.02	0.02
Octane	111-65-9	<0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	<0.02	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753476 TRIP_BLANK Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: TB-011415B Porosity: Water Filled Voids:

Installation Date: 1/9/2015 8:30:00AM

Retrieval Date: 1/14/2015 12:30:00PM Date Analyzed: 1/22/2015 1:49:00PM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		<0.50	0.50
BTEX		<0.02	0.02

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE NAME	FIELD ID	DATE/ TIME INSTALLED		DATE/ TIME RETRIEVED		DATE/ TIME RECEIVED		DATE/ TIME ANALYZED		DF	estimated TPH, ug/m^3	MTBE, ug/m^3
Average RL =											424	2810
00753459	SG-01	1/9/15 9:00		1/14/15 8:15		1/16/15 10:35	ET	1/22/15 12:47	ET	1	485000 E	<2810
00753460	SG-02	1/9/15 9:10		1/14/15 8:25		1/16/15 10:35	ET	1/23/15 11:54	ET	1	4000	<2810
00753461	SG-03	1/9/15 9:20		1/14/15 8:35		1/16/15 10:35	ET	1/23/15 1:08	ET	1	2370	<2810
00753462	SG-04	1/9/15 9:30		1/14/15 8:40		1/16/15 10:35	ET	1/22/15 15:52	ET	1	2990	<2810
00753463	SG-05	1/9/15 9:40		1/14/15 8:50		1/16/15 10:35	ET	1/22/15 14:50	ET	1	8150	<2810
00753464	SG-06	1/9/15 9:50		1/14/15 9:00		1/16/15 10:35	ET	1/22/15 18:58	ET	1	5880	<2810
00753465	SG-07	1/9/15 10:00		1/14/15 9:05		1/16/15 10:35	ET	1/22/15 23:04	ET	1	6460	<2810
00753466	SG-08	1/9/15 10:10		1/14/15 9:15		1/16/15 10:35	ET	1/23/15 12:56	ET	1	9590	<2810
00753467	SG-09	1/9/15 10:20		1/14/15 9:25		1/16/15 10:35	ET	1/22/15 11:45	ET	1	7850	<2810
00753468	SG-10	1/9/15 10:30		1/14/15 9:35		1/16/15 10:35	ET	1/23/15 10:52	ET	1	9480	<2810
00753469	SG-11	1/9/15 10:40		1/14/15 9:45		1/16/15 10:35	ET	1/23/15 16:02	ET	1	120000 E	<2810
00753470	SG-12	1/9/15 10:50		1/14/15 9:50		1/16/15 10:35	ET	1/23/15 12:06	ET	1	9710	<2810
00753471	SG-13	1/9/15 11:00		1/14/15 10:00		1/16/15 10:35	ET	1/22/15 17:56	ET	1	8330	<2810
00753472	SG-14	1/9/15 11:10		1/14/15 10:05		1/16/15 10:35	ET	1/22/15 16:54	ET	1	6630	<2810
00753473	SG-16	1/9/15 11:20		1/14/15 10:15		1/16/15 10:35	ET	1/22/15 19:59	ET	1	2400	<2810
00753475	TB-011415A	1/9/15 8:00		1/14/15 12:00		1/16/15 10:35	ET	1/22/15 21:01	ET	1	<410	<2780
00753476	TB-011415B	1/9/15 8:30		1/14/15 12:30		1/16/15 10:35	ET	1/22/15 13:49	ET	1	<410	<2780
BLK_ENV-246692	Method Blank							1/22/15 11:14	ET	1	<424	<2810

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE NAME	FIELD ID	t12DCE, ug/m^3	11DCA, ug/m^3	c12DCE, ug/m^3	CHCl3, ug/m^3	111TCA, ug/m^3	12DCA, ug/m^3
Average RL =		5900	2020	1910	1030	610	495
00753459	SG-01	<5900	<2020	<1910	<1030	<611	<496
00753460	SG-02	<5900	<2020	<1910	<1030	<611	<496
00753461	SG-03	<5900	<2020	<1910	<1030	<611	<496
00753462	SG-04	<5910	<2020	<1920	<1030	<611	<496
00753463	SG-05	<5910	<2020	<1920	<1030	<611	<496
00753464	SG-06	<5910	<2020	<1920	<1030	<611	<496
00753465	SG-07	<5910	<2020	<1920	<1030	<611	<496
00753466	SG-08	<5910	<2020	<1920	<1030	<611	<496
00753467	SG-09	<5910	<2020	<1920	<1030	<611	<496
00753468	SG-10	<5910	<2020	<1920	<1030	<611	<496
00753469	SG-11	<5910	<2020	<1920	<1030	<611	<496
00753470	SG-12	<5910	<2020	<1920	3260	<611	<496
00753471	SG-13	<5910	<2020	<1920	8720	<611	<496
00753472	SG-14	<5910	<2020	<1920	22600	<612	<496
00753473	SG-16	<5910	<2020	<1920	89200	<612	<496
00753475	TB-011415A	<5870	<2000	<1890	<1020	<599	<487
00753476	TB-011415B	<5870	<2000	<1890	<1020	<599	<487
BLK_ENV-246692	Method Blank	<5900	<2020	<1910	<1030	<610	<495

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE	FIELD						estimated	
NAME	ID	BENZ, ug/m^3	CCl4, ug/m^3	TCE, ug/m^3	112TCA, ug/m^3	TOL, ug/m^3	OCT, ug/m^3	PCE, ug/m^3
Average RL =		489	547	207	35.1	51.4	52.9	39.1
00753459	SG-01	1270	<548	<207	<35.3	1420	14900	<39.2
00753460	SG-02	528	<548	<207	<35.3	136	70.6	<39.2
00753461	SG-03	<489	<548	<207	<35.3	82.8	60.6	<39.2
00753462	SG-04	<490	<548	<207	<35.3	180	115	52.8
00753463	SG-05	604	<548	656	<35.3	298	665	1690
00753464	SG-06	903	<548	<207	<35.3	234	303	<39.2
00753465	SG-07	783	<548	<207	<35.3	485	220	<39.3
00753466	SG-08	1020	<548	<207	<35.3	256	532	860
00753467	SG-09	783	<548	<207	<35.3	207	388	<39.3
00753468	SG-10	1670	<548	225	<35.3	830	701	<39.3
00753469	SG-11	5760	<548	561	<35.3	3530	4510	<39.3
00753470	SG-12	903	929	16200	<35.3	442	264	1380
00753471	SG-13	801	<548	<207	<35.3	312	1120	377
00753472	SG-14	678	<548	<207	<35.3	630	231	2630
00753473	SG-16	713	1160	<207	<35.3	132	120	322
00753475	TB-011415A	<481	<537	<202	<34.1	<50.0	<51.5	<38.0
00753476	TB-011415B	<481	<537	<202	<34.1	<50.0	<51.5	<38.0
BLK_ENV-246692	Method Blank	<489	<547	<207	<35.1	<51.4	<52.9	<39.1

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE	FIELD		estimated				
NAME	ID	ClBENZ, ug/m^3	1112TetCA, ug/m^3	ETBENZ, ug/m^3	mpXYL, ug/m^3	oXYL, ug/m^3	1122TetCA, ug/m^3
Average RL =		25.3	18.9	24.2	22.0	30.6	18.9
00753459	SG-01	<25.3	<18.9	119	510	412	<18.9
00753460	SG-02	<25.3	<18.9	<24.3	26.4	<30.7	<18.9
00753461	SG-03	<25.3	<18.9	<24.3	37.3	<30.7	<18.9
00753462	SG-04	<25.4	<19.0	46.4	148	85.8	<19.0
00753463	SG-05	<25.4	<19.0	44.1	131	80.3	<19.0
00753464	SG-06	<25.4	<19.0	38.3	104	73.4	<19.0
00753465	SG-07	<25.4	<19.0	<24.3	36.3	<30.7	<19.0
00753466	SG-08	<25.4	<19.0	40.6	105	73.4	<19.0
00753467	SG-09	<25.4	<19.0	29.0	77.4	49.5	<19.0
00753468	SG-10	<25.4	<19.0	65.9	171	108	<19.0
00753469	SG-11	<25.4	<19.0	358	804	486	<19.0
00753470	SG-12	<25.4	<19.0	31.4	65.5	45.2	<19.0
00753471	SG-13	<25.4	<19.0	592	1790	523	<19.0
00753472	SG-14	<25.4	<19.0	66.0	242	169	<19.0
00753473	SG-16	<25.4	<19.0	<24.3	24.3	<30.8	<19.0
00753475	TB-011415A	<24.5	<18.3	<23.4	<21.3	<29.7	<18.3
00753476	TB-011415B	<24.5	<18.3	<23.4	<21.3	<29.7	<18.3
BLK_ENV-246692	Method Blank	<25.3	<18.9	<24.2	<22.0	<30.6	<18.9

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE NAME	FIELD ID	135TMB, ug/m^3	124TMB, ug/m^3	13DCB, ug/m^3	14DCB, ug/m^3	12DCB, ug/m^3	estimated UNDEC, ug/m^3
Average RL =		33.0	24.9	20.0	20.2	19.1	46.2
00753459	SG-01	7910	2540	<20.1	<20.3	<19.2	26400 E
00753460	SG-02	<33.1	<24.9	<20.1	<20.3	<19.2	61.5
00753461	SG-03	<33.1	<24.9	<20.1	<20.3	<19.2	<46.4
00753462	SG-04	<33.1	27.3	<20.1	<20.3	<19.2	<46.4
00753463	SG-05	46.9	109	<20.1	<20.3	<19.2	218
00753464	SG-06	46.9	106	<20.1	<20.3	<19.2	128
00753465	SG-07	<33.2	30.9	<20.1	<20.3	<19.2	85.2
00753466	SG-08	48.5	109	<20.1	<20.3	<19.2	202
00753467	SG-09	<33.2	85.3	<20.1	<20.3	<19.2	207
00753468	SG-10	53.0	124	<20.1	<20.3	<19.2	322
00753469	SG-11	103	262	<20.1	<20.3	<19.2	1110
00753470	SG-12	<33.2	53.2	<20.1	<20.3	<19.2	214
00753471	SG-13	33.2	91.0	<20.1	<20.3	<19.2	131
00753472	SG-14	106	155	<20.1	<20.4	<19.3	96.7
00753473	SG-16	<33.2	<25.0	<20.1	<20.4	<19.3	<46.5
00753475	TB-011415A	<32.0	<24.1	<19.4	<19.6	<18.5	<44.8
00753476	TB-011415B	<32.0	<24.1	<19.4	<19.6	<18.5	<44.8
BLK_ENV-246692	Method Blank	<33.0	<24.9	<20.0	<20.2	<19.1	<46.2

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
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AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE	FIELD	estimated	estimated	estimated	estimated	estimated
NAME	ID	NAPH, ug/m^3	TRIDEC, ug/m^3	2MeNAPH, ug/m^3	Acenaphthylene, ug/m^3	PENTADEC, ug/m^3
Average RL =		46.2	46.2	46.2	46.2	46.2
00753459	SG-01	459	4930	480	<46.4	79.0
00753460	SG-02	<46.4	<46.4	<46.4	<46.4	<46.4
00753461	SG-03	<46.4	<46.4	<46.4	<46.4	<46.4
00753462	SG-04	<46.4	47.3	<46.4	<46.4	<46.4
00753463	SG-05	49.1	119	103	<46.4	<46.4
00753464	SG-06	<46.4	58.0	81.7	<46.4	<46.4
00753465	SG-07	<46.4	109	58.0	<46.4	<46.4
00753466	SG-08	57.1	65.1	113	<46.4	<46.4
00753467	SG-09	<46.4	158	85.2	<46.4	<46.4
00753468	SG-10	<46.4	164	55.3	<46.4	<46.4
00753469	SG-11	66.0	617	71.2	<46.4	59.8
00753470	SG-12	<46.5	137	46.5	<46.5	<46.5
00753471	SG-13	<46.5	<46.5	<46.5	<46.5	<46.5
00753472	SG-14	50.1	74.8	77.5	<46.5	<46.5
00753473	SG-16	<46.5	<46.5	<46.5	<46.5	<46.5
00753475	TB-011415A	<44.8	<44.8	<44.8	<44.8	<44.8
00753476	TB-011415B	<44.8	<44.8	<44.8	<44.8	<44.8
BLK_ENV-246692	Method Blank	<46.2	<46.2	<46.2	<46.2	<46.2

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
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ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE NAME	FIELD ID	estimated Acenaphthene, ug/m^3	estimated Fluorene, ug/m^3
Average RL =		46.2	46.2
00753459	SG-01	463	363
00753460	SG-02	<46.4	<46.4
00753461	SG-03	<46.4	<46.4
00753462	SG-04	<46.4	<46.4
00753463	SG-05	<46.4	<46.4
00753464	SG-06	<46.4	<46.4
00753465	SG-07	<46.4	<46.4
00753466	SG-08	<46.4	<46.4
00753467	SG-09	<46.4	<46.4
00753468	SG-10	<46.4	<46.4
00753469	SG-11	<46.4	<46.4
00753470	SG-12	<46.5	<46.5
00753471	SG-13	<46.5	<46.5
00753472	SG-14	<46.5	<46.5
00753473	SG-16	<46.5	<46.5
00753475	TB-011415A	<44.8	<44.8
00753476	TB-011415B	<44.8	<44.8
BLK_ENV-246692	Method Blank	<46.2	<46.2

KEY TO DATA TABLE

UNITS

µg	micrograms, relative mass value
µg/m^3	micrograms per cubic meter; estimated soil gas concentration
µg/L	micrograms per Liter; calculated water concentration

DATA QUALIFIERS

>	greater than; value exceeds calibration range, estimated value
<	less than; compound value is below the LOD and RL
J	mass value below LOQ or RL, but above LOD, estimated mass value
E	mass value exceeds upper calibration level, estimated mass value
Q	one or more quality control parameters failed for the compound

ABBREVIATIONS

AVG RL	average reporting limit; calculated based on individual field sample RLs
LOD	limit of detection
LOQ	limit of quantification
MDL	method detection limit
RL	reporting limit

1112TetCA	1,1,1,2-tetrachloroethane
111TCA	1,1,1-trichloroethane
1122TetCA	1,1,2,2-tetrachloroethane
112TCA	1,1,2-trichloroethane
11DCA	1,1-dichloroethane
11DCE	1,1-dichloroethene
124TMB	1,2,4-trimethylbenzene
12DCA	1,2-dichloroethane
12DCB	1,2-dichlorobenzene
135TMB	1,3,5-trimethylbenzene
13DCB	1,3-dichlorobenzene
14DCB	1,4-dichlorobenzene
2MeNAPH	2-methyl naphthalene
BENZ	benzene
BTEX	combined masses of benzene, toluene, ethylbenzene, and total xylenes (Gasoline Range Aromatics)
C11,C13&C15	combined masses of undecane, tridecane, and pentadecane (C11+C13+C15) (Diesel Range Alkanes)
c12DCE	cis-1,2-dichloroethene
CCl4	carbon tetrachloride
CHC13	chloroform
ClBENZ	chlorobenzene
ct12DCE	cis- & trans-1,2-dichloroethene
EtBENZ	ethylbenzene
mpXYL	m-, p-xylene
MTBE	methyl t-butyl ether
NAPH	naphthalene
OCT	octane
oXYL	o-xylene
PCE	tetrachloroethene
PENTADEC	pentadecane
PHEN	phenanthrene
t12DCE	trans-1,2-dichloroethene
TCE	trichloroethene
TMBs	combined masses of 1,3,5-trimethylbenzene and 1,2,4-trimethylbenzene
TOL	toluene
TPH	total petroleum hydrocarbons
TRIDEC	tridecane
UNDEC	undecane
VC	vinyl chloride

AMPLIFIED GEOCHEMICAL IMAGING, LLC

Concentration Method Summary for AGI Samplers

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In environmental analysis obtaining a contaminate concentration value allows for quantifiable risk assessment. The following procedure outlines the method used to determine accurate concentration values from the AGI Sampler in soil gas and air sampling:

DERIVATION OF CONCENTRATION EQUATION

When a fresh sampler (which, by definition and verification, has a contaminate concentration of zero) is inserted into a locally homogeneous contaminated media (with a non-zero contaminant concentration), a concentration gradient is created between the sampler and the media. Due to the concentration gradient, contaminant will diffuse from the media across the permeable membrane to the enclosed adsorbents as described by Fick's first law of diffusion[1], often expressed in differential form as:

$$F = -D\left(\frac{dC}{dx}\right) \text{ or in the integral form as: } \frac{dm}{dt} = -D\left(\frac{A}{L}\right)(C_X - C_0) \qquad (1)$$

where m = mass, t = time, D = diffusion coefficient, (A/L) = geometric parameter describing shape of sampler, C_X = concentration of analyte in the sampler at time, $t = x$, C_0 = concentration at time, $t = 0$.

As we ultimately want to measure the concentration of the analyte, we rearrange equation (1) to solve for C_X:

$$C_X = -\left[\left(\frac{1}{D}\right)\left(\frac{L}{A}\right)\left(\frac{dm}{dt}\right)\right] + C_0 \qquad (2)$$

By using a fresh sampler, the initial concentration (C_0) in the sampler is zero. We combine the quantity $D\frac{A}{L}$, which is referred to as the sampling rate[2] (S) of the sampler, measured in units of vol/time for the analyte of interest. This yields:

$$C_X = -\left[\left(\frac{1}{S}\right)\left(\frac{dm}{dt}\right)\right] \qquad (3)$$

Thus, concentration (C_X) can be calculated by using the mass (m) of the analyte adsorbed to the sampler after a given exposure time (t) and the sampling rate (S) for the analyte of interest. Two of these values are straightforward – the mass is measured using our standard thermal desorption GC/MS procedure, the time is documented by the field installation team. The third, sampling rate (S), is measured through a series of controlled chamber experiments for each analyte. Using these three values, an accurate contaminate concentration value can be calculated using the AGI Sampler. The process for determining S for the AGI Sampler is described briefly in the next section.

DETERMINING the *S* PARAMETER – AGI Sampler Sampling Rate

To determine *S* for the AGI Sampler we have exposed samplers for different times (*t*) at various concentrations (*C*). We then plot mass (*m*) vs. time (*t*) and divide the slope by concentration to gain a value for *S* for that compound as shown in equation (4) which is rearranged from equation (3).

$$S = -\left[\left(\frac{1}{C}\right)\left(\frac{dm}{dt}\right)\right] \qquad (4)$$

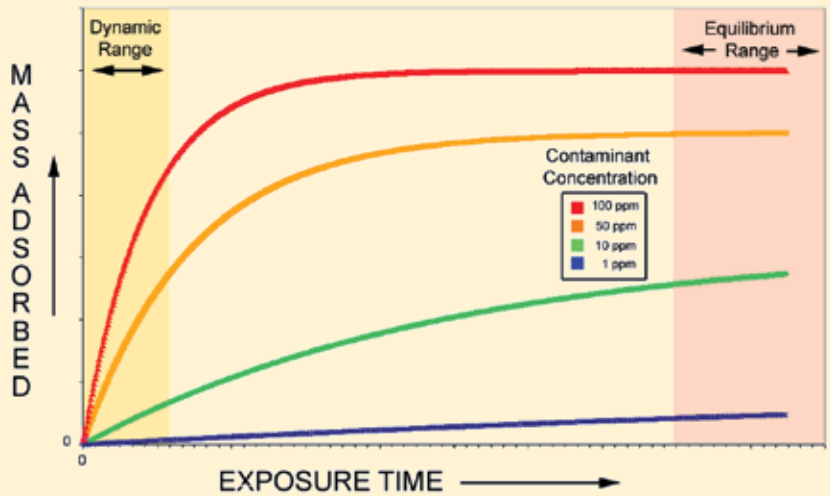

Figure 1 shows typical adsorption curves for a AGI Sampler exposed to a compound at various concentration levels. Notice that in the dynamic range that slopes vary in proportion to concentration.

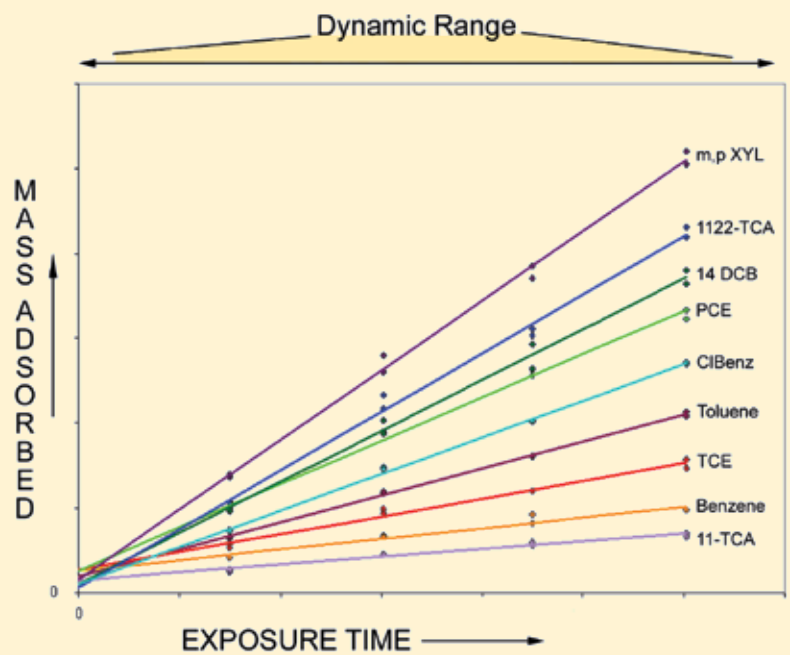

Figure 2 shows the uptake rate for various compounds typical of environmental investigations in the linear dynamic range.

When measuring *S*, we tested each compound at varying temperature (10 to 40°C), relative humidity (0 to 80%), flow rate (0.5 to 15cm/s) and vapor concentrations (0.1ppb to 100ppm).

Under typical sampling conditions, none of these variables were found to significantly impact the sampling rate.

ADJUSTMENTS FOR DIFFUSION RESISTANCE IN SOIL

When measuring gas concentration values in soils we must adjust the sampling rate (S_{air}) values to account for the increased tortuosity due to the presence of soil and moisture.

We previously defined the sampling rate of the module for the analyte of interest as:

$$S_{air} = D_{air}\,(A/L) \qquad (5)$$

In soil, the effective diffusion coefficient (D_{air}) is reduced due to the increased tortuosity, and can be described as:

$$D_{soil} = E(D_{air}) \qquad (6)$$

resulting in (when combined with (5))

$$S_{soil} = E(S_{air}) \qquad (7)$$

where E is the "Soil Effectiveness Factor."

As Millington & Quirk[3] showed, E is governed by the total soil porosity (θ, total volume of pores/total volume) and volumetric air content (Φ, volume of air/total volume) of the media and relates as:

$$E = \frac{(\Phi)^{10/3}}{(\theta)^{2}} \qquad (8)$$

Expressing E as a function of total soil porosity (θ) and water filled porosity (ε, volume of water/volume of pores), this relation can be rearranged as:

$$E = \theta^{(4/3)}(1-\varepsilon)^{(10/3)} \qquad (9)$$

: as Φ, θ and ε have the following relationship:

$$\Phi = \theta\,(1-\varepsilon)$$

Once we've solved for E, we can solve for D_{soil} using equation (5) and S_{soil} using equation (7).

Thus, with measurements for two of these three site-specific soil parameters (θ, ε or Φ), soil gas concentration values can be calculated for modules installed in soil.

REFERENCES

[1] Cussler, E. L., 1997, *Diffusion, Mass Transfer in Fluid Systems*, 2nd ed., Cambridge Univ., Press, 570p.

[2] James D. Mulik and Robert G. Lewis Advances in Air Sampling, AICHG (1990), ISN 0-87371-115-7, Chapter 9, "Recent Developments in Passive Sampling Devices."

[3] Millington, R.J., and J. M. Quirk, "Permeability of Porous Solids", Trans.Faraday Soc., 57, (1961), 1200-1207.

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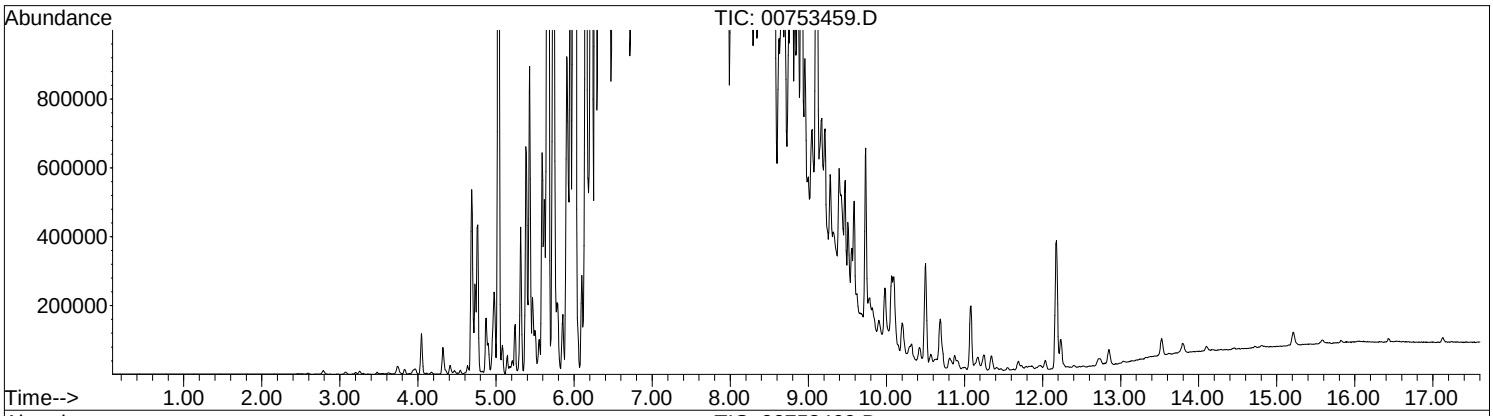
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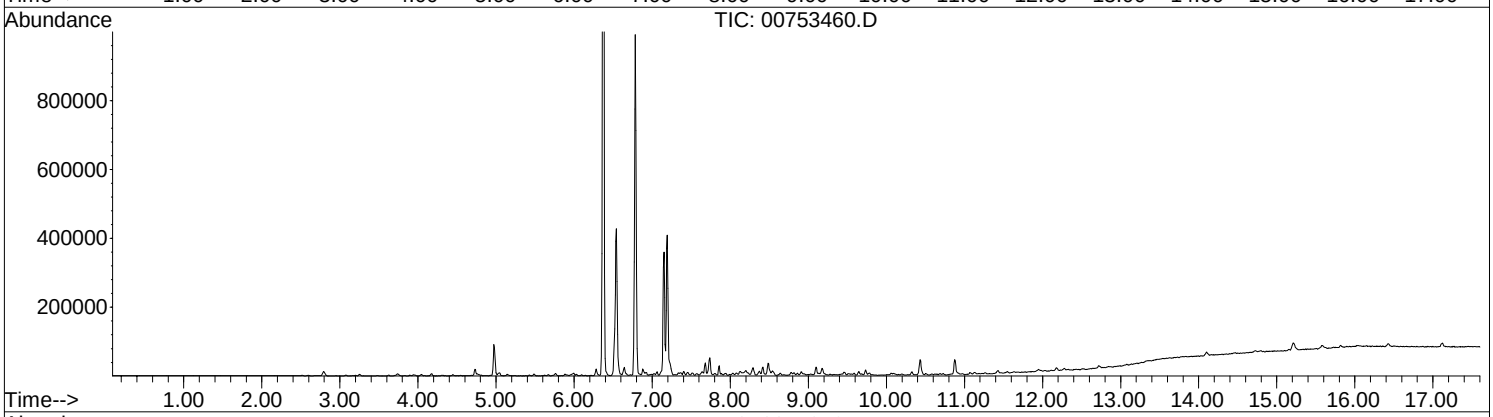
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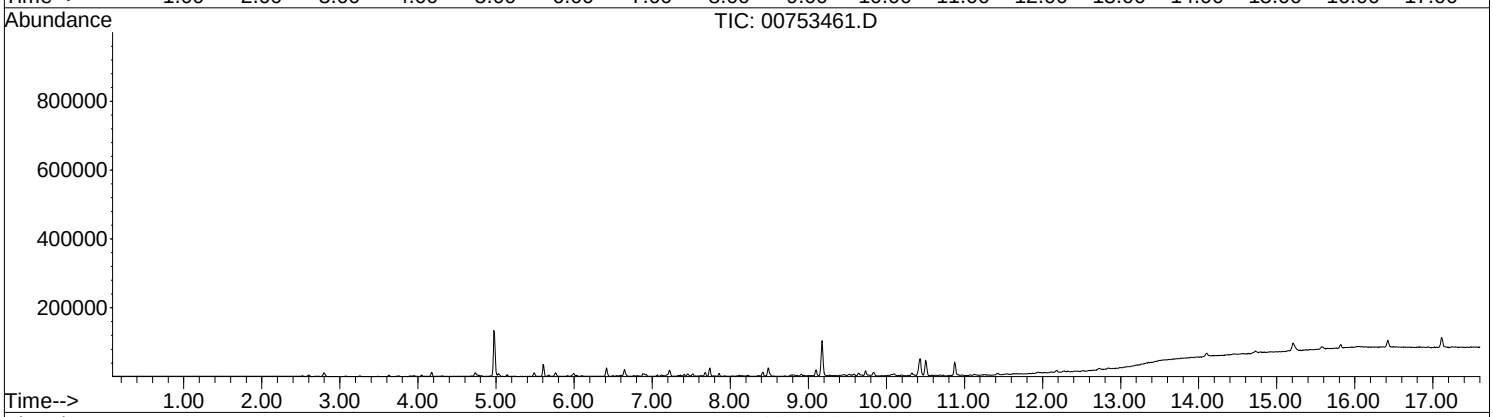
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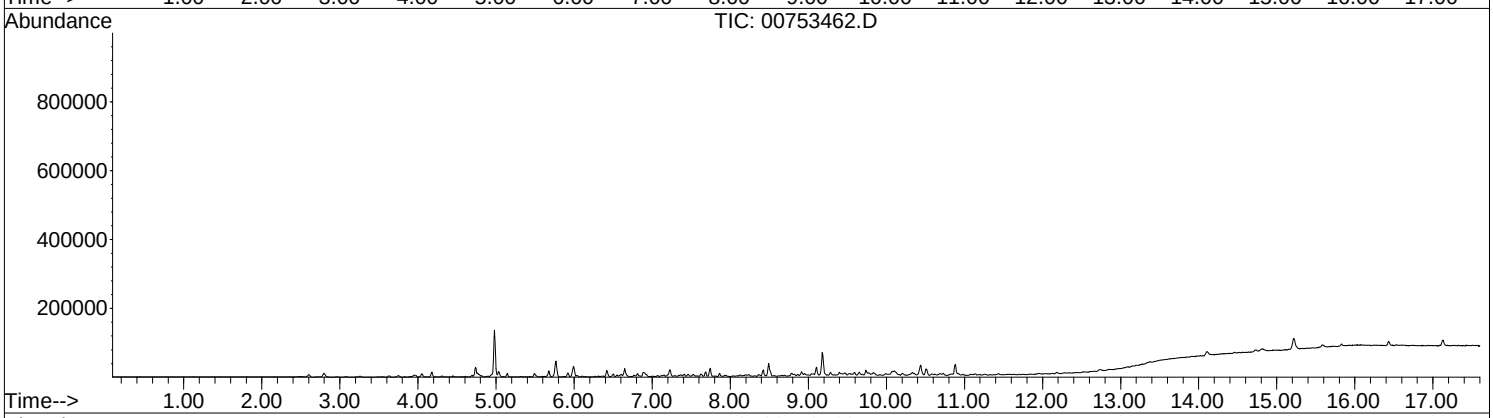
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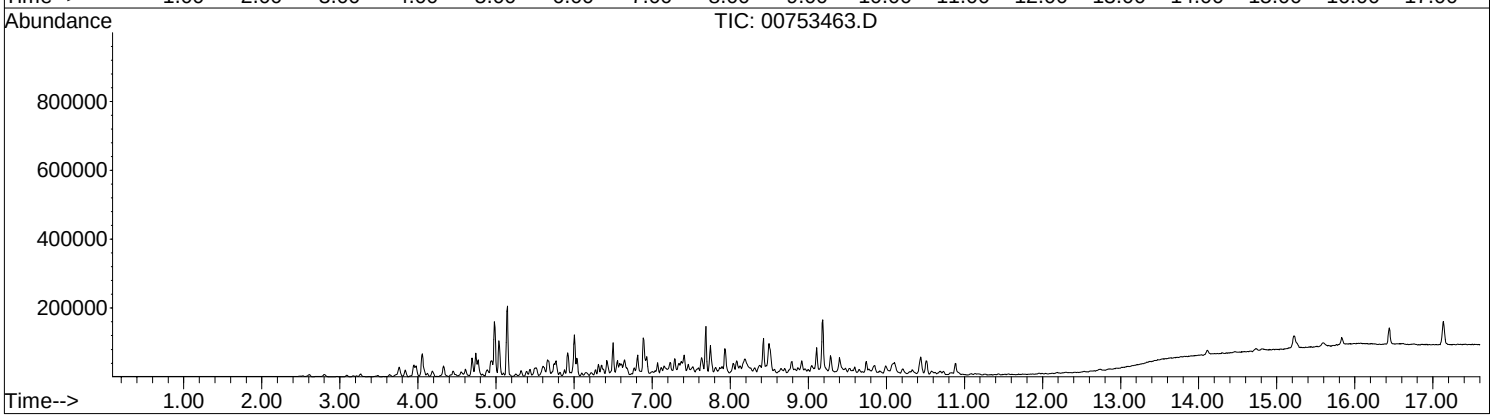
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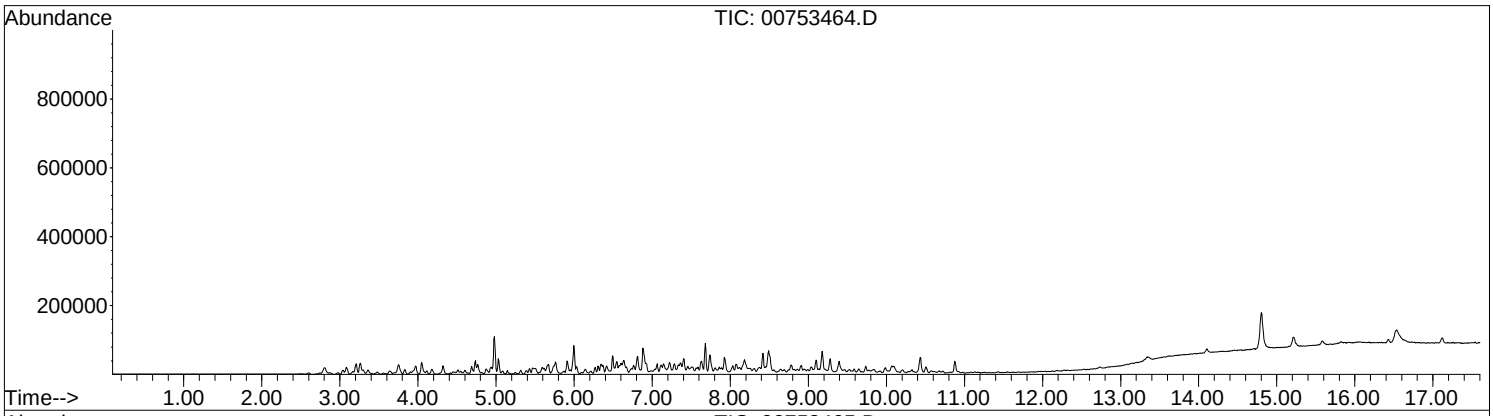
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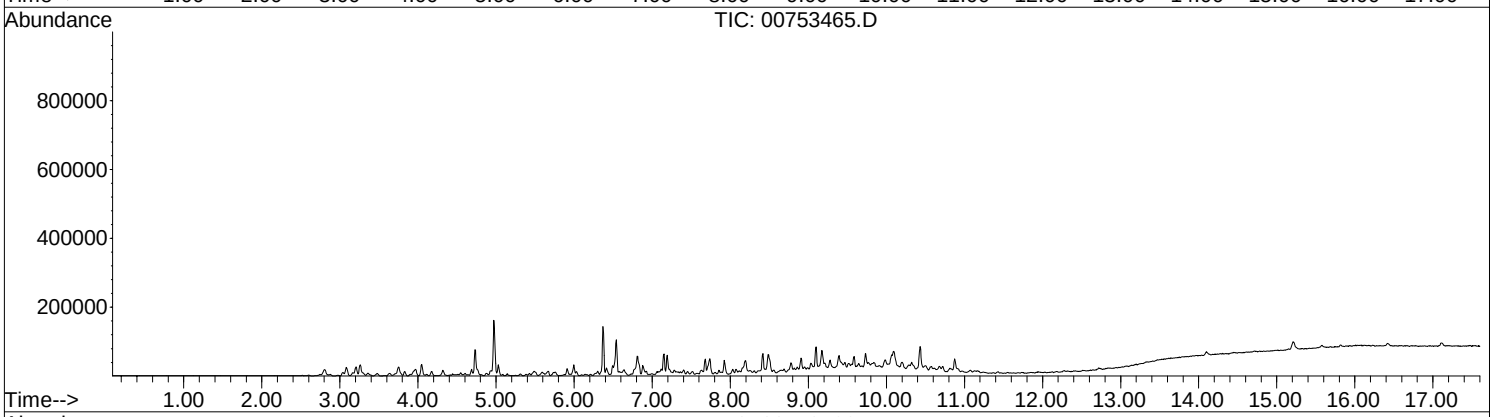
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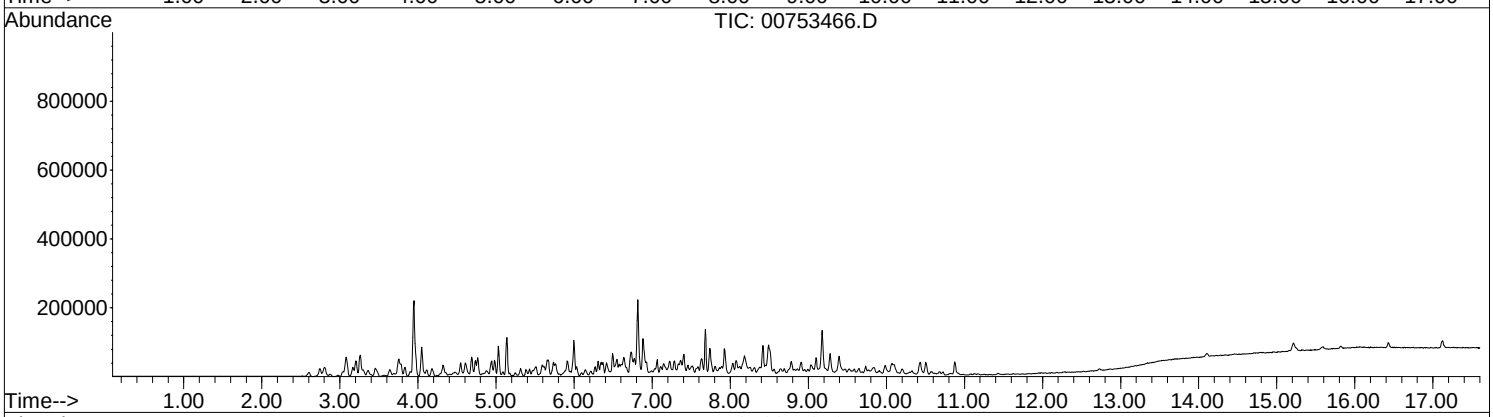
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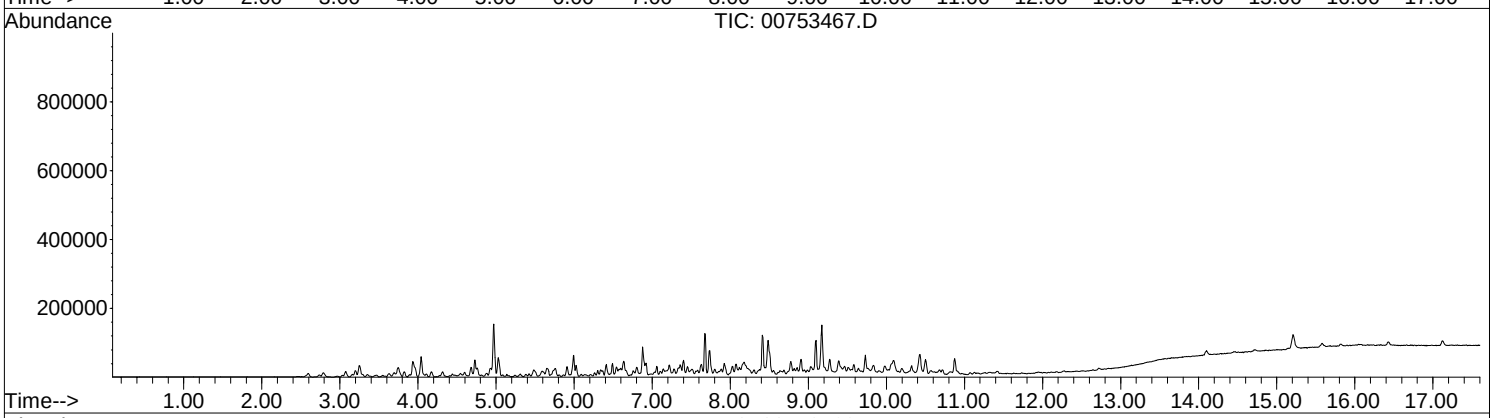
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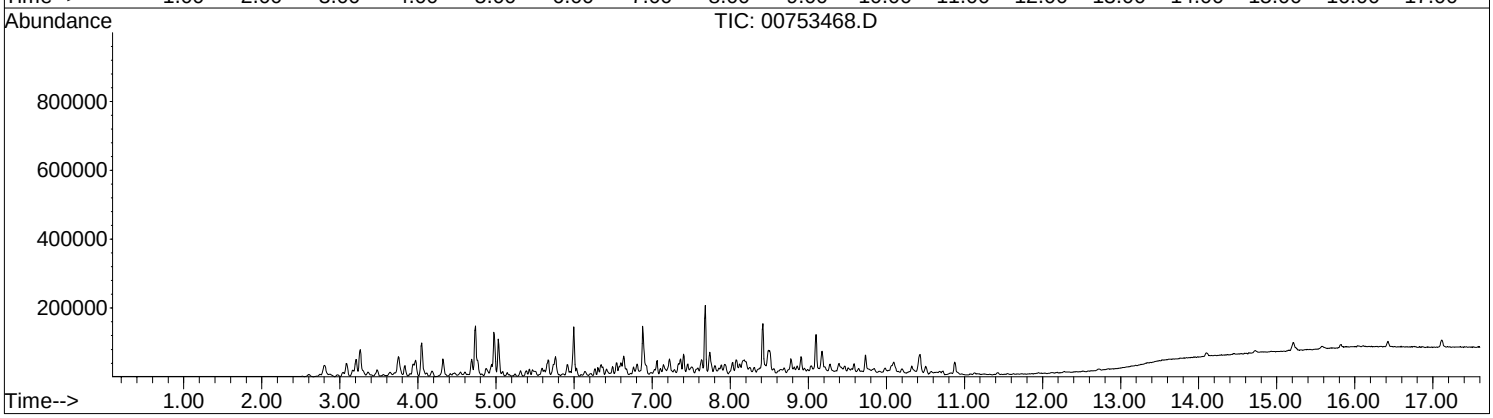
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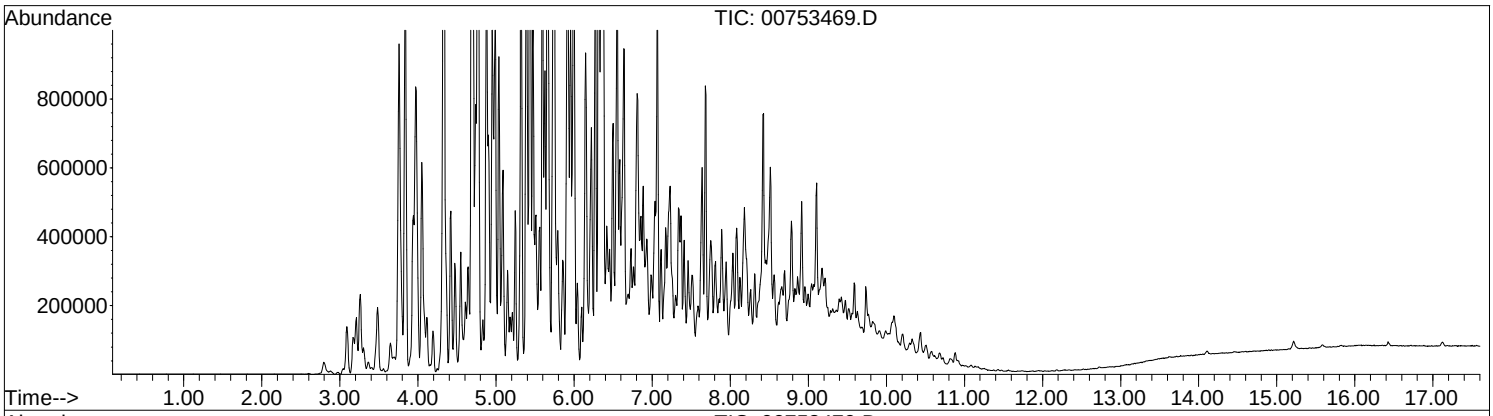
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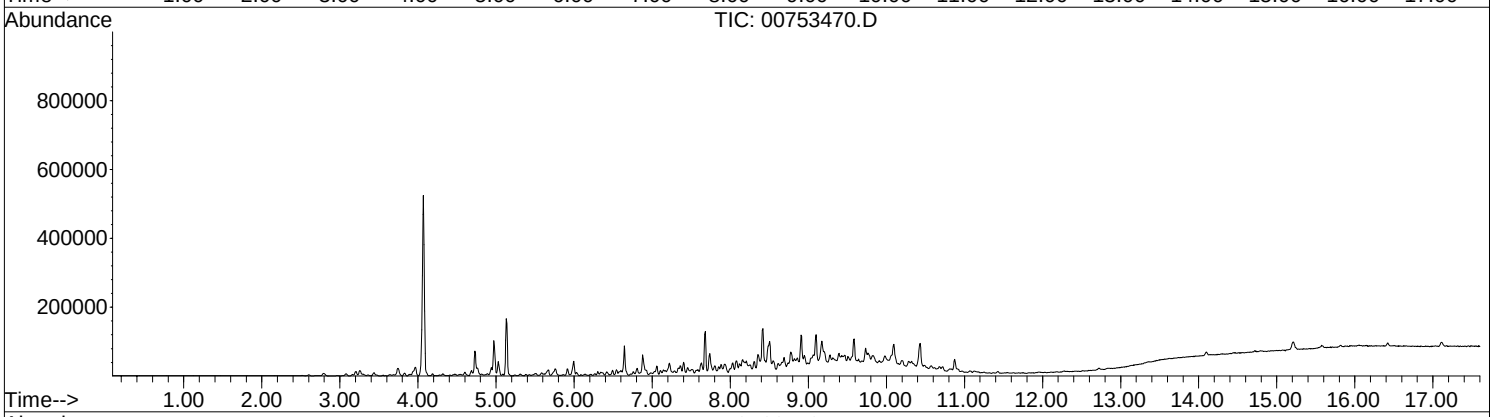
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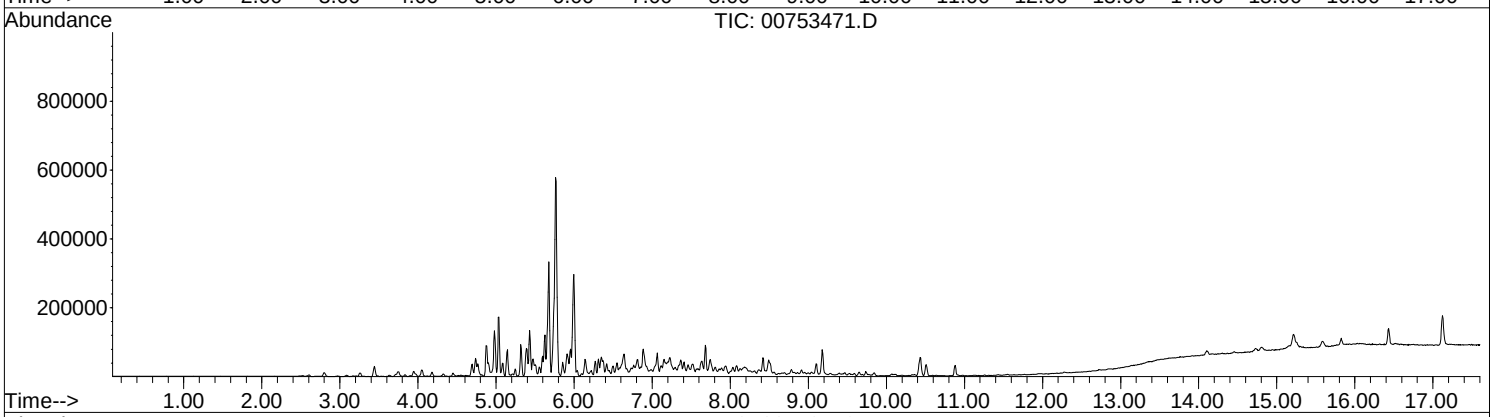
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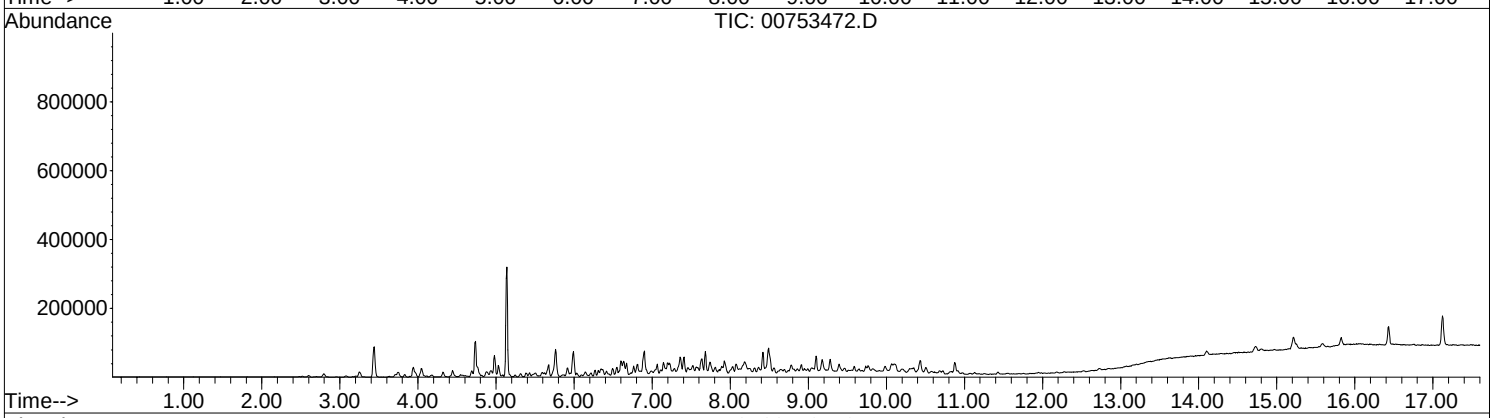
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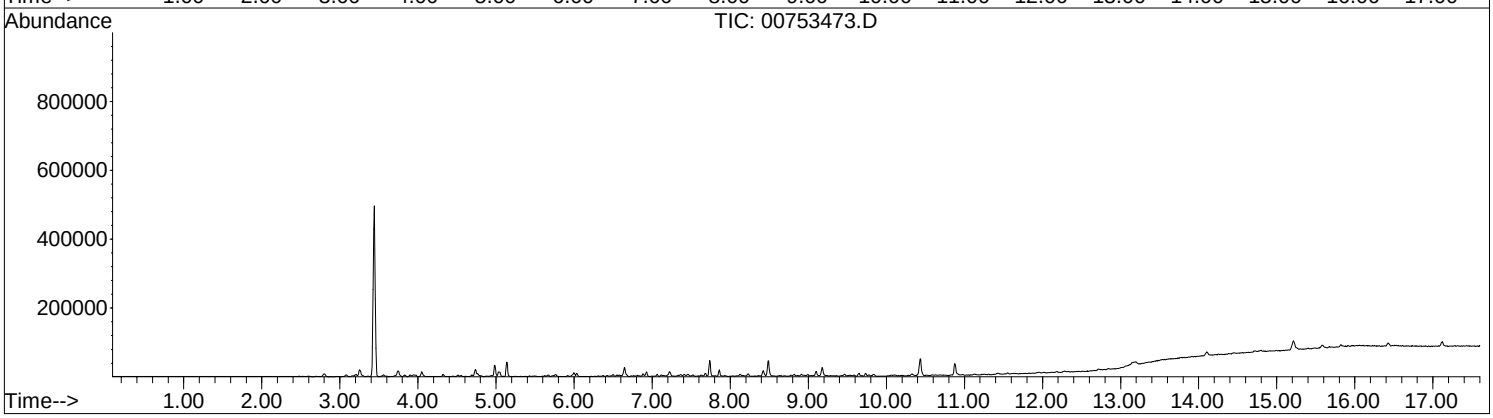
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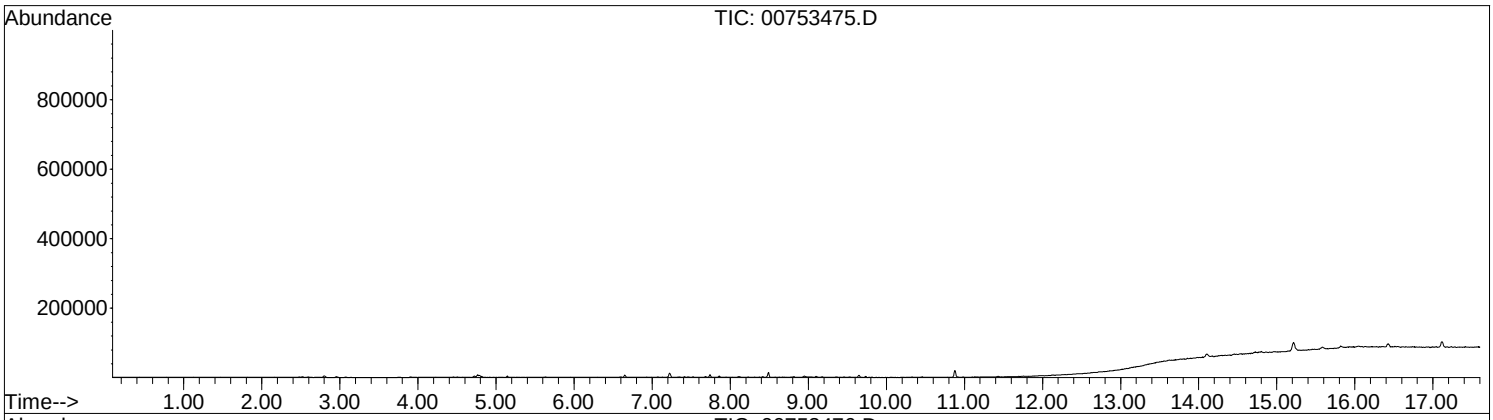
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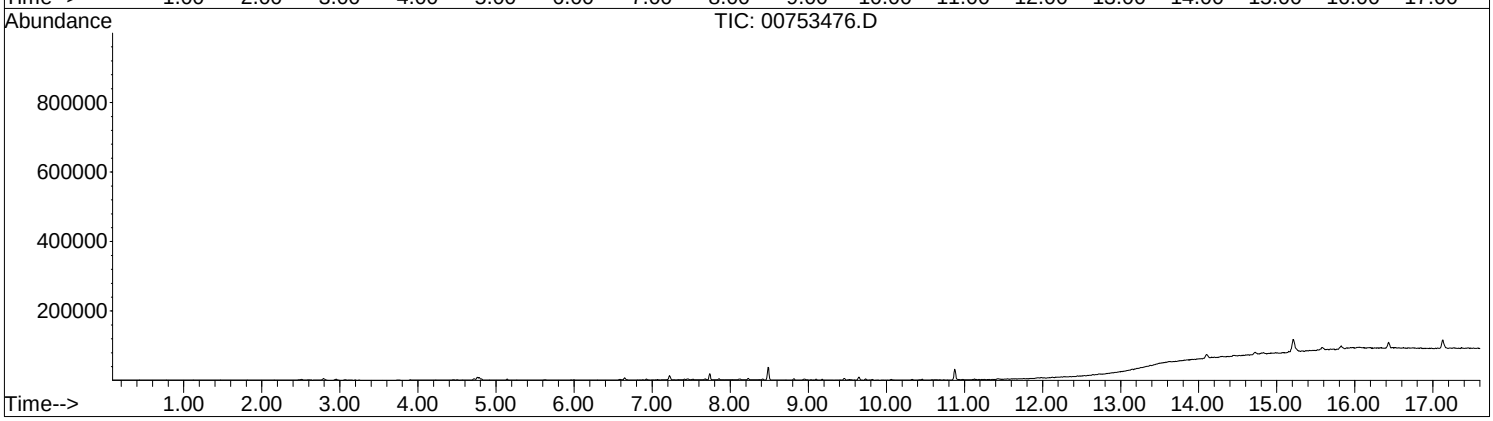
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ATTACHMENT D
DATA VALIDATION REPORT

TABLE D-1
GORE SORBER SOIL VAPOR RESULTS - JANUARY 9-15, 2015
ESTIMATED VOLATILE ORGANIC AND PETROLEUM HYDROCARBON CONCENTRATIONS IN SOIL GAS
GREATER STRAWBERRY POINT, MARTIN STATE AIRPORT
MIDDLE RIVER, MARYLAND

LOCATION	GSP-SG-01	GSP-SG-02	GSP-SG-03	GSP-SG-04	GSP-SG-05	GSP-SG-06	GSP-SG-07
SAMPLE ID	SG-01	SG-02	SG-03	SG-04	SG-05	SG-06	SG-07
SAMPLE DATE	20150109	20150109	20150109	20150109	20150109	20150109	20150109
TOP DEPTH (ft)	0	0	0	0	0	0	0
BOTTOM DEPTH (ft)	2.5	2.5	2.5	2.5	2.5	2.5	2.5
VOLATILES (UG/M3)							
1,1,1,2-TETRACHLOROETHANE	18.9 UJ	18.9 UJ	18.9 UJ	19 UJ	19 UJ	19 UJ	19 UJ
1,1,1-TRICHLOROETHANE	611 U	611 U	611 U	611 U	611 U	611 U	611 U
1,1,2,2-TETRACHLOROETHANE	18.9 U	18.9 U	18.9 U	19 U	19 U	19 U	19 U
1,1,2-TRICHLOROETHANE	35.3 U	35.3 U	35.3 U	35.3 U	35.3 U	35.3 U	35.3 U
1,1-DICHLOROETHANE	2020 U	2020 U	2020 U	2020 U	2020 U	2020 U	2020 U
1,2,4-TRIMETHYLBENZENE	2540	24.9 U	24.9 U	27.3	109	106	30.9
1,2-DICHLOROBENZENE	19.2 U	19.2 U	19.2 U	19.2 U	19.2 U	19.2 U	19.2 U
1,2-DICHLOROETHANE	496 U	496 U	496 U	496 U	496 U	496 U	496 U
1,3,5-TRIMETHYLBENZENE	7910	33.1 U	33.1 U	33.1 U	46.9	46.9	33.2 U
1,3-DICHLOROBENZENE	20.1 U	20.1 U	20.1 U	20.1 U	20.1 U	20.1 U	20.1 U
1,4-DICHLOROBENZENE	20.3 U	20.3 U	20.3 U	20.3 U	20.3 U	20.3 U	20.3 U
2-METHYLNAPHTHALENE	480 J	46.4 UJ	46.4 UJ	46.4 UJ	103 J	81.7 J	58 J
ACENAPHTHENE	463 J	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ
ACENAPHTHYLENE	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ
BENZENE	1270	528	489 U	490 U	604	903	783
BTEX	3731	690	120	460	1157	1353	1304
CARBON TETRACHLORIDE	548 U	548 U	548 U	548 U	548 U	548 U	548 U
CHLOROBENZENE	25.3 U	25.3 U	25.3 U	25.4 U	25.4 U	25.4 U	25.4 U
CHLOROFORM	1030 U	1030 U	1030 U	1030 U	1030 U	1030 U	1030 U
CIS-1,2-DICHLOROETHENE	1910 U	1910 U	1910 U	1910 U	1910 U	1910 U	1910 U
ETHYLBENZENE	119	24.3 U	24.3 U	46.4	44.1	38.3	24.3 U
FLUORENE	363 J	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ
M+P-XYLENES	510	26.4	37.3	148	131	104	36.3
METHYL TERT-BUTYL ETHER	2810 U	2810 U	2810 U	2810 U	2810 U	2810 U	2810 U
NAPHTHALENE	459 J	46.4 UJ	46.4 UJ	46.4 UJ	49.1 J	46.4 UJ	46.4 UJ
OCTANE	14900 J	70.6 J	60.6 J	115 J	665 J	303 J	220 J
O-XYLENE	412	30.7 U	30.7 U	85.8	80.3	73.4	30.7 U
PENTADECANE	79 J	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ
TETRACHLOROETHENE	39.2 U	39.2 U	39.2 U	52.8	1690	39.2 U	39.2 U
TOLUENE	1420	136	82.8	180	298	234	485
TRANS-1,2-DICHLOROETHENE	5900 U	5900 U	5900 U	5910 U	5910 U	5910 U	5910 U
TRICHLOROETHENE	207 U	207 U	207 U	207 U	656	207 U	207 U
TRIDECANE	4930 J	46.4 U	46.4 U	47.3 J	119 J	58 J	109 J
UNDECANE	26400 J	61.5 J	46.4 UJ	46.4 UJ	218 J	128 J	85.2 J
PETROLEUM HYDROCARBONS (UG/M3)							
TOTAL PETROLEUM HYDROCARBONS	485000 J	4000 J	2370 J	2990 J	8150 J	5880 J	6460 J

TABLE D-1
GORE SORBER SOIL VAPOR RESULTS - JANUARY 9-15, 2015
ESTIMATED VOLATILE ORGANIC AND PETROLEUM HYDROCARBON CONCENTRATIONS IN SOIL GAS
GREATER STRAWBERRY POINT, MARTIN STATE AIRPORT
MIDDLE RIVER, MARYLAND

LOCATION	GSP-SG-08	GSP-SG-09	GSP-SG-10	GSP-SG-11	GSP-SG-12	GSP-SG-13	GSP-SG-14	GSP-SG-16
SAMPLE ID	SG-08	SG-09	SG-10	SG-11	SG-12	SG-13	SG-14	SG-16
SAMPLE DATE	20150109	20150109	20150109	20150109	20150109	20150109	20150109	20150109
TOP DEPTH (ft)	0	0	0	0	0	0	0	0
BOTTOM DEPTH (ft)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
VOLATILES (UG/M3)								
1,1,1,2-TETRACHLOROETHANE	19 UJ	19 UJ	19 UJ	19 UJ	19 UJ	19 UJ	19 UJ	19 UJ
1,1,1-TRICHLOROETHANE	611 U	611 U	611 U	611 U	611 U	611 U	611 U	611 U
1,1,2,2-TETRACHLOROETHANE	19 U	19 U	19 U	19 U	19 U	19 U	19 U	19 U
1,1,2-TRICHLOROETHANE	35.3 U	35.3 U	35.3 U	35.3 U	35.3 U	35.3 U	35.3 U	35.3 U
1,1-DICHLOROETHANE	2020 U	2020 U	2020 U	2020 U	2020 U	2020 U	2020 U	2020 U
1,2,4-TRIMETHYLBENZENE	109	85.3	124	262	53.2	91	155	25 U
1,2-DICHLOROBENZENE	19.2 U	19.2 U	19.2 U	19.2 U	19.2 U	19.2 U	19.3 U	19.3 U
1,2-DICHLOROETHANE	496 U	496 U	496 U	496 U	496 U	496 U	496 U	496 U
1,3,5-TRIMETHYLBENZENE	48.5	33.2 U	53	103	33.2 U	33.2	106	33.2 U
1,3-DICHLOROBENZENE	20.1 U	20.1 U	20.1 U	20.1 U	20.1 U	20.1 U	20.1 U	20.1 U
1,4-DICHLOROBENZENE	20.3 U	20.3 U	20.3 U	20.3 U	20.3 U	20.3 U	20.4 U	20.4 U
2-METHYLNAPHTHALENE	113 J	85.2 J	55.3 J	71.2 J	46.5 J	46.5 UJ	77.5 J	46.5 UJ
ACENAPHTHENE	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.5 UJ	46.5 UJ	46.5 UJ	46.5 UJ
ACENAPHTHYLENE	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.5 UJ	46.5 UJ	46.5 UJ	46.5 UJ
BENZENE	1020	783	1670	5760	903	801	678	713
BTEX	1495	1146	2845	10938	1487	3547	1785	869
CARBON TETRACHLORIDE	548 U	548 U	548 U	548 U	929	548 U	548 U	1160
CHLOROBENZENE	25.4 U	25.4 U	25.4 U	25.4 U	25.4 U	25.4 U	25.4 U	25.4 U
CHLOROFORM	1030 U	1030 U	1030 U	1030 U	3260	8720	22600	89200
CIS-1,2-DICHLOROETHENE	1910 U	1910 U	1910 U	1910 U	1910 U	1910 U	1910 U	1910 U
ETHYLBENZENE	40.6	29	65.9	358	31.4	592	66	24.3 U
FLUORENE	46.4 UJ	46.4 UJ	46.4 UJ	46.4 UJ	46.5 UJ	46.5 UJ	46.5 UJ	46.5 UJ
M+P-XYLENES	105	77.4	171	804	65.5	1790	242	24.3
METHYL TERT-BUTYL ETHER	2810 U	2810 U	2810 U	2810 U	2810 U	2810 U	2810 U	2810 U
NAPHTHALENE	57.1 J	46.4 UJ	46.4 UJ	66 J	46.5 UJ	46.5 UJ	50.1 J	46.5 UJ
OCTANE	532 J	388 J	701 J	4510 J	264 J	1120 J	231 J	120 J
O-XYLENE	73.4	49.5	108	486	45.2	52.3	169	30.8 U
PENTADECANE	46.4 UJ	46.4 UJ	46.4 UJ	59.8 J	46.5 UJ	46.5 UJ	46.5 UJ	46.5 UJ
TETRACHLOROETHENE	860	39.2 U	39.2 U	39.2 U	1380	377	2630	322
TOLUENE	256	207	830	3530	442	312	630	132
TRANS-1,2-DICHLOROETHENE	5910 U	5910 U	5910 U	5910 U	5910 U	5910 U	5910 U	5910 U
TRICHLOROETHENE	207 U	207 U	225	561	16200	207 U	207 U	207 U
TRIDECANE	65.1 J	158 J	164 J	617 J	137 J	46.5 UJ	74.8 J	46.5 UJ
UNDECANE	202 J	207 J	322 J	1110 J	214 J	131 J	96.7 J	46.5 UJ
PETROLEUM HYDROCARBONS (UG/M3)								
TOTAL PETROLEUM HYDROCARBONS	9590 J	7850 J	9480 J	120000 J	9710 J	8330 J	6630 J	2400 J

SG - Passive soil gas sample collected using Gore® Sorber sampling device.
GSP - Greater Strawberry Point
ft - feet
ug/m3 - microgram per cubic meter
J - estimated value.
U - not detected above laboratory detection limit.
UJ - non-detect result is considered estimated.

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE: MARCH 13, 2015**

FROM: **EDWARD SEDLMYER** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOC / TPH**
LOCKHEED MARTIN STATE AIRPORT (MSA) STRAWBERRY POINT
SAMPLE DELIVERY GROUP (SDG) ENV01281

SAMPLES: 17/Soil Gas/VOC / TPH

SG-01	SG-02	SG-03	SG-04	SG-05
SG-06	SG-07	SG-08	SG-09	SG-10
SG-11	SG-12	SG-13	SG-14	SG-16
TB-011415A	TB-011415B			

Overview

The sample set for Lockheed MSA Strawberry Point, SDG ENV01281, consists of fifteen (15) soil gas samples and two (2) trip blanks. The samples were analyzed for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH).

The samples were collected using Gore-Sorber devices by Tetra Tech on January 9, 2015 and analyzed by AGI Environmental Services. All analyses were conducted in accordance with AGI's standard operating procedure (SPG-WI-0292), which is based on SW-846 Method 8260C analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, laboratory method blank results, and detection limits. Areas of concern are listed below.

Major Issues

- No major issues were identified.

Minor Issues

- The TPH and undecane concentrations for sample SG-01 were greater than the linear calibration range of the instrument. The sample could not be re-analyzed because the entire sample is desorbed and is used for analysis. The TPH and undecane detections for sample SG-01 were qualified as estimated (J).

- The TPH concentration for sample SG-11 was greater than the linear calibration range of the instrument. The sample could not be re-analyzed because the entire sample is desorbed and is used for analysis. The TPH detection for sample SG-11 was qualified as estimated (J).

- Detected and nondetected results for TPH, octane, 1,1,1,2-tetrachlroethane, naphthalene, tridecane, 2-methyl naphthalene, acenaphthylene, pentadecane, acenaphthene, and fluorene were qualified as estimated, J and UJ, respectively because the final concentrations for these compounds were quantified based on estimated uptake factors by the laboratory.

Notes

Sample SG-15 could not be analyzed because the sample boring hole collapsed during collection.

The laboratory did not include GC/MS tuning, initial calibration, or continuing calibration information in the data package. The laboratory made the following statements in the case narrative that GC/MS tunes, initial calibration, and continuing calibrations met the following criteria:

- A BFB tune is analyzed at the beginning of each analytical run and after every 30 samples.
- Initial calibration: A minimum of a five point calibration curve is analyzed prior to the analysis of samples.
- Linearity of target compounds: if the RSD of any target analyte is less than or equal to 25% then average response factor can be used for quantitation. If the RSD exceeds 25% for target compound a regression equation can be used for quantitation.
- Continuing calibration verification: After every ten samples, and at the end of each analytical batch, and a second source reference standard is analyzed near the mid-point of the calibration curve. The acceptance criteria for all target analytes in the reference standards are ± 50% of the true value.

The total ion chromatograms (TICs) for samples SG-01 and SG-11 show peak saturation because of large hydrocarbon concentrations.

The carbon range for the TPH analyses was from C4-C20.

The laboratory reported non-detected sample results to the laboratory reporting limit (RL).

All data reported on the laboratory sample summary forms express results in ug units only. The laboratory did report sample results in terms of concentrations expressed in units of ug/m^3 on spreadsheets within the data package deliverable. The data reviewer amended the database to reflect the results expressed in concentration units of ug/m^3. Results expressed in concentration units matches the presentation of results on contour maps provided by AGI.

Gore-Sorber devices are passive soil gas sampling modules which are impermeable to moisture and solid particles but are gas permeable. The devices contain a sorbent matrix that has an affinity for volatile and semivolatile organic compounds. The devices were placed in a small diameter hole (approximately 2 inches in diameter) at a depth of approximately 2.5 feet. The devices were installed on January 9, 2015 and were removed from the soil boring location on January 14, 2015.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: Results for two compounds in two samples were qualified due to concentrations greater than the linear calibration range of the instrument.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008).

Edward Sedlmyer

Tetra Tech
Edward Sedlmyer
Chemist/Data Validator

Joseph A. Samchuck

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % 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 = ICP PDS Recovery Noncompliance; 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 (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% 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 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 04136	NSAMPLE	SG-01			SG-02			SG-03			SG-04		
SDG: ENV01281	LAB_ID	753459			753460			753461			753462		
FRACTION: OV	SAMP_DATE	1/9/2015			1/9/2015			1/9/2015			1/9/2015		
MEDIA: SOIL GAS	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		18.9	UJ	Q	18.9	UJ	Q	18.9	UJ	Q	19	UJ	Q
1,1,1-TRICHLOROETHANE		611	U		611	U		611	U		611	U	
1,1,2,2-TETRACHLOROETHANE		18.9	U		18.9	U		18.9	U		19	U	
1,1,2-TRICHLOROETHANE		35.3	U		35.3	U		35.3	U		35.3	U	
1,1-DICHLOROETHANE		2020	U		2020	U		2020	U		2020	U	
1,2,4-TRIMETHYLBENZENE		2540			24.9	U		24.9	U		27.3		
1,2-DICHLOROBENZENE		19.2	U		19.2	U		19.2	U		19.2	U	
1,2-DICHLOROETHANE		496	U		496	U		496	U		496	U	
1,3,5-TRIMETHYLBENZENE		7910			33.1	U		33.1	U		33.1	U	
1,3-DICHLOROBENZENE		20.1	U		20.1	U		20.1	U		20.1	U	
1,4-DICHLOROBENZENE		20.3	U		20.3	U		20.3	U		20.3	U	
2-METHYLNAPHTHALENE		480	J	Q	46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q
ACENAPHTHENE		463	J	Q	46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q
ACENAPHTHYLENE		46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q
BENZENE		1270			528			489	U		490	U	
BTEX		3731			690			120			460		
CARBON TETRACHLORIDE		548	U		548	U		548	U		548	U	
CHLOROBENZENE		25.3	U		25.3	U		25.3	U		25.4	U	
CHLOROFORM		1030	U		1030	U		1030	U		1030	U	
CIS-1,2-DICHLOROETHENE		1910	U		1910	U		1910	U		1910	U	
ETHYLBENZENE		119			24.3	U		24.3	U		46.4		
FLUORENE		363	J	Q	46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q
M+P-XYLENES		510			26.4			37.3			148		
METHYL TERT-BUTYL ETHER		2810	U		2810	U		2810	U		2810	U	
NAPHTHALENE		459	J	Q	46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q
OCTANE		14900	J	Q	70.6	J	Q	60.6	J	Q	115	J	Q
O-XYLENE		412			30.7	U		30.7	U		85.8		
PENTADECANE		79	J	Q	46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q
TETRACHLOROETHENE		39.2	U		39.2	U		39.2	U		52.8		
TOLUENE		1420			136			82.8			180		
TRANS-1,2-DICHLOROETHENE		5900	U		5900	U		5900	U		5910	U	
TRICHLOROETHENE		207	U		207	U		207	U		207	U	
TRIDECANE		4930	J	Q	46.4	U	Q	46.4	U	Q	47.3	J	Q
UNDECANE		26400	J	LQ	61.5	J	Q	46.4	UJ	Q	46.4	UJ	Q

PROJ_NO: 04136	NSAMPLE	SG-05			SG-06			SG-07			SG-08		
SDG: ENV01281	LAB_ID	753463			753464			753465			753466		
FRACTION: OV	SAMP_DATE	1/9/2015			1/9/2015			1/9/2015			1/9/2015		
MEDIA: SOIL GAS	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		19	UJ	Q	19	UJ	Q	19	UJ	Q	19	UJ	Q
1,1,1-TRICHLOROETHANE		611	U		611	U		611	U		611	U	
1,1,2,2-TETRACHLOROETHANE		19	U		19	U		19	U		19	U	
1,1,2-TRICHLOROETHANE		35.3	U		35.3	U		35.3	U		35.3	U	
1,1-DICHLOROETHANE		2020	U		2020	U		2020	U		2020	U	
1,2,4-TRIMETHYLBENZENE		109			106			30.9			109		
1,2-DICHLOROBENZENE		19.2	U		19.2	U		19.2	U		19.2	U	
1,2-DICHLOROETHANE		496	U		496	U		496	U		496	U	
1,3,5-TRIMETHYLBENZENE		46.9			46.9			33.2	U		48.5		
1,3-DICHLOROBENZENE		20.1	U		20.1	U		20.1	U		20.1	U	
1,4-DICHLOROBENZENE		20.3	U		20.3	U		20.3	U		20.3	U	
2-METHYLNAPHTHALENE		103	J	Q	81.7	J	Q	58	J	Q	113	J	Q
ACENAPHTHENE		46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q
ACENAPHTHYLENE		46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q
BENZENE		604			903			783			1020		
BTEX		1157			1353			1304			1495		
CARBON TETRACHLORIDE		548	U		548	U		548	U		548	U	
CHLOROBENZENE		25.4	U		25.4	U		25.4	U		25.4	U	
CHLOROFORM		1030	U		1030	U		1030	U		1030	U	
CIS-1,2-DICHLOROETHENE		1910	U		1910	U		1910	U		1910	U	
ETHYLBENZENE		44.1			38.3			24.3	U		40.6		
FLUORENE		46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q
M+P-XYLENES		131			104			36.3			105		
METHYL TERT-BUTYL ETHER		2810	U		2810	U		2810	U		2810	U	
NAPHTHALENE		49.1	J	Q	46.4	UJ	Q	46.4	UJ	Q	57.1	J	Q
OCTANE		665	J	Q	303	J	Q	220	J	Q	532	J	Q
O-XYLENE		80.3			73.4			30.7	U		73.4		
PENTADECANE		46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q
TETRACHLOROETHENE		1690			39.2	U		39.2	U		860		
TOLUENE		298			234			485			256		
TRANS-1,2-DICHLOROETHENE		5910	U		5910	U		5910	U		5910	U	
TRICHLOROETHENE		656			207	U		207	U		207	U	
TRIDECANE		119	J	Q	58	J	Q	109	J	Q	65.1	J	Q
UNDECANE		218	J	Q	128	J	Q	85.2	J	Q	202	J	Q

PROJ_NO: 04136	NSAMPLE	SG-09			SG-10			SG-11			SG-12		
SDG: ENV01281	LAB_ID	753467			753468			753469			753470		
FRACTION: OV	SAMP_DATE	1/9/2015			1/9/2015			1/9/2015			1/9/2015		
MEDIA: SOIL GAS	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		19	UJ	Q	19	UJ	Q	19	UJ	Q	19	UJ	Q
1,1,1-TRICHLOROETHANE		611	U		611	U		611	U		611	U	
1,1,2,2-TETRACHLOROETHANE		19	U		19	U		19	U		19	U	
1,1,2-TRICHLOROETHANE		35.3	U		35.3	U		35.3	U		35.3	U	
1,1-DICHLOROETHANE		2020	U		2020	U		2020	U		2020	U	
1,2,4-TRIMETHYLBENZENE		85.3			124			262			53.2		
1,2-DICHLOROBENZENE		19.2	U		19.2	U		19.2	U		19.2	U	
1,2-DICHLOROETHANE		496	U		496	U		496	U		496	U	
1,3,5-TRIMETHYLBENZENE		33.2	U		53			103			33.2	U	
1,3-DICHLOROBENZENE		20.1	U		20.1	U		20.1	U		20.1	U	
1,4-DICHLOROBENZENE		20.3	U		20.3	U		20.3	U		20.3	U	
2-METHYLNAPHTHALENE		85.2	J	Q	55.3	J	Q	71.2	J	Q	46.5	J	Q
ACENAPHTHENE		46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q	46.5	UJ	Q
ACENAPHTHYLENE		46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q	46.5	UJ	Q
BENZENE		783			1670			5760			903		
BTEX		1146			2845			10938			1487		
CARBON TETRACHLORIDE		548	U		548	U		548	U		929		
CHLOROBENZENE		25.4	U		25.4	U		25.4	U		25.4	U	
CHLOROFORM		1030	U		1030	U		1030	U		3260		
CIS-1,2-DICHLOROETHENE		1910	U		1910	U		1910	U		1910	U	
ETHYLBENZENE		29			65.9			358			31.4		
FLUORENE		46.4	UJ	Q	46.4	UJ	Q	46.4	UJ	Q	46.5	UJ	Q
M+P-XYLENES		77.4			171			804			65.5		
METHYL TERT-BUTYL ETHER		2810	U		2810	U		2810	U		2810	U	
NAPHTHALENE		46.4	UJ	Q	46.4	UJ	Q	66	J	Q	46.5	UJ	Q
OCTANE		388	J	Q	701	J	Q	4510	J	Q	264	J	Q
O-XYLENE		49.5			108			486			45.2		
PENTADECANE		46.4	UJ	Q	46.4	UJ	Q	59.8	J	Q	46.5	UJ	Q
TETRACHLOROETHENE		39.2	U		39.2	U		39.2	U		1380		
TOLUENE		207			830			3530			442		
TRANS-1,2-DICHLOROETHENE		5910	U		5910	U		5910	U		5910	U	
TRICHLOROETHENE		207	U		225			561			16200		
TRIDECANE		158	J	Q	164	J	Q	617	J	Q	137	J	Q
UNDECANE		207	J	Q	322	J	Q	1110	J	Q	214	J	Q

PROJ_NO: 04136	NSAMPLE	SG-13			SG-14			SG-16			TB-011415A		
SDG: ENV01281	LAB_ID	753471			753472			753473			753475		
FRACTION: OV	SAMP_DATE	1/9/2015			1/9/2015			1/9/2015			1/9/2015		
MEDIA: SOIL GAS	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		19	UJ	Q	19	UJ	Q	19	UJ	Q	18.3	UJ	Q
1,1,1-TRICHLOROETHANE		611	U		611	U		611	U		599	U	
1,1,2,2-TETRACHLOROETHANE		19	U		19	U		19	U		18.3	U	
1,1,2-TRICHLOROETHANE		35.3	U		35.3	U		35.3	U		202	U	
1,1-DICHLOROETHANE		2020	U		2020	U		2020	U		2000	U	
1,2,4-TRIMETHYLBENZENE		91			155			25	U		24.1	U	
1,2-DICHLOROBENZENE		19.2	U		19.3	U		19.3	U		18.5	U	
1,2-DICHLOROETHANE		496	U		496	U		496	U		487	U	
1,3,5-TRIMETHYLBENZENE		33.2			106			33.2	U		32	U	
1,3-DICHLOROBENZENE		20.1	U		20.1	U		20.1	U		19.4	U	
1,4-DICHLOROBENZENE		20.3	U		20.4	U		20.4	U		19.6	U	
2-METHYLNAPHTHALENE		46.5	UJ	Q	77.5	J	Q	46.5	UJ	Q	44.8	UJ	Q
ACENAPHTHENE		46.5	UJ	Q	46.5	UJ	Q	46.5	UJ	Q	44.8	UJ	Q
ACENAPHTHYLENE		46.5	UJ	Q	46.5	UJ	Q	46.5	UJ	Q	44.8	UJ	Q
BENZENE		801			678			713			481	U	
BTEX		3547			1785			869			605	U	
CARBON TETRACHLORIDE		548	U		548	U		1160			537	U	
CHLOROBENZENE		25.4	U		25.4	U		25.4	U		24.5	U	
CHLOROFORM		8720			22600			89200			1020	U	
CIS-1,2-DICHLOROETHENE		1910	U		1910	U		1910	U		1890	U	
ETHYLBENZENE		592			66			24.3	U		23.4	U	
FLUORENE		46.5	UJ	Q	46.5	UJ	Q	46.5	UJ	Q	44.8	UJ	Q
M+P-XYLENES		1790			242			24.3			21.3	U	
METHYL TERT-BUTYL ETHER		2810	U		2810	U		2810	U		2780	U	
NAPHTHALENE		46.5	UJ	Q	50.1	J	Q	46.5	UJ	Q	44.8	UJ	Q
OCTANE		1120	J	Q	231	J	Q	120	J	Q	51.5	UJ	Q
O-XYLENE		52.3			169			30.8	U		29.7	U	
PENTADECANE		46.5	UJ	Q	46.5	UJ	Q	46.5	UJ	Q	44.8	UJ	Q
TETRACHLOROETHENE		377			2630			322			38	U	
TOLUENE		312			630			132			50	U	
TRANS-1,2-DICHLOROETHENE		5910	U		5910	U		5910	U		5870	U	
TRICHLOROETHENE		207	U		207	U		207	U		202	U	
TRIDECANE		46.5	UJ	Q	74.8	J	Q	46.5	UJ	Q	44.8	UJ	Q
UNDECANE		131	J	Q	96.7	J	Q	46.5	UJ	Q	44.8	UJ	Q

PROJ_NO: 04136	NSAMPLE	TB-011415B		
SDG: ENV01281	LAB_ID	753476		
FRACTION: OV	SAMP_DATE	1/9/2015		
MEDIA: SOIL GAS	QC_TYPE	NM		
	UNITS	UG/M3		
	PCT_SOLIDS			
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		18.3	UJ	Q
1,1,1-TRICHLOROETHANE		599	U	
1,1,2,2-TETRACHLOROETHANE		18.3	U	
1,1,2-TRICHLOROETHANE		202	U	
1,1-DICHLOROETHANE		2000	U	
1,2,4-TRIMETHYLBENZENE		24.1	U	
1,2-DICHLOROBENZENE		18.5	U	
1,2-DICHLOROETHANE		487	U	
1,3,5-TRIMETHYLBENZENE		32	U	
1,3-DICHLOROBENZENE		19.4	U	
1,4-DICHLOROBENZENE		19.6	U	
2-METHYLNAPHTHALENE		44.8	UJ	Q
ACENAPHTHENE		44.8	UJ	Q
ACENAPHTHYLENE		44.8	UJ	Q
BENZENE		481	U	
BTEX		605	U	
CARBON TETRACHLORIDE		537	U	
CHLOROBENZENE		24.5	U	
CHLOROFORM		1020	U	
CIS-1,2-DICHLOROETHENE		1890	U	
ETHYLBENZENE		23.4	U	
FLUORENE		44.8	UJ	Q
M+P-XYLENES		21.3	U	
METHYL TERT-BUTYL ETHER		2780	U	
NAPHTHALENE		44.8	UJ	Q
OCTANE		51.5	UJ	Q
O-XYLENE		29.7	U	
PENTADECANE		44.8	UJ	Q
TETRACHLOROETHENE		38	U	
TOLUENE		50	U	
TRANS-1,2-DICHLOROETHENE		5870	U	
TRICHLOROETHENE		202	U	
TRIDECANE		44.8	UJ	Q
UNDECANE		44.8	UJ	Q

PROJ_NO: 04136	NSAMPLE	SG-01			SG-02			SG-03			SG-04		
SDG: ENV01281	LAB_ID	753459			753460			753461			753462		
FRACTION: PET	SAMP_DATE	1/9/2015			1/9/2015			1/9/2015			1/9/2015		
MEDIA: SOIL GAS	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL PETROLEUM HYDROCARBONS		485000	J	LQ	4000	J	Q	2370	J	Q	2990	J	Q

PROJ_NO: 04136	NSAMPLE	SG-05			SG-06			SG-07			SG-08		
SDG: ENV01281	LAB_ID	753463			753464			753465			753466		
FRACTION: PET	SAMP_DATE	1/9/2015			1/9/2015			1/9/2015			1/9/2015		
MEDIA: SOIL GAS	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL PETROLEUM HYDROCARBONS		8150	J	Q	5880	J	Q	6460	J	Q	9590	J	Q

PROJ_NO: 04136	NSAMPLE	SG-09			SG-10			SG-11			SG-12		
SDG: ENV01281	LAB_ID	753467			753468			753469			753470		
FRACTION: PET	SAMP_DATE	1/9/2015			1/9/2015			1/9/2015			1/9/2015		
MEDIA: SOIL GAS	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL PETROLEUM HYDROCARBONS		7850	J	Q	9480	J	Q	120000	J	LQ	9710	J	Q

PROJ_NO: 04136	NSAMPLE	SG-13			SG-14			SG-16			TB-011415A		
SDG: ENV01281	LAB_ID	753471			753472			753473			753475		
FRACTION: PET	SAMP_DATE	1/9/2015			1/9/2015			1/9/2015			1/9/2015		
MEDIA: SOIL GAS	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL PETROLEUM HYDROCARBONS		8330	J	Q	6630	J	Q	2400	J	Q	410	UJ	Q

PROJ_NO: 04136	NSAMPLE	TB-011415B		
SDG: ENV01281	LAB_ID	753476		
FRACTION: PET	SAMP_DATE	1/9/2015		
MEDIA: SOIL GAS	QC_TYPE	NM		
	UNITS	UG/M3		
	PCT_SOLIDS			
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
TOTAL PETROLEUM HYDROCARBONS		410	UJ	Q

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

AMPLIFIED GEOCHEMICAL IMAGING, LLC
210 Executive Drive, Suite 1
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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753459 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-01 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:00:00AM
Retrieval Date: 1/14/2015 8:15:00AM Date Analyzed: 1/22/2015 12:47:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.07**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.67**	**0.02**
Octane	**111-65-9**	**7.54**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.10**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.48**	**0.02**
o-Xylene	**95-47-6**	**0.31**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**6.91**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**2.48**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**36.58**	**0.05**
Naphthalene	**91-20-3**	**0.54**	**0.05**
Tridecane	**629-50-5**	**6.39**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.57**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	**629-62-9**	**0.09**	**0.05**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753459 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-01 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 9:00:00AM

Retrieval Date: 1/14/2015 8:15:00AM Date Analyzed: 1/22/2015 12:47:00PM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	0.55	0.05
Fluorene	86-73-7	0.43	0.05
TPH		754.20	0.50
BTEX		1.62	0.02

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753460 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-02 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:10:00AM
Retrieval Date: 1/14/2015 8:25:00AM Date Analyzed: 1/23/2015 11:54:00AM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.02**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.06**	**0.02**
Octane	**111-65-9**	**0.03**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	**108-38-3/106-42-3**	**0.02**	**0.02**
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.07**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753460 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-02
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:10:00AM
Retrieval Date: 1/14/2015 8:25:00AM
Date Analyzed: 1/23/2015 11:54:00AM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**5.15**	**0.50**
BTEX		**0.10**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753461 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-03 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:20:00AM
Retrieval Date: 1/14/2015 8:35:00AM Date Analyzed: 1/23/2015 1:08:00AM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.03**	**0.02**
Octane	**111-65-9**	**0.02**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	**108-38-3/106-42-3**	**0.03**	**0.02**
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753461 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-03 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 9:20:00AM

Retrieval Date: 1/14/2015 8:35:00AM Date Analyzed: 1/23/2015 1:08:00AM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**2.98**	**0.50**
BTEX		**0.07**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753462 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-04 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:30:00AM
Retrieval Date: 1/14/2015 8:40:00AM Date Analyzed: 1/22/2015 3:52:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.08**	**0.02**
Octane	**111-65-9**	**0.05**	**0.02**
Tetrachloroethene	**127-18-4**	**0.03**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.04**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.14**	**0.02**
o-Xylene	**95-47-6**	**0.06**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	**95-63-6**	**0.02**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.05**	**0.05**
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753462 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-04 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 9:30:00AM

Retrieval Date: 1/14/2015 8:40:00AM Date Analyzed: 1/22/2015 3:52:00PM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**3.80**	**0.50**
BTEX		**0.31**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753463 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-05 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:40:00AM
Retrieval Date: 1/14/2015 8:50:00AM Date Analyzed: 1/22/2015 2:50:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.03**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	**79-01-6**	**0.07**	**0.02**
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.13**	**0.02**
Octane	**111-65-9**	**0.29**	**0.02**
Tetrachloroethene	**127-18-4**	**0.89**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.04**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.12**	**0.02**
o-Xylene	**95-47-6**	**0.06**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.03**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.09**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.25**	**0.05**
Naphthalene	**91-20-3**	**0.05**	**0.05**
Tridecane	**629-50-5**	**0.13**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.11**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753463 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-05 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 9:40:00AM

Retrieval Date: 1/14/2015 8:50:00AM Date Analyzed: 1/22/2015 2:50:00PM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**10.77**	**0.50**
BTEX		**0.37**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753464 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-06 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 9:50:00AM
Retrieval Date: 1/14/2015 9:00:00AM Date Analyzed: 1/22/2015 6:58:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.04**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.10**	**0.02**
Octane	**111-65-9**	**0.13**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.03**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.10**	**0.02**
o-Xylene	**95-47-6**	**0.05**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.03**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.09**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.14**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.06**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.09**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753464 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-06 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 9:50:00AM

Retrieval Date: 1/14/2015 9:00:00AM Date Analyzed: 1/22/2015 6:58:00PM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**7.67**	**0.50**
BTEX		**0.32**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753465 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-07 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:00:00AM
Retrieval Date: 1/14/2015 9:05:00AM Date Analyzed: 1/22/2015 11:04:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.04**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.21**	**0.02**
Octane	**111-65-9**	**0.09**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	**108-38-3/106-42-3**	**0.03**	**0.02**
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	**95-63-6**	**0.03**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.09**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.12**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.06**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753465 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-07
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:00:00AM
Retrieval Date: 1/14/2015 9:05:00AM
Date Analyzed: 1/22/2015 11:04:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**8.46**	**0.50**
BTEX		**0.28**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753466 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-08 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:10:00AM
Retrieval Date: 1/14/2015 9:15:00AM Date Analyzed: 1/23/2015 12:56:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.05**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.11**	**0.02**
Octane	**111-65-9**	**0.23**	**0.02**
Tetrachloroethene	**127-18-4**	**0.45**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.03**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.10**	**0.02**
o-Xylene	**95-47-6**	**0.05**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.03**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.09**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.23**	**0.05**
Naphthalene	**91-20-3**	**0.06**	**0.05**
Tridecane	**629-50-5**	**0.07**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.13**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753466 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-08
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:10:00AM
Retrieval Date: 1/14/2015 9:15:00AM
Date Analyzed: 1/23/2015 12:56:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**12.75**	**0.50**
BTEX		**0.34**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753467 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-09 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:20:00AM
Retrieval Date: 1/14/2015 9:25:00AM Date Analyzed: 1/22/2015 11:45:00AM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.04**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.09**	**0.02**
Octane	**111-65-9**	**0.16**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.02**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.07**	**0.02**
o-Xylene	**95-47-6**	**0.03**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	**95-63-6**	**0.07**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.24**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.18**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.09**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753467 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-09
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:20:00AM
Retrieval Date: 1/14/2015 9:25:00AM
Date Analyzed: 1/22/2015 11:45:00AM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**10.35**	**0.50**
BTEX		**0.25**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753468 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-10 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:30:00AM
Retrieval Date: 1/14/2015 9:35:00AM Date Analyzed: 1/23/2015 10:52:00AM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.09**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	**79-01-6**	**0.02**	**0.02**
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.38**	**0.02**
Octane	**111-65-9**	**0.30**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.06**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.16**	**0.02**
o-Xylene	**95-47-6**	**0.08**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.03**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.11**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.37**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.19**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.06**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753468 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-10 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 10:30:00AM

Retrieval Date: 1/14/2015 9:35:00AM Date Analyzed: 1/23/2015 10:52:00AM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**12.59**	**0.50**
BTEX		**0.76**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753469 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-11 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:40:00AM
Retrieval Date: 1/14/2015 9:45:00AM Date Analyzed: 1/23/2015 4:02:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.44**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	**79-01-6**	**0.06**	**0.02**
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**1.75**	**0.02**
Octane	**111-65-9**	**2.14**	**0.02**
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.32**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.76**	**0.02**
o-Xylene	**95-47-6**	**0.37**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.07**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.23**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**1.36**	**0.05**
Naphthalene	**91-20-3**	**0.07**	**0.05**
Tridecane	**629-50-5**	**0.74**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.08**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	**629-62-9**	**0.07**	**0.05**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753469 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-11 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 10:40:00AM

Retrieval Date: 1/14/2015 9:45:00AM Date Analyzed: 1/23/2015 4:02:00PM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**176.63**	**0.50**
BTEX		**3.63**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753470 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-12 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:50:00AM
Retrieval Date: 1/14/2015 9:50:00AM Date Analyzed: 1/23/2015 12:06:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	**67-66-3**	**0.08**	**0.02**
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.04**	**0.02**
Carbon Tetrachloride	**56-23-5**	**0.04**	**0.02**
Trichloroethene	**79-01-6**	**2.82**	**0.02**
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.19**	**0.02**
Octane	**111-65-9**	**0.11**	**0.02**
Tetrachloroethene	**127-18-4**	**0.73**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.03**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.06**	**0.02**
o-Xylene	**95-47-6**	**0.03**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	**95-63-6**	**0.04**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.25**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	**629-50-5**	**0.15**	**0.05**
2-Methylnaphthalene	91-57-6	0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753470 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-12
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 10:50:00AM
Retrieval Date: 1/14/2015 9:50:00AM
Date Analyzed: 1/23/2015 12:06:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**12.90**	**0.50**
BTEX		**0.35**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753471 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-13 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 11:00:00AM
Retrieval Date: 1/14/2015 10:00:00AM Date Analyzed: 1/22/2015 5:56:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	**67-66-3**	**0.26**	**0.02**
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.04**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.13**	**0.02**
Octane	**111-65-9**	**0.49**	**0.02**
Tetrachloroethene	**127-18-4**	**0.20**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.54**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**1.71**	**0.02**
o-Xylene	**95-47-6**	**0.40**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	0.02	0.02
1,2,4-Trimethylbenzene	**95-63-6**	**0.08**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.15**	**0.05**
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753471 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-13 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 11:00:00AM

Retrieval Date: 1/14/2015 10:00:00AM Date Analyzed: 1/22/2015 5:56:00PM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**11.01**	**0.50**
BTEX		**2.81**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753472 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-14 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 11:10:00AM
Retrieval Date: 1/14/2015 10:05:00AM Date Analyzed: 1/22/2015 4:54:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	**67-66-3**	**0.80**	**0.02**
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.03**	**0.02**
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.28**	**0.02**
Octane	**111-65-9**	**0.09**	**0.02**
Tetrachloroethene	**127-18-4**	**1.39**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	**100-41-4**	**0.06**	**0.02**
m,p-Xylene	**108-38-3/106-42-3**	**0.23**	**0.02**
o-Xylene	**95-47-6**	**0.12**	**0.02**
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	**108-67-8**	**0.07**	**0.02**
1,2,4-Trimethylbenzene	**95-63-6**	**0.13**	**0.02**
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	**1120-21-4**	**0.11**	**0.05**
Naphthalene	**91-20-3**	**0.05**	**0.05**
Tridecane	**629-50-5**	**0.08**	**0.05**
2-Methylnaphthalene	**91-57-6**	**0.09**	**0.05**
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753472 FIELD_SAMPLE
Matrix: SOIL GAS
Product: SPG0008
Dilution Factor: 1
Field ID: SG-14
Porosity: 0.39
Water Filled Voids: 0.73
Installation Date: 1/9/2015 11:10:00AM
Retrieval Date: 1/14/2015 10:05:00AM
Date Analyzed: 1/22/2015 4:54:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**8.67**	**0.50**
BTEX		**0.71**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753473 FIELD_SAMPLE Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: SG-16 Porosity: 0.39 Water Filled Voids: 0.73
Installation Date: 1/9/2015 11:20:00AM
Retrieval Date: 1/14/2015 10:15:00AM Date Analyzed: 1/22/2015 7:59:00PM
Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	**67-66-3**	**4.13**	**0.02**
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	**71-43-2**	**0.03**	**0.02**
Carbon Tetrachloride	**56-23-5**	**0.05**	**0.02**
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	**108-88-3**	**0.05**	**0.02**
Octane	**111-65-9**	**0.05**	**0.02**
Tetrachloroethene	**127-18-4**	**0.17**	**0.02**
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	**108-38-3/106-42-3**	**0.02**	**0.02**
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753473 **FIELD_SAMPLE** Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: SG-16 Porosity: 0.39 Water Filled Voids: 0.73

Installation Date: 1/9/2015 11:20:00AM

Retrieval Date: 1/14/2015 10:15:00AM Date Analyzed: 1/22/2015 7:59:00PM

Analyst: Kelly J Stringham **Method: SPG-WI-0292** **Batch: ENV-150119-2**

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		**3.02**	**0.50**
BTEX		**0.11**	**0.02**

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753475 TRIP_BLANK Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: TB-011415A Porosity: Water Filled Voids:
Installation Date: 1/9/2015 8:00:00AM
Retrieval Date: 1/14/2015 12:00:00PM Date Analyzed: 1/22/2015 9:01:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	<0.02	0.02
Octane	111-65-9	<0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	<0.02	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753475 TRIP_BLANK Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: TB-011415A Porosity: Water Filled Voids:

Installation Date: 1/9/2015 8:00:00AM

Retrieval Date: 1/14/2015 12:00:00PM Date Analyzed: 1/22/2015 9:01:00PM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		<0.50	0.50
BTEX		<0.02	0.02

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech
SITE NAME: Greater Strawberry Point Area
SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753476 TRIP_BLANK Matrix: SOIL GAS Product: SPG0008
Dilution Factor: 1 Field ID: TB-011415B Porosity: Water Filled Voids:
Installation Date: 1/9/2015 8:30:00AM
Retrieval Date: 1/14/2015 12:30:00PM Date Analyzed: 1/22/2015 1:49:00PM
Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2
Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	<0.02	0.02
Octane	111-65-9	<0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	<0.02	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05

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PROJECT NUMBER: ENV 01281 **FOR:** Tetra Tech

SITE NAME: Greater Strawberry Point Area

SITE ADDRESS: GERMANTOWN, MARYLAND 20874 USA

SAMPLER ID: 00753476 TRIP_BLANK Matrix: SOIL GAS Product: SPG0008

Dilution Factor: 1 Field ID: TB-011415B Porosity: Water Filled Voids:

Installation Date: 1/9/2015 8:30:00AM

Retrieval Date: 1/14/2015 12:30:00PM Date Analyzed: 1/22/2015 1:49:00PM

Analyst: Kelly J Stringham **Method:** SPG-WI-0292 **Batch:** ENV-150119-2

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		<0.50	0.50
BTEX		<0.02	0.02

APPENDIX C

SUPPORT DOCUMENTATION

AMPLIFIED GEOCHEMICAL IMAGING, LLC

Laboratory Report

Site: Greater Strawberry Point Area

Prepared for:

TETRA TECH, INC.
20251 CENTURY BOULEVARD SUITE 200
GERMANTOWN, MARYLAND
UNITED STATES

Prepared on:
January 28, 2015

Project Summary and Objective

Amplified Geochemical Imaging, LLC. (AGI) provided the AGI Environmental Survey used at:

Greater Strawberry Point Area

The service provided by AGI included delivery of the required quantity of AGI Universal Samplers, analysis by the method described below for the requested organic compounds, reporting of the data, and contour mapping (as needed).

This report includes results for only the samples noted under the Laboratory Sample Report section. If contour maps are part of the project deliverable, the maps will be prepared and issued under a separate report cover, upon receipt of a usable sitemap (electronic) and compound choices for contouring.

Written/submitted by:

Jim E Whetzel

Project Manager

Reviewed/approved by:

Jay W Hodny

Project Manager

Analytical data approved by:

Fatima Niazi

Chemist

Quality Assurance Statement

The AGI Laboratory, at Amplified Geochemical Imaging's facility in Elkton, MD USA, operates under the guidelines of its ISO Standard 17025 DoD ELAP accreditation, and its Quality Assurance Manual, Operating Procedures, and Methods (SPG-SOP-0462).

For this project, the analytical method, results, and observations reported do [ ] do not [√] fall within the scope of AGI's ISO 17025 accreditation.

Screening/Concentration Method

The AGI Universal Samplers are analyzed at AGI's fixed laboratory using thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) instrumentation following U.S. EPA Method 8260 (SPG-WI-0292) which includes the following:

- **BFB Tuning Frequency:** A BFB tune is analyzed at the start of each analytical run and after every 30 samples.
- **Initial Calibration:** A minimum of a five point calibration curve is analyzed prior to the analysis of samples.
- **Linearity of Target Compounds:** If the RSD of any target analyte is less than or equal to 25% then average response factor can be used for quantitation. If the RSD exceeds 25% for a target compound a regression equation can be used for quantitation.
- **Continuing Calibration Verification:** After every 10 samples, and at the end of each analytical batch, and a second-source Reference Standard is analyzed near the mid point of the calibration curve. The acceptance criteria for all target analytes in the reference standards are +/- 50% of the true value.
- **Method Blank:** Analyzed prior to the analysis of field samples and every 30 samples.

Note: Analyte levels reported for the field-deployed AGI Universal Samplers that exceed trip and method blank levels, and/or the reporting limit, are more likely to have originated from on-site sources.

Media Sampled:	SOIL GAS
Chemist - sample analysis:	Kelly J Stringham
Chemist - data processor:	Kelly J Stringham
Chemist - data review:	Fatima Niazi

Method deviations: None.

Please note that data file names ending with R are rerun samples using the second pair of sorbers, in which the original results were not reported. Data file names ending in D are duplicate analysis results for the second set of sorbers from the same sampler, and are reported.

Additional Report Information

- Comments
- Laboratory Sample Report
- Chain of Custody
- Installation and Retrieval Log
- Analytical Results and Key
- Concentration Calculation Method Summary)
- Total Ion Chromatograms

Project Specific Comments

Sample 753460 was found to have significant levels of non-fuel non-target compounds that contributed to the TPH value reported.

Survey period [1]	The AGI Samplers were deployed on January 9, 2015 and retrieved on January 15, 2015.		
Tamper seal intact:	Yes		
Date received:	1/16/2015 10:35 AM	By:	Darlene Yellowdy
COC returned:	Yes		

Comments:

A file copy of the original Chain of Custody was provided to the client to use with returned samples. The form was completed by Tetra Tech and emailed back to AGI, signed and included in the report.

1 - Installation start to end of retrieval, as reported. See installation and retrieval log for individual deployment and retrieval dates and times (i.e., sampler exposure time).

General Comments

Analytical QA/QC

Laboratory instrumentation consists of gas chromatographs equipped with mass selective detectors, coupled with automated thermal desorption units. Sample preparation involves cutting the tip off the bottom of the AGI Universal Sampler, and transferring one or more "sorbers" to a thermal desorption tube for analysis. The insertion/retrieval cord prevents soil, water and other interferences from coming in contact with the adsorbent. No further sample preparation is required. Any replicate sorbers not consumed in the initial analysis will be discarded fifteen (15) days from the date of the laboratory report.

Data are archived and stored in a secure manner as per AGI's Quality Assurance program (SPG-SOP-0462).

Total petroleum hydrocarbons (TPH), gasoline-range petroleum hydrocarbons (GRPH), and/or diesel range petroleum hydrocarbons (DRPH), when reported, are calculated using the area under the peaks observed in m/z 55 and 57 selected ion chromatograms. Quantitation of the mass values was performed using the response factor for a specific alkane (present in the calibration standards). TPH values include the entire chromatogram and provide estimates for aliphatic hydrocarbon ranges of C4 to C20. GRPH and DRPH include only the relevant regions of the chromatograms and provide estimates for C4 to C10 and C10 to C20 aliphatic hydrocarbons, respectively.

Trip blanks were provided to document potential exposures that were not part of the signal of interest (e.g., impact during sampler shipment, installation and/or retrieval, and storage). The trip blanks are identically manufactured and packaged AGI Universal Samplers to those samplers deployed in the field . The trip blanks remain unopened during all phases of the project. Levels reported on the trip blanks may indicate potential impact to the samplers other than the contaminant source of interest.

Unresolved peak envelopes (UPEs) are represented as a series of compound peaks clustered together around a central gas chromatograph elution time in the total ion chromatogram. UPEs may be indicative of complex fluid mixtures. UPEs observed early in the chromatograms are considered to indicate presence of more volatile fluids, while UPEs observed later in the chromatogram may indicate the presence of less volatile fluids. Multiple UPEs may indicate the presence of multiple complex fluids.

Total ion chromatograms (TICs) are included in the Attachments. The eight-digit serial number of each sampler is incorporated in the TIC identification (e.g., 12345678.D represents AGI Universal Sampler 12345678).

Soil Gas Sampling

For soil gas sampling, the AGI Environmental Survey reports mass levels migrating through the open pore spaces of the soil and diffusing through the sampler membrane for sorption by the engineered, hydrophobic adsorbents, housed within the membrane tube. During the migration of the soil gas away from the source to the AGI Universal Sampler, the vapors are subject to a variety of attenuation factors. The soil gas masses reported on the samplers compare favorably with the concentrations reported in the soil or groundwater (e.g., where soil gas levels are reported at greater levels to other sampled locations on the site, the matrix data should reveal the same pattern, and vice versa). However, due to a variety of factors, a perfect comparison between matrix data and soil gas levels can rarely be achieved.

Soil gas concentrations (µg/m3) are calculated following the method described in the Additional Report Information section.

Soil gas signals reported by this method cannot be correlated specifically to soil adsorbed, groundwater, and /or free-phase contamination. The soil gas signal reported from each AGI Universal Sampler can evolve from all of these sources. Differentiation between soil and groundwater contamination can only be achieved with prior knowledge of the site history (i.e., the site is known to have groundwater contamination only).

Air Sampling

For indoor, outdoor, and crawlspace air sampling, the AGI Environmental Survey reports mass levels present in the air and diffusing through the sampler membrane for sorption by the engineered adsorbents housed within the membrane tube.

Air concentrations (µg/m3) are calculated following the method described in the Additional Report Information section.

Groundwater and Sediment Porewater Sampling

For groundwater and sediment porewater sampling, the AGI Environmental Survey reports the mass levels of compounds present in the water which, when coming in contact with the sampler membrane, partitions out of solution, and diffuses through the sampler membrane for sorption by the engineered adsorbents.

Water concentrations (µg/L) are calculated using the quantified mass, exposure period and the compound specific uptake rate. The rates were measured under controlled experimental conditions. The uptake rates are corrected for water pressure (depth of the AGI Universal Sampler below the water table), water temperature and the aquifer flow rate. For sediment porewater, the uptake rate is corrected for the reduced volume of water in the sediment, by multiplying the uptake rate by the pore water fraction.

LABORATORY SAMPLE REPORT

Project: ENV 01281 **Site Name: Greater Strawberry Point Area** **Module Type: SPG0008**

Module ID	Sample Type	Field ID
00753459	FIELD_SAMPLE	SG-01
00753460	FIELD_SAMPLE	SG-02
00753461	FIELD_SAMPLE	SG-03
00753462	FIELD_SAMPLE	SG-04
00753463	FIELD_SAMPLE	SG-05
00753464	FIELD_SAMPLE	SG-06
00753465	FIELD_SAMPLE	SG-07
00753466	FIELD_SAMPLE	SG-08
00753467	FIELD_SAMPLE	SG-09
00753468	FIELD_SAMPLE	SG-10
00753469	FIELD_SAMPLE	SG-11
00753470	FIELD_SAMPLE	SG-12
00753471	FIELD_SAMPLE	SG-13
00753472	FIELD_SAMPLE	SG-14
00753473	FIELD_SAMPLE	SG-16
00753474	LOST	SG-15
00753475	TRIP_BLANK	TB-011415A
00753476	TRIP_BLANK	TB-011415B

Total # "FIELD SAMPLES"	Total # "TRIP BLANKS"	Total # "UNUSED"	Total # "LOST"
15	**2**	**0**	**1**

Duplicate samples: 0

AMPLIFIED GEOCHEMICAL IMAGING, LLC

210 Executive Drive, Suite 1
Newark, DE 19702-3335 USA
ph: +1-302-266-2428
www.agisurveys.net

AGI Universal Passive Sampler Chain of Custody
Soil gas and/or Air Sampling

Production Order #: 01281

Customer Name: Tetra Tech
Address: 20251 CENTURY BOULEVARD
SUITE 200

GERMANTOWN, MARYLAND 20874
USA

Site Name: Greater Strawberry Point Area
Site Address:

Project Manager: Tony Apanavage

Serial # of Samplers Shipped
00753459 - 00753476

# of Samplers for Installation	16.00	# of Trip Blanks	2
Total Samplers Shipped	18.00	Pieces	
Total Samplers Received	18	Pieces	
Total Samplers Installed	16	Pieces	

Serial # of Trip Blanks (Client Decides)

00753475	00753476	GEOLOGY: SILTY SAND

Prepared By: Lisa Boette
Verified By: Darlene Lilly

Installation Method: (Circle those that apply)
Slide Hammer Hammer Drill Auger
Other DPT

Installation Performed By:
Name: T. APANAVAGE
Company: TETRA TECH

Retrieval Performed By:
Name: T. APANAVAGE / S. CAMPBELL
Company: TETRA TECH

Installation Start Date / Time: 1/9/15 0900
Installation Complete Date / Time: 1/9/15 1130

Retrieval Start Date / Time: 1/14/15 0815
Retrieval Complete Date / Time: 1/14/15 1015

Total Samplers Retrieved: 15
Total Samplers Lost In Field: 1
Total Unused Samplers Returned: 0

Relinquished By	Lisa Boette	Date/Time 12-15-14 10:00	**Received By:**	Date/Time
Company:	AGI		**Company:**	
Relinquished By	[signature]	Date/Time 1/15/15 1300	**Received By:**	Darlene Lilly Date/Time 1/16/15 10:35AM
Company:	TETRATECH		**Company:**	AGI

AMPLIFIED GEOCHEMICAL IMAGING, LLC

210 Executive Drive, Suite 1
Newark, DE USA 19702-3335
ph: 302-266-2428

AGI Project No. ENV 01281
Site Name: Greater Strawberry Point Area
Site Location:

Company Name: Tetra Tech
Location:
Samples collected by:

AGI Soil Gas Sampling
Installation & Retrieval Log

*** Optional or as needed**

SAMPLER SERIAL NO.	FIELD ID* (e.g., arbitrary, US EPA)	SAMPLE TYPE (Field Sample, Trip Blank, Field Blank, etc.)	INSTALLATION DATE & TIME MM/DD/YYYY HH:MM (24 Hour) ex. 12/27/2000 13:00	RETRIEVAL DATE & TIME MM/DD/YYYY HH:MM (24 Hour) ex. 12/30/2000 13:00	OBSERVATIONS/COMMENTS* (e.g., sample depth, location description, missing, pulled from hole, etc. - as needed)	SAMPLE ENVIRONMENT* (e.g., grass, bare soil, through slab)
00753459	SG-01	FIELD_SAMPLE	1/9/15 9:00	1/14/15 8:15	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753460	SG-02	FIELD_SAMPLE	1/9/15 9:10	1/14/15 8:25	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753461	SG-03	FIELD_SAMPLE	1/9/15 9:20	1/14/15 8:35	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753462	SG-04	FIELD_SAMPLE	1/9/15 9:30	1/14/15 8:40	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753463	SG-05	FIELD_SAMPLE	1/9/15 9:40	1/14/15 8:50	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753464	SG-06	FIELD_SAMPLE	1/9/15 9:50	1/14/15 9:00	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753465	SG-07	FIELD_SAMPLE	1/9/15 10:00	1/14/15 9:05	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753466	SG-08	FIELD_SAMPLE	1/9/15 10:10	1/14/15 9:15	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753467	SG-09	FIELD_SAMPLE	1/9/15 10:20	1/14/15 9:25	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753468	SG-10	FIELD_SAMPLE	1/9/15 10:30	1/14/15 9:35	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753469	SG-11	FIELD_SAMPLE	1/9/15 10:40	1/14/15 9:45	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753470	SG-12	FIELD_SAMPLE	1/9/15 10:50	1/14/15 9:50	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753471	SG-13	FIELD_SAMPLE	1/9/15 11:00	1/14/15 10:00	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753472	SG-14	FIELD_SAMPLE	1/9/15 11:10	1/14/15 10:05	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753473	SG-16	FIELD_SAMPLE	1/9/15 11:20	1/14/15 10:15	installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	grass
00753474	SG-15	FIELD_SAMPLE	1/9/15 11:30		**SAMPLE LOST, HOLE CAVED IN**-installed 2.5 feet bgs, subsurface moist to wet, rain event during sampling	asphalt
00753475	TB-011415A	TRIP_BLANK	1/9/15 8:00	1/14/15 12:00	trip blank	trip blank
00753476	TB-011415B	TRIP_BLANK	1/9/15 8:30	1/14/15 12:30	trip blank	trip blank

SPG-FCD-8929 Soil Gas R5

AGI Soil Gas Sampling
Installation & Retrieval Log

* Optional or as needed

	YES / NO			AT MINIMUM PROVIDE SOIL TYPE						
SAMPLER SERIAL NO.	EVIDENCE OF LIQUID PETROLEUM HYDROCARBONS?	ODOR ?	WATER IN INSTALLATION HOLE?	SOIL TYPE AT MODULE DEPTH (clay, loamy sand etc.)	TOTAL SOIL POROSITY AT MODULE DEPTH* (total volume of pores/total volume)	WATER FILLED SOIL POROSITY AT MODULE DEPTH* (volume of water/volume of pores)	PROJECTED COORDINATES X (EASTING)	PROJECTED COORDINATES Y (NORTHING)	COORDINATE SYSTEM* (e.g., UTM Zone, Stateplane, etc.)	COORDINATE DATUM* (e.g., WGS 84)
00753459	No	No	Yes	SANDY_CLAY						
00753460	No	No	No	SANDY_CLAY						
00753461	No	No	No	SANDY_CLAY						
00753462	No	No	No	SANDY_CLAY						
00753463	No	No	Yes	SANDY_CLAY						
00753464	No	No	Yes	SANDY_CLAY						
00753465	No	No	Yes	SANDY_CLAY						
00753466	No	No	Yes	SANDY_CLAY						
00753467	No	No	No	SANDY_CLAY						
00753468	No	No	No	SANDY_CLAY						
00753469	No	No	No	SANDY_CLAY						
00753470	No	No	No	SANDY_CLAY						
00753471	No	No	No	SANDY_CLAY						
00753472	No	No	No	SANDY_CLAY						
00753473	No	No	No	SANDY_CLAY						
00753474	No	No	No	SANDY_CLAY						
00753475	No	No								
00753476	No	No								

SPG-FCD-8929 Soil Gas R5

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE NAME	FIELD ID	DATE/ TIME INSTALLED		DATE/ TIME RETRIEVED		DATE/ TIME RECEIVED		DATE/ TIME ANALYZED		DF	estimated TPH, ug/m^3	MTBE, ug/m^3
Average RL =											424	2810
00753459	SG-01	1/9/15 9:00		1/14/15 8:15		1/16/15 10:35	ET	1/22/15 12:47	ET	1	485000 E	<2810
00753460	SG-02	1/9/15 9:10		1/14/15 8:25		1/16/15 10:35	ET	1/23/15 11:54	ET	1	4000	<2810
00753461	SG-03	1/9/15 9:20		1/14/15 8:35		1/16/15 10:35	ET	1/23/15 1:08	ET	1	2370	<2810
00753462	SG-04	1/9/15 9:30		1/14/15 8:40		1/16/15 10:35	ET	1/22/15 15:52	ET	1	2990	<2810
00753463	SG-05	1/9/15 9:40		1/14/15 8:50		1/16/15 10:35	ET	1/22/15 14:50	ET	1	8150	<2810
00753464	SG-06	1/9/15 9:50		1/14/15 9:00		1/16/15 10:35	ET	1/22/15 18:58	ET	1	5880	<2810
00753465	SG-07	1/9/15 10:00		1/14/15 9:05		1/16/15 10:35	ET	1/22/15 23:04	ET	1	6460	<2810
00753466	SG-08	1/9/15 10:10		1/14/15 9:15		1/16/15 10:35	ET	1/23/15 12:56	ET	1	9590	<2810
00753467	SG-09	1/9/15 10:20		1/14/15 9:25		1/16/15 10:35	ET	1/22/15 11:45	ET	1	7850	<2810
00753468	SG-10	1/9/15 10:30		1/14/15 9:35		1/16/15 10:35	ET	1/23/15 10:52	ET	1	9480	<2810
00753469	SG-11	1/9/15 10:40		1/14/15 9:45		1/16/15 10:35	ET	1/23/15 16:02	ET	1	120000 E	<2810
00753470	SG-12	1/9/15 10:50		1/14/15 9:50		1/16/15 10:35	ET	1/23/15 12:06	ET	1	9710	<2810
00753471	SG-13	1/9/15 11:00		1/14/15 10:00		1/16/15 10:35	ET	1/22/15 17:56	ET	1	8330	<2810
00753472	SG-14	1/9/15 11:10		1/14/15 10:05		1/16/15 10:35	ET	1/22/15 16:54	ET	1	6630	<2810
00753473	SG-16	1/9/15 11:20		1/14/15 10:15		1/16/15 10:35	ET	1/22/15 19:59	ET	1	2400	<2810
00753475	TB-011415A	1/9/15 8:00		1/14/15 12:00		1/16/15 10:35	ET	1/22/15 21:01	ET	1	<410	<2780
00753476	TB-011415B	1/9/15 8:30		1/14/15 12:30		1/16/15 10:35	ET	1/22/15 13:49	ET	1	<410	<2780
BLK_ENV-246692	Method Blank							1/22/15 11:14	ET	1	<424	<2810

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE NAME	FIELD ID	t12DCE, ug/m^3	11DCA, ug/m^3	c12DCE, ug/m^3	CHCl3, ug/m^3	111TCA, ug/m^3	12DCA, ug/m^3
Average RL =		5900	2020	1910	1030	610	495
00753459	SG-01	<5900	<2020	<1910	<1030	<611	<496
00753460	SG-02	<5900	<2020	<1910	<1030	<611	<496
00753461	SG-03	<5900	<2020	<1910	<1030	<611	<496
00753462	SG-04	<5910	<2020	<1920	<1030	<611	<496
00753463	SG-05	<5910	<2020	<1920	<1030	<611	<496
00753464	SG-06	<5910	<2020	<1920	<1030	<611	<496
00753465	SG-07	<5910	<2020	<1920	<1030	<611	<496
00753466	SG-08	<5910	<2020	<1920	<1030	<611	<496
00753467	SG-09	<5910	<2020	<1920	<1030	<611	<496
00753468	SG-10	<5910	<2020	<1920	<1030	<611	<496
00753469	SG-11	<5910	<2020	<1920	<1030	<611	<496
00753470	SG-12	<5910	<2020	<1920	3260	<611	<496
00753471	SG-13	<5910	<2020	<1920	8720	<611	<496
00753472	SG-14	<5910	<2020	<1920	22600	<612	<496
00753473	SG-16	<5910	<2020	<1920	89200	<612	<496
00753475	TB-011415A	<5870	<2000	<1890	<1020	<599	<487
00753476	TB-011415B	<5870	<2000	<1890	<1020	<599	<487
BLK_ENV-246692	Method Blank	<5900	<2020	<1910	<1030	<610	<495

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE	FIELD						estimated	
NAME	ID	BENZ, ug/m^3	CCl4, ug/m^3	TCE, ug/m^3	112TCA, ug/m^3	TOL, ug/m^3	OCT, ug/m^3	PCE, ug/m^3
Average RL =		489	547	207	35.1	51.4	52.9	39.1
00753459	SG-01	1270	<548	<207	<35.3	1420	14900	<39.2
00753460	SG-02	528	<548	<207	<35.3	136	70.6	<39.2
00753461	SG-03	<489	<548	<207	<35.3	82.8	60.6	<39.2
00753462	SG-04	<490	<548	<207	<35.3	180	115	52.8
00753463	SG-05	604	<548	656	<35.3	298	665	1690
00753464	SG-06	903	<548	<207	<35.3	234	303	<39.2
00753465	SG-07	783	<548	<207	<35.3	485	220	<39.3
00753466	SG-08	1020	<548	<207	<35.3	256	532	860
00753467	SG-09	783	<548	<207	<35.3	207	388	<39.3
00753468	SG-10	1670	<548	225	<35.3	830	701	<39.3
00753469	SG-11	5760	<548	561	<35.3	3530	4510	<39.3
00753470	SG-12	903	929	16200	<35.3	442	264	1380
00753471	SG-13	801	<548	<207	<35.3	312	1120	377
00753472	SG-14	678	<548	<207	<35.3	630	231	2630
00753473	SG-16	713	1160	<207	<35.3	132	120	322
00753475	TB-011415A	<481	<537	<202	<34.1	<50.0	<51.5	<38.0
00753476	TB-011415B	<481	<537	<202	<34.1	<50.0	<51.5	<38.0
BLK_ENV-246692	Method Blank	<489	<547	<207	<35.1	<51.4	<52.9	<39.1

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE	FIELD		estimated				
NAME	ID	ClBENZ, ug/m^3	1112TetCA, ug/m^3	ETBENZ, ug/m^3	mpXYL, ug/m^3	oXYL, ug/m^3	1122TetCA, ug/m^3
Average RL =		25.3	18.9	24.2	22.0	30.6	18.9
00753459	SG-01	<25.3	<18.9	119	510	412	<18.9
00753460	SG-02	<25.3	<18.9	<24.3	26.4	<30.7	<18.9
00753461	SG-03	<25.3	<18.9	<24.3	37.3	<30.7	<18.9
00753462	SG-04	<25.4	<19.0	46.4	148	85.8	<19.0
00753463	SG-05	<25.4	<19.0	44.1	131	80.3	<19.0
00753464	SG-06	<25.4	<19.0	38.3	104	73.4	<19.0
00753465	SG-07	<25.4	<19.0	<24.3	36.3	<30.7	<19.0
00753466	SG-08	<25.4	<19.0	40.6	105	73.4	<19.0
00753467	SG-09	<25.4	<19.0	29.0	77.4	49.5	<19.0
00753468	SG-10	<25.4	<19.0	65.9	171	108	<19.0
00753469	SG-11	<25.4	<19.0	358	804	486	<19.0
00753470	SG-12	<25.4	<19.0	31.4	65.5	45.2	<19.0
00753471	SG-13	<25.4	<19.0	592	1790	523	<19.0
00753472	SG-14	<25.4	<19.0	66.0	242	169	<19.0
00753473	SG-16	<25.4	<19.0	<24.3	24.3	<30.8	<19.0
00753475	TB-011415A	<24.5	<18.3	<23.4	<21.3	<29.7	<18.3
00753476	TB-011415B	<24.5	<18.3	<23.4	<21.3	<29.7	<18.3
BLK_ENV-246692	Method Blank	<25.3	<18.9	<24.2	<22.0	<30.6	<18.9

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
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AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE NAME	FIELD ID	135TMB, ug/m^3	124TMB, ug/m^3	13DCB, ug/m^3	14DCB, ug/m^3	12DCB, ug/m^3	estimated UNDEC, ug/m^3
Average RL =		33.0	24.9	20.0	20.2	19.1	46.2
00753459	SG-01	7910	2540	<20.1	<20.3	<19.2	26400 E
00753460	SG-02	<33.1	<24.9	<20.1	<20.3	<19.2	61.5
00753461	SG-03	<33.1	<24.9	<20.1	<20.3	<19.2	<46.4
00753462	SG-04	<33.1	27.3	<20.1	<20.3	<19.2	<46.4
00753463	SG-05	46.9	109	<20.1	<20.3	<19.2	218
00753464	SG-06	46.9	106	<20.1	<20.3	<19.2	128
00753465	SG-07	<33.2	30.9	<20.1	<20.3	<19.2	85.2
00753466	SG-08	48.5	109	<20.1	<20.3	<19.2	202
00753467	SG-09	<33.2	85.3	<20.1	<20.3	<19.2	207
00753468	SG-10	53.0	124	<20.1	<20.3	<19.2	322
00753469	SG-11	103	262	<20.1	<20.3	<19.2	1110
00753470	SG-12	<33.2	53.2	<20.1	<20.3	<19.2	214
00753471	SG-13	33.2	91.0	<20.1	<20.3	<19.2	131
00753472	SG-14	106	155	<20.1	<20.4	<19.3	96.7
00753473	SG-16	<33.2	<25.0	<20.1	<20.4	<19.3	<46.5
00753475	TB-011415A	<32.0	<24.1	<19.4	<19.6	<18.5	<44.8
00753476	TB-011415B	<32.0	<24.1	<19.4	<19.6	<18.5	<44.8
BLK_ENV-246692	Method Blank	<33.0	<24.9	<20.0	<20.2	<19.1	<46.2

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE NAME	FIELD ID	estimated NAPH, ug/m^3	estimated TRIDEC, ug/m^3	estimated 2MeNAPH, ug/m^3	estimated Acenaphthylene, ug/m^3	estimated PENTADEC, ug/m^3
Average RL =		46.2	46.2	46.2	46.2	46.2
00753459	SG-01	459	4930	480	<46.4	79.0
00753460	SG-02	<46.4	<46.4	<46.4	<46.4	<46.4
00753461	SG-03	<46.4	<46.4	<46.4	<46.4	<46.4
00753462	SG-04	<46.4	47.3	<46.4	<46.4	<46.4
00753463	SG-05	49.1	119	103	<46.4	<46.4
00753464	SG-06	<46.4	58.0	81.7	<46.4	<46.4
00753465	SG-07	<46.4	109	58.0	<46.4	<46.4
00753466	SG-08	57.1	65.1	113	<46.4	<46.4
00753467	SG-09	<46.4	158	85.2	<46.4	<46.4
00753468	SG-10	<46.4	164	55.3	<46.4	<46.4
00753469	SG-11	66.0	617	71.2	<46.4	59.8
00753470	SG-12	<46.5	137	46.5	<46.5	<46.5
00753471	SG-13	<46.5	<46.5	<46.5	<46.5	<46.5
00753472	SG-14	50.1	74.8	77.5	<46.5	<46.5
00753473	SG-16	<46.5	<46.5	<46.5	<46.5	<46.5
00753475	TB-011415A	<44.8	<44.8	<44.8	<44.8	<44.8
00753476	TB-011415B	<44.8	<44.8	<44.8	<44.8	<44.8
BLK_ENV-246692	Method Blank	<46.2	<46.2	<46.2	<46.2	<46.2

AMPLIFIED GEOCHEMICAL IMAGING ANALYTICAL RESULTS
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE
TETRA TECH, GERMANTOWN, MD
AGI STANDARD TARGET VOCs/SVOCs
ESTIMATED SOIL GAS CONCENTRATIONS
GREATER STRAWBERRY POINT AREA
ORDER # 01281

DATAFILE NAME	FIELD ID	estimated Acenaphthene, ug/m^3	estimated Fluorene, ug/m^3
Average RL =		46.2	46.2
00753459	SG-01	463	363
00753460	SG-02	<46.4	<46.4
00753461	SG-03	<46.4	<46.4
00753462	SG-04	<46.4	<46.4
00753463	SG-05	<46.4	<46.4
00753464	SG-06	<46.4	<46.4
00753465	SG-07	<46.4	<46.4
00753466	SG-08	<46.4	<46.4
00753467	SG-09	<46.4	<46.4
00753468	SG-10	<46.4	<46.4
00753469	SG-11	<46.4	<46.4
00753470	SG-12	<46.5	<46.5
00753471	SG-13	<46.5	<46.5
00753472	SG-14	<46.5	<46.5
00753473	SG-16	<46.5	<46.5
00753475	TB-011415A	<44.8	<44.8
00753476	TB-011415B	<44.8	<44.8
BLK_ENV-246692	Method Blank	<46.2	<46.2

KEY TO DATA TABLE

UNITS

µg	micrograms, relative mass value
µg/m^3	micrograms per cubic meter; estimated soil gas concentration
µg/L	micrograms per Liter; calculated water concentration

DATA QUALIFIERS

>	greater than; value exceeds calibration range, estimated value
<	less than; compound value is below the LOD and RL
J	mass value below LOQ or RL, but above LOD, estimated mass value
E	mass value exceeds upper calibration level, estimated mass value
Q	one or more quality control parameters failed for the compound

ABBREVIATIONS

AVG RL	average reporting limit; calculated based on individual field sample RLs
LOD	limit of detection
LOQ	limit of quantification
MDL	method detection limit
RL	reporting limit

1112TetCA	1,1,1,2-tetrachloroethane
111TCA	1,1,1-trichloroethane
1122TetCA	1,1,2,2-tetrachloroethane
112TCA	1,1,2-trichloroethane
11DCA	1,1-dichloroethane
11DCE	1,1-dichloroethene
124TMB	1,2,4-trimethylbenzene
12DCA	1,2-dichloroethane
12DCB	1,2-dichlorobenzene
135TMB	1,3,5-trimethylbenzene
13DCB	1,3-dichlorobenzene
14DCB	1,4-dichlorobenzene
2MeNAPH	2-methyl naphthalene
BENZ	benzene
BTEX	combined masses of benzene, toluene, ethylbenzene, and total xylenes (Gasoline Range Aromatics)
C11,C13&C15	combined masses of undecane, tridecane, and pentadecane (C11+C13+C15) (Diesel Range Alkanes)
c12DCE	cis-1,2-dichloroethene
CCl4	carbon tetrachloride
CHC13	chloroform
ClBENZ	chlorobenzene
ct12DCE	cis- & trans-1,2-dichloroethene
EtBENZ	ethylbenzene
mpXYL	m-, p-xylene
MTBE	methyl t-butyl ether
NAPH	naphthalene
OCT	octane
oXYL	o-xylene
PCE	tetrachloroethene
PENTADEC	pentadecane
PHEN	phenanthrene
t12DCE	trans-1,2-dichloroethene
TCE	trichloroethene
TMBs	combined masses of 1,3,5-trimethylbenzene and 1,2,4-trimethylbenzene
TOL	toluene
TPH	total petroleum hydrocarbons
TRIDEC	tridecane
UNDEC	undecane
VC	vinyl chloride

AMPLIFIED GEOCHEMICAL IMAGING, LLC

Concentration Method Summary for AGI Samplers

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In environmental analysis obtaining a contaminate concentration value allows for quantifiable risk assessment. The following procedure outlines the method used to determine accurate concentration values from the AGI Sampler in soil gas and air sampling:

DERIVATION OF CONCENTRATION EQUATION

When a fresh sampler (which, by definition and verification, has a contaminate concentration of zero) is inserted into a locally homogeneous contaminated media (with a non-zero contaminant concentration), a concentration gradient is created between the sampler and the media. Due to the concentration gradient, contaminant will diffuse from the media across the permeable membrane to the enclosed adsorbents as described by Fick's first law of diffusion[1], often expressed in differential form as:

$$F = -D\left(\frac{dC}{dx}\right) \text{ or in the integral form as: } \frac{dm}{dt} = -D\left(\frac{A}{L}\right)(C_X - C_0) \qquad (1)$$

where m = mass, t = time, D = diffusion coefficient, (A/L) = geometric parameter describing shape of sampler, C_X = concentration of analyte in the sampler at time, $t = x$, C_0 = concentration at time, $t = 0$.

As we ultimately want to measure the concentration of the analyte, we rearrange equation (1) to solve for C_X:

$$C_X = -\left[\left(\frac{1}{D}\right)\left(\frac{L}{A}\right)\left(\frac{dm}{dt}\right)\right] + C_0 \qquad (2)$$

By using a fresh sampler, the initial concentration (C_0) in the sampler is zero. We combine the quantity $D\frac{A}{L}$, which is referred to as the sampling rate[2] (S) of the sampler, measured in units of vol/time for the analyte of interest. This yields:

$$C_X = -\left[\left(\frac{1}{S}\right)\left(\frac{dm}{dt}\right)\right] \qquad (3)$$

Thus, concentration (C_X) can be calculated by using the mass (m) of the analyte adsorbed to the sampler after a given exposure time (t) and the sampling rate (S) for the analyte of interest. Two of these values are straightforward – the mass is measured using our standard thermal desorption GC/MS procedure, the time is documented by the field installation team. The third, sampling rate (S), is measured through a series of controlled chamber experiments for each analyte. Using these three values, an accurate contaminate concentration value can be calculated using the AGI Sampler. The process for determining S for the AGI Sampler is described briefly in the next section.

DETERMINING the *S* PARAMETER – AGI Sampler Sampling Rate

To determine *S* for the AGI Sampler we have exposed samplers for different times (*t*) at various concentrations (*C*). We then plot mass (*m*) vs. time (*t*) and divide the slope by concentration to gain a value for *S* for that compound as shown in equation (4) which is rearranged from equation (3).

$$S = -\left[\left(\frac{1}{C}\right)\left(\frac{dm}{dt}\right)\right] \qquad (4)$$

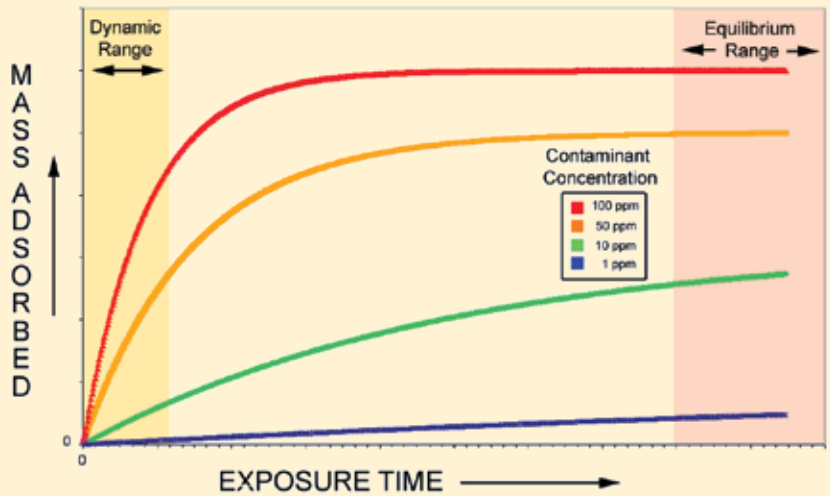

Figure 1 shows typical adsorption curves for a AGI Sampler exposed to a compound at various concentration levels. Notice that in the dynamic range that slopes vary in proportion to concentration.

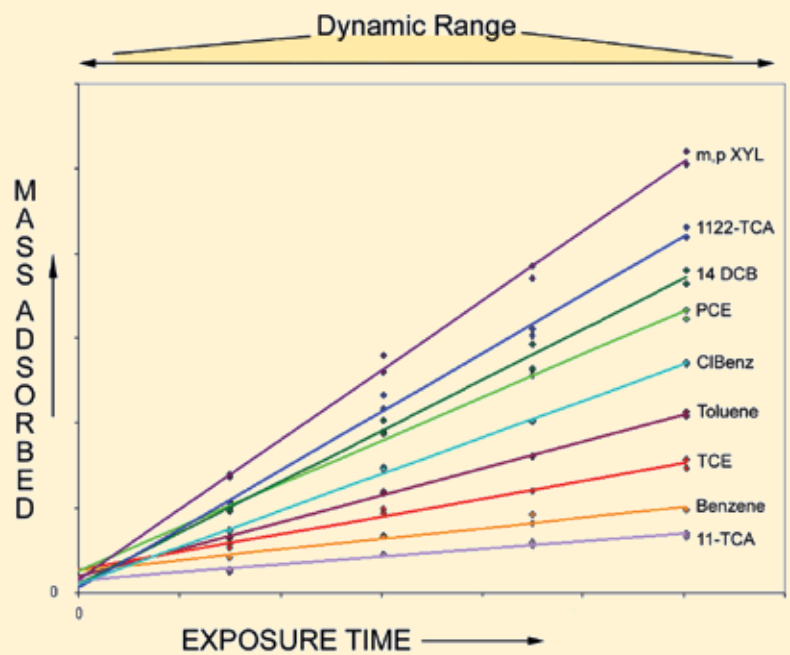

Figure 2 shows the uptake rate for various compounds typical of environmental investigations in the linear dynamic range.

When measuring *S*, we tested each compound at varying temperature (10 to 40°C), relative humidity (0 to 80%), flow rate (0.5 to 15cm/s) and vapor concentrations (0.1ppb to 100ppm).

Under typical sampling conditions, none of these variables were found to significantly impact the sampling rate.

ADJUSTMENTS FOR DIFFUSION RESISTANCE IN SOIL

When measuring gas concentration values in soils we must adjust the sampling rate (S_{air}) values to account for the increased tortuosity due to the presence of soil and moisture.

We previously defined the sampling rate of the module for the analyte of interest as:

$$S_{air} = D_{air}\,(A/L) \qquad (5)$$

In soil, the effective diffusion coefficient (D_{air}) is reduced due to the increased tortuosity, and can be described as:

$$D_{soil} = E(D_{air}) \qquad (6)$$

resulting in (when combined with (5))

$$S_{soil} = E(S_{air}) \qquad (7)$$

where E is the "Soil Effectiveness Factor."

As Millington & Quirk[3] showed, E is governed by the total soil porosity (θ, total volume of pores/total volume) and volumetric air content (Φ, volume of air/total volume) of the media and relates as:

$$E = \frac{(\Phi)^{10/3}}{(\theta)^{2}} \qquad (8)$$

Expressing E as a function of total soil porosity (θ) and water filled porosity (ε, volume of water/volume of pores), this relation can be rearranged as:

$$E = \theta^{(4/3)}(1-\varepsilon)^{(10/3)} \qquad (9)$$

: as Φ, θ and ε have the following relationship:

$$\Phi = \theta\,(1-\varepsilon)$$

Once we've solved for E, we can solve for D_{soil} using equation (5) and S_{soil} using equation (7).

Thus, with measurements for two of these three site-specific soil parameters (θ, ε or Φ), soil gas concentration values can be calculated for modules installed in soil.

REFERENCES

[1] Cussler, E. L., 1997, *Diffusion, Mass Transfer in Fluid Systems*, 2nd ed., Cambridge Univ., Press, 570p.

[2] James D. Mulik and Robert G. Lewis Advances in Air Sampling, AICHG (1990), ISN 0-87371-115-7, Chapter 9, "Recent Developments in Passive Sampling Devices."

[3] Millington, R.J., and J. M. Quirk, "Permeability of Porous Solids", Trans.Faraday Soc., 57, (1961), 1200-1207.

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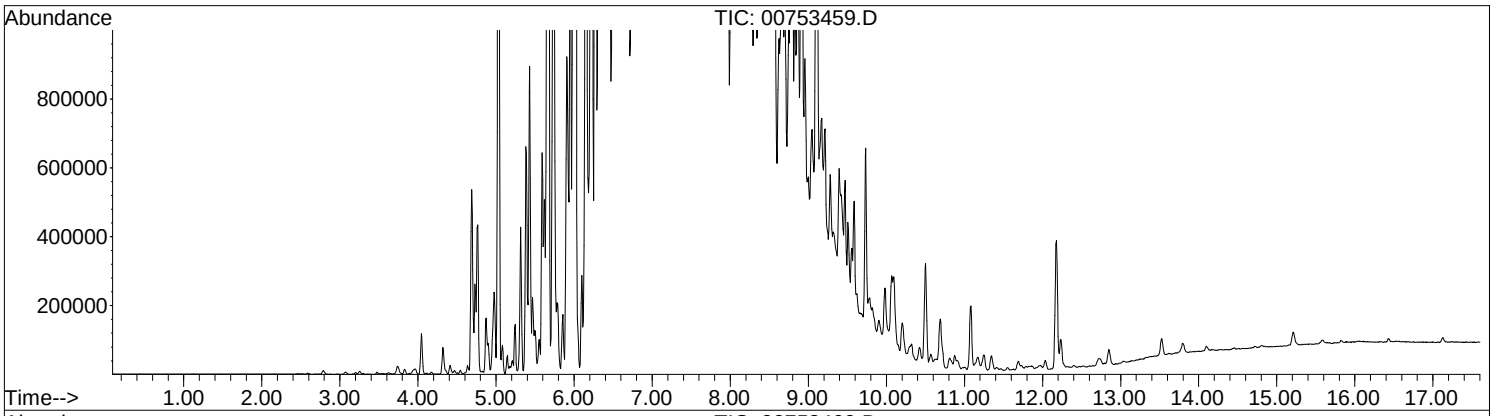
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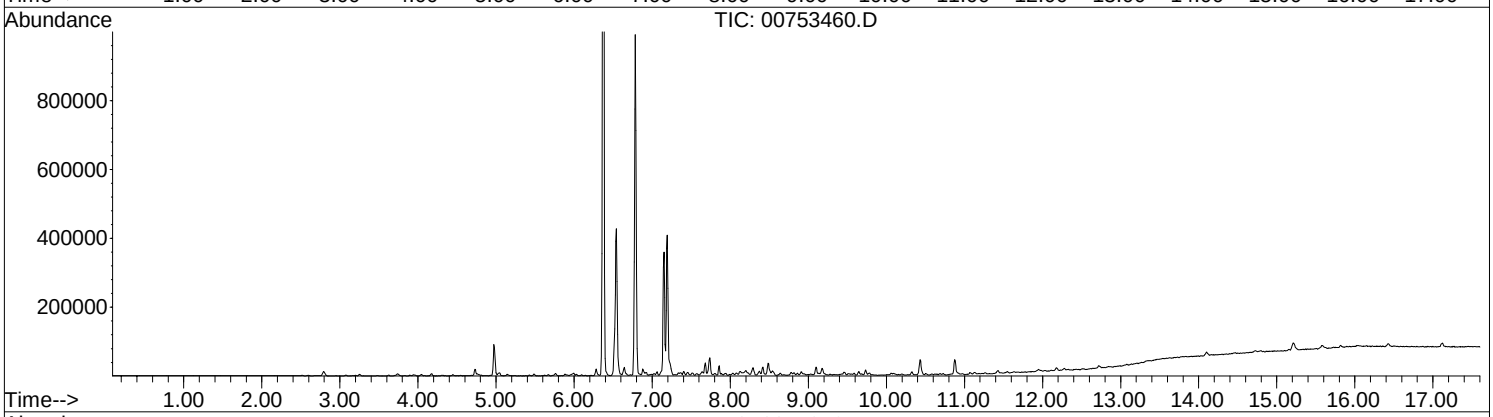
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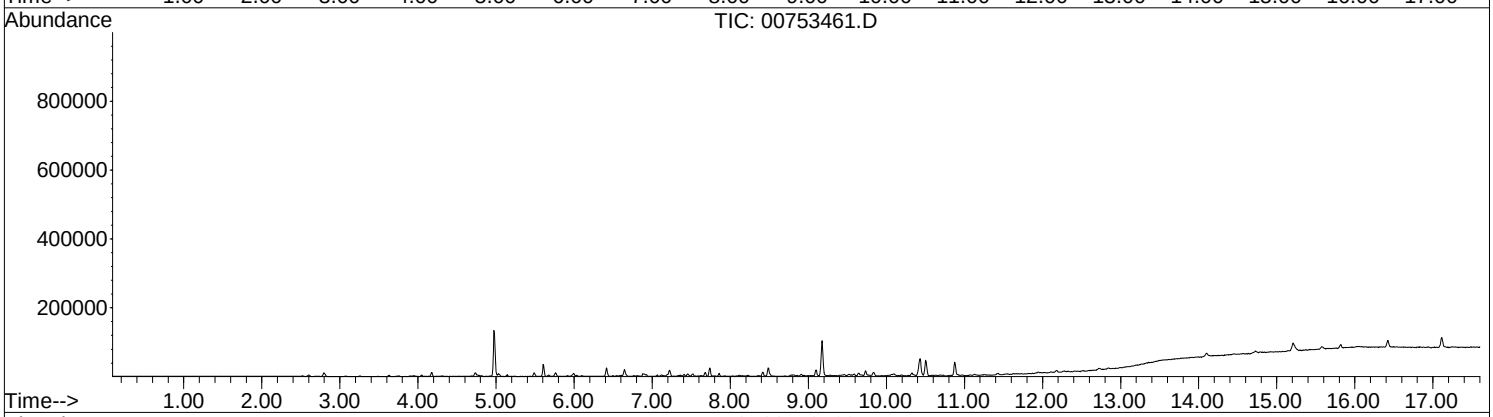
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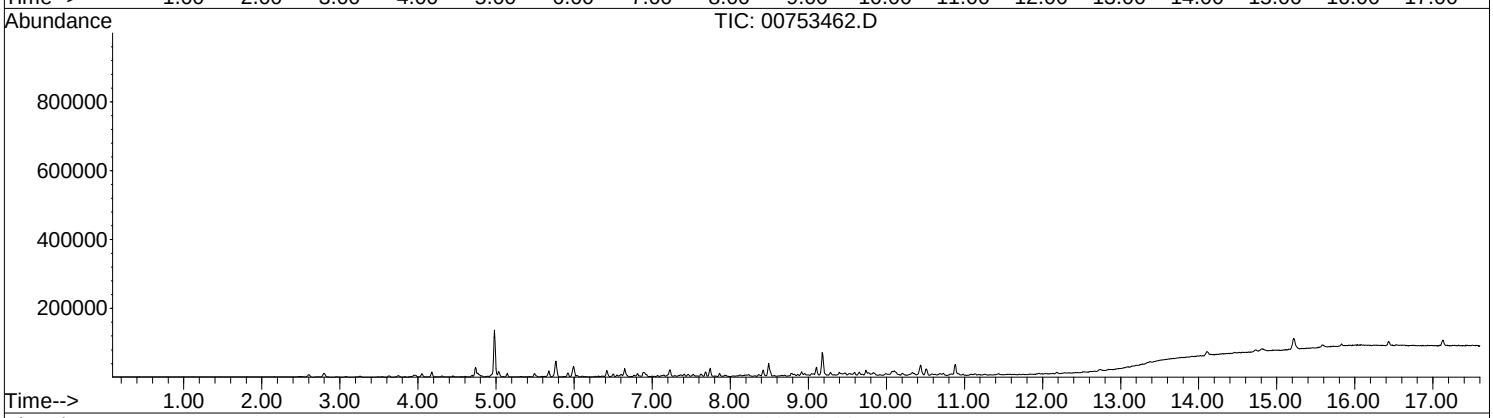
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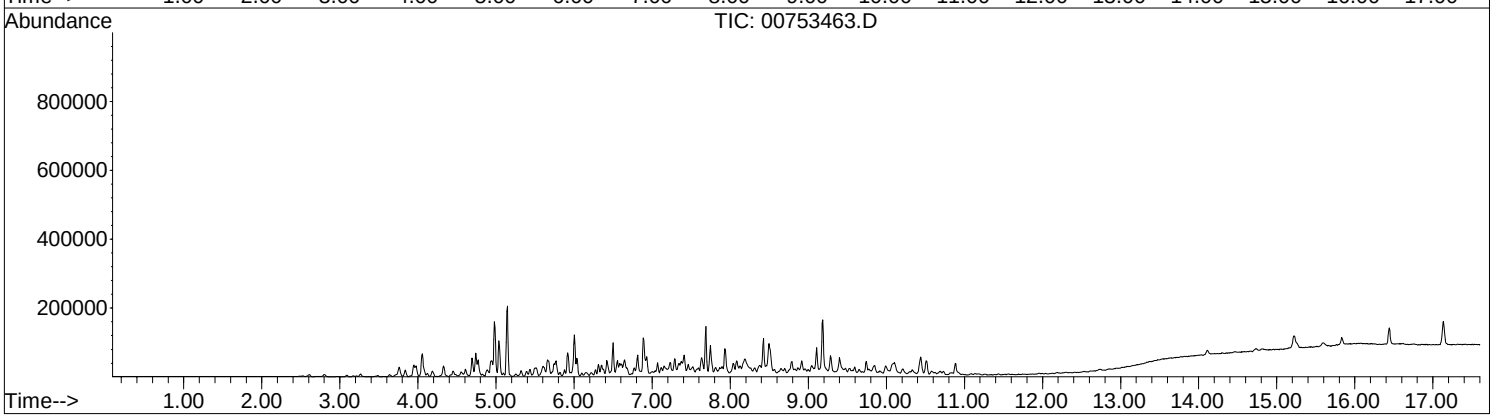
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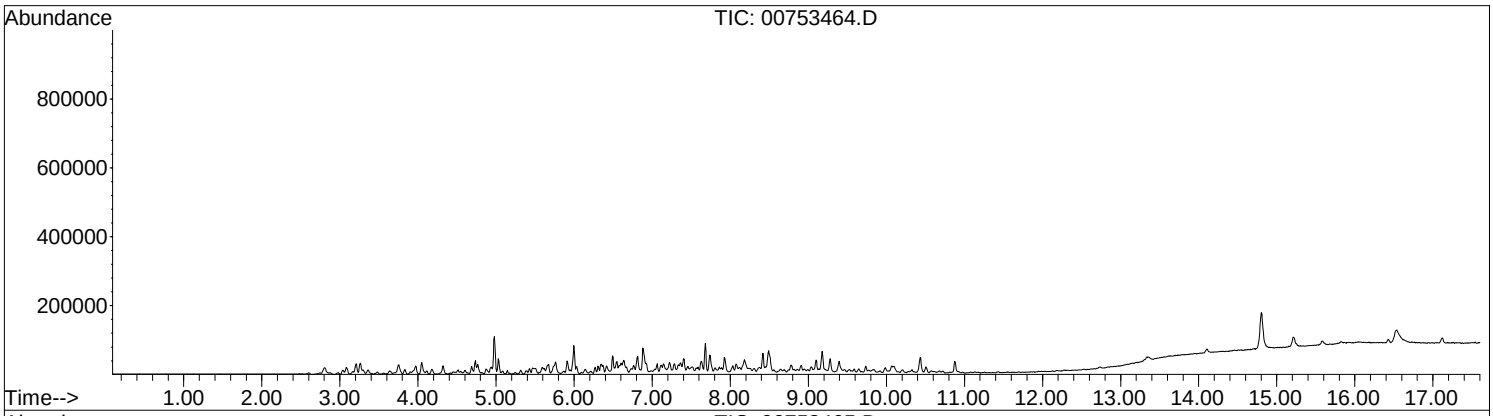
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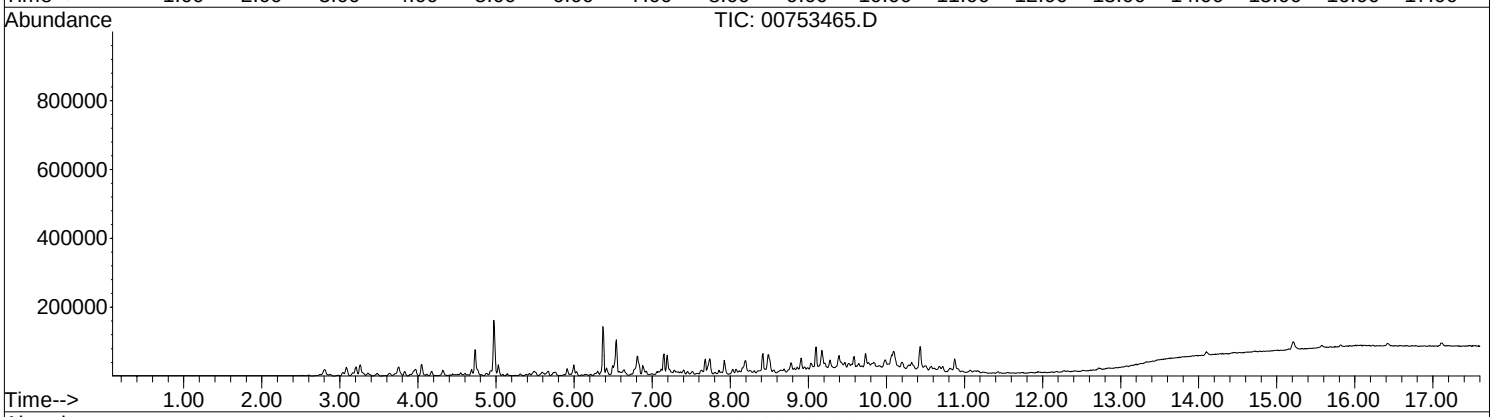
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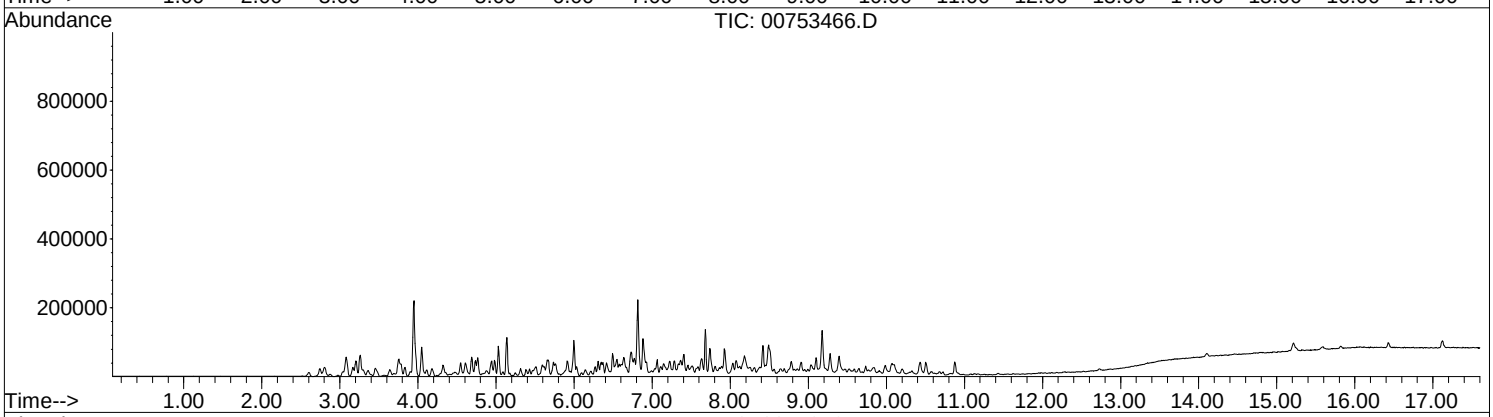
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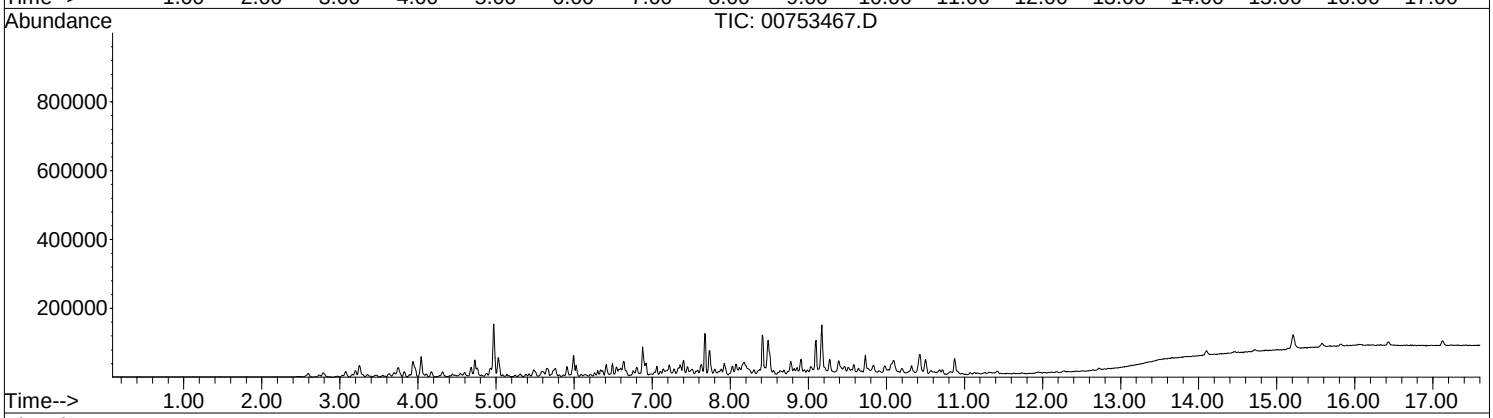
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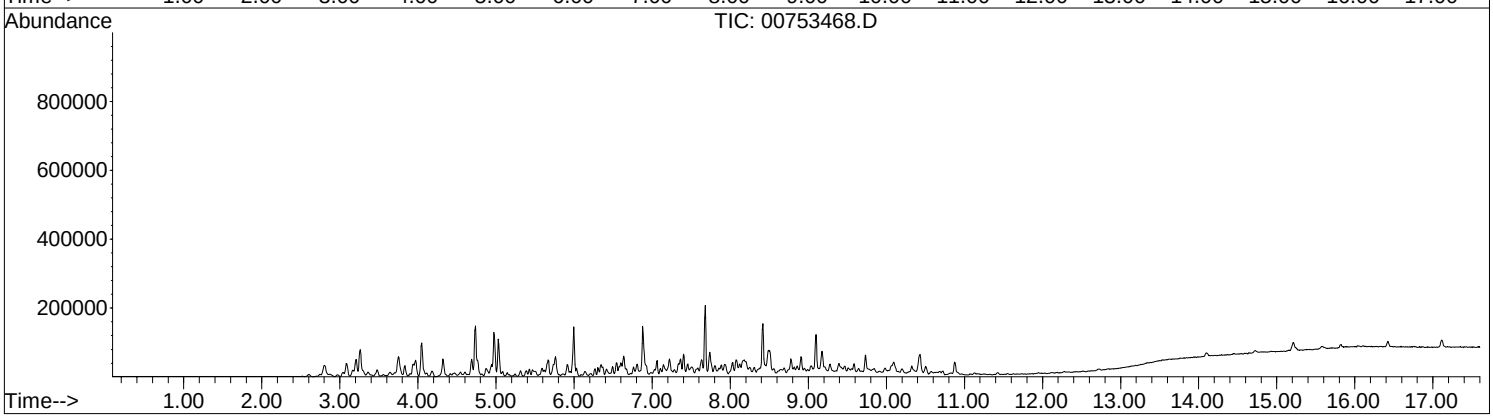
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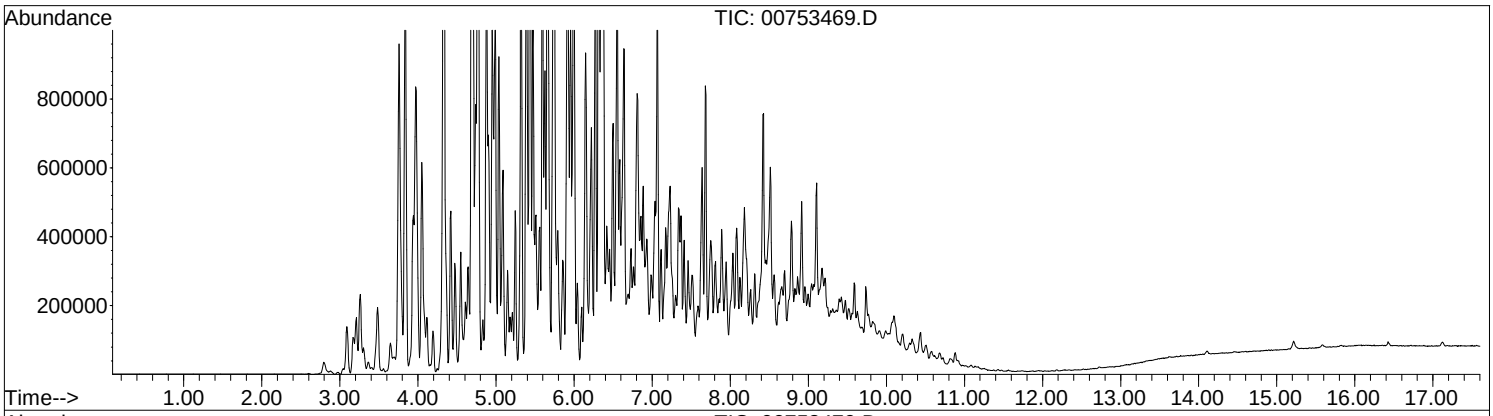
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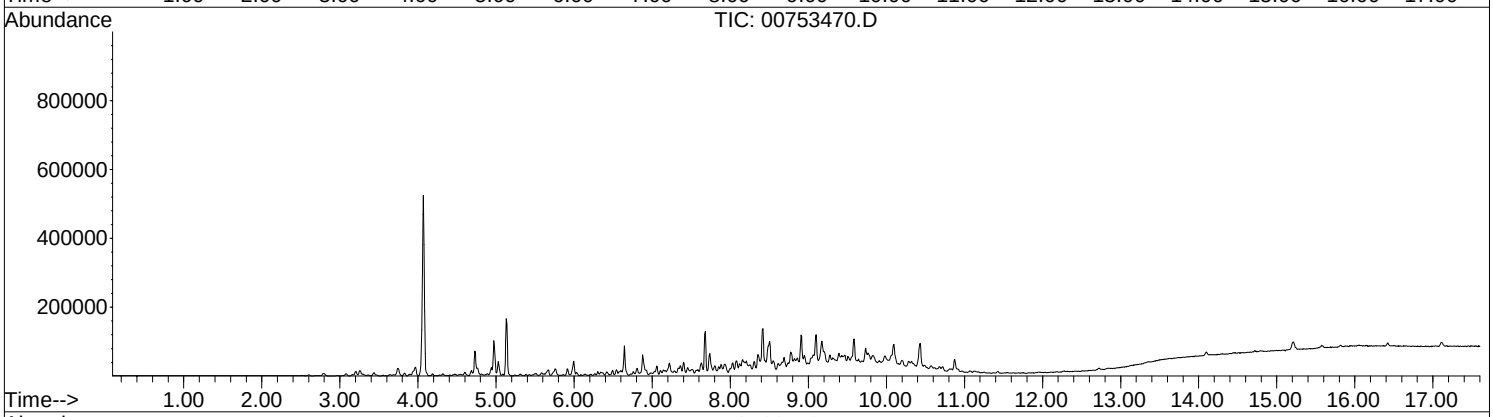
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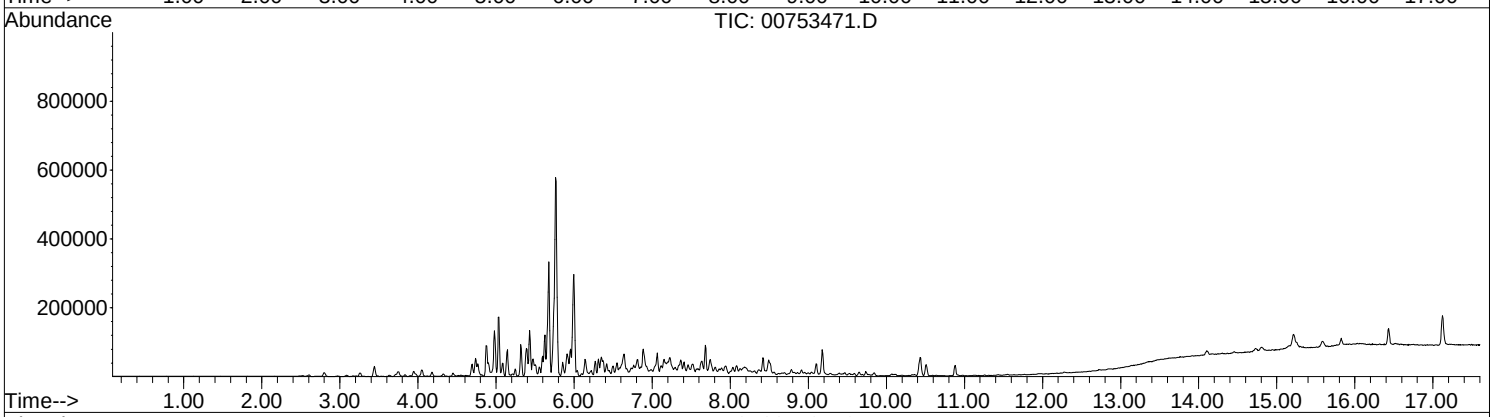
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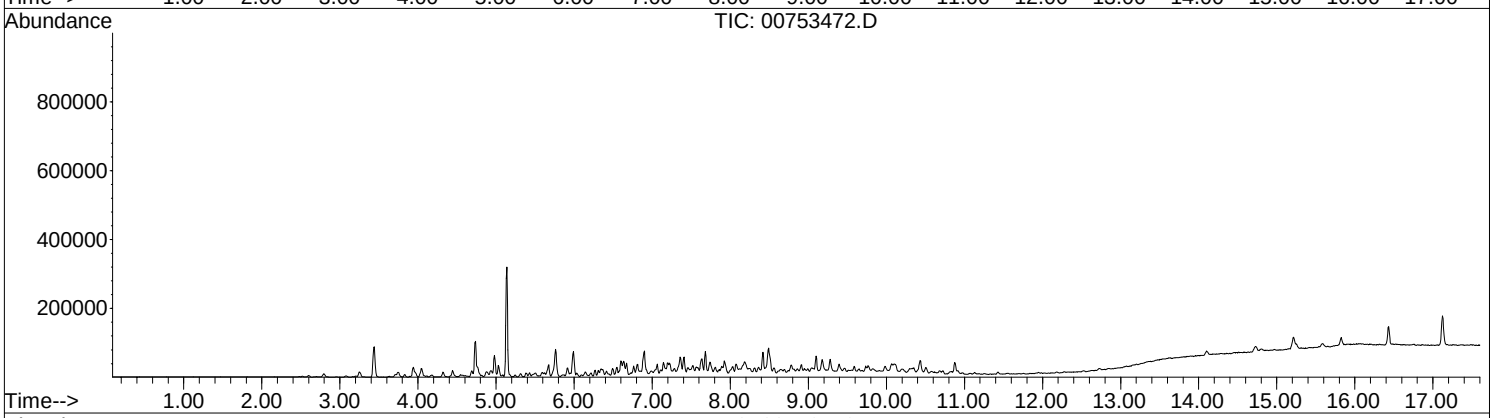
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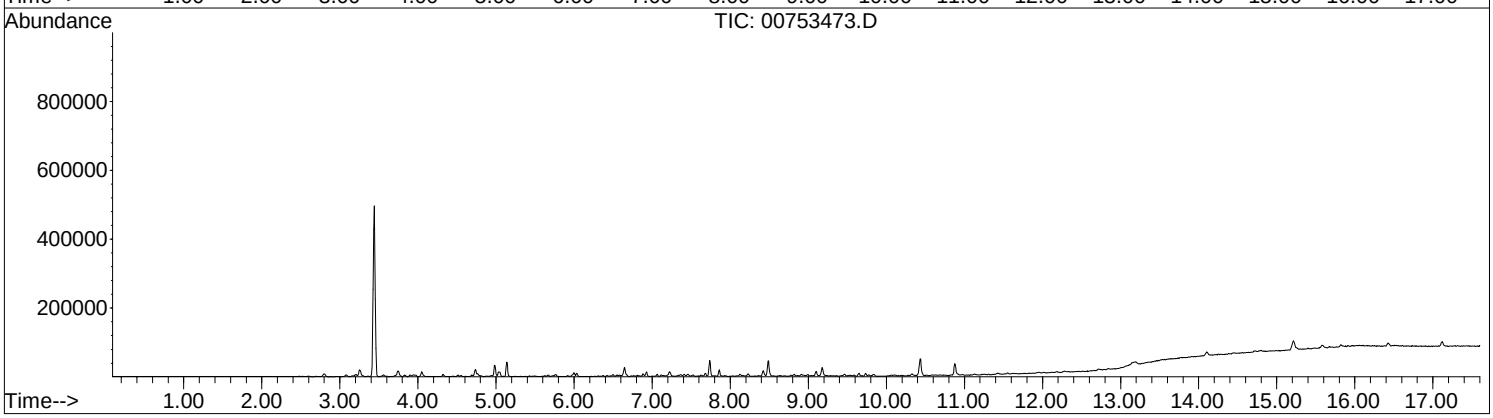
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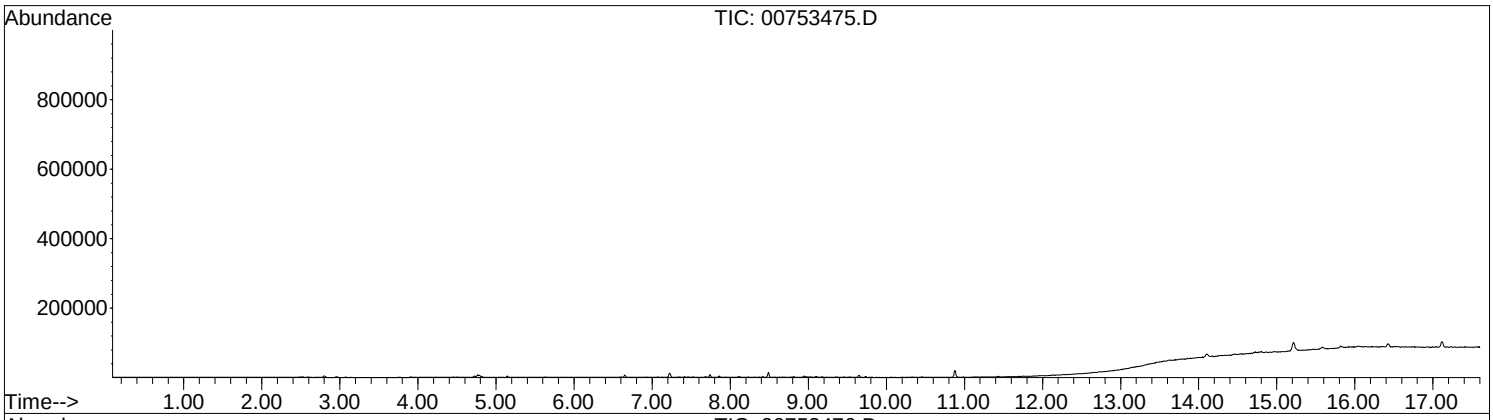
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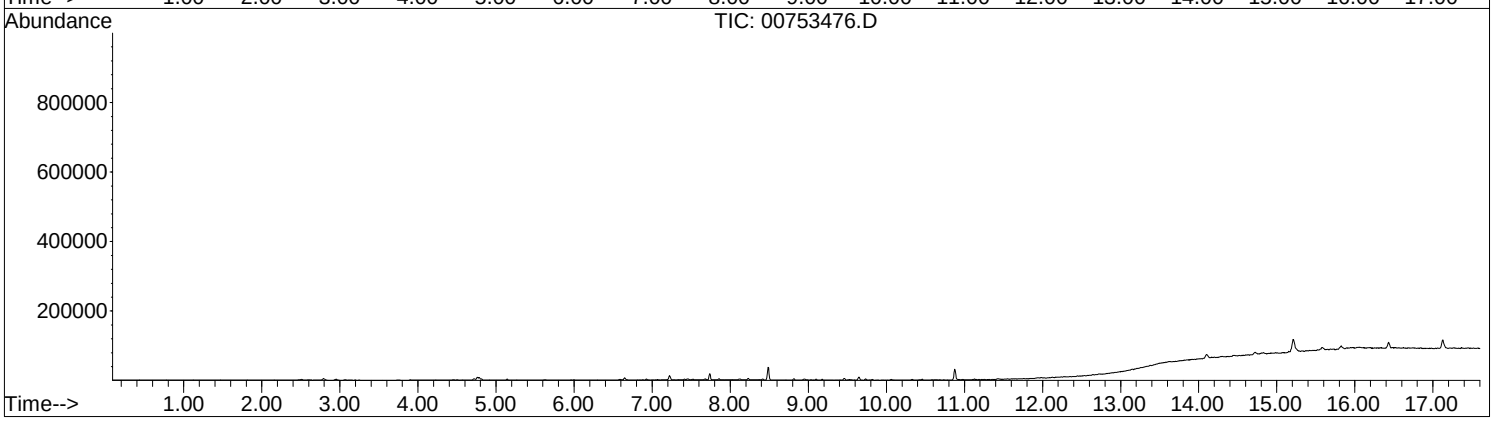
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ATTACHMENT E
AGI MAPPING REPORT

AMPLIFIED GEOCHEMICAL IMAGING, LLC

Mapping Report

Site: Greater Strawberry Point Area

Prepared for:

TETRA TECH
20251 CENTURY BOULEVARD SUITE 200
GERMANTOWN, MARYLAND
UNITED STATES

Prepared on:

February 05, 2015

Project Summary

Amplified Geochemical Imaging, LLC. (AGI) provided the AGI Environmental Survey

Greater Strawberry Point Area

The service provided by AGI included delivery of the required quantity of AGI Universal Samplers, analysis by the method described for the requested organic compounds, and reporting of the data. A Laboratory Report was issued previously which summarized the field sampling and analytical procedures, and contained the

Normally, when printed at scale, the maps are 11 x 17 inch in size. Other sizes are available upon request. General and project specific comments on the contouring and mapping can be found on the next page.

Maps prepared by:

Jay W Hodny

Project Manager

Maps reviewed/approved by:

Jim E Whetzel

Project Manager

General Comments

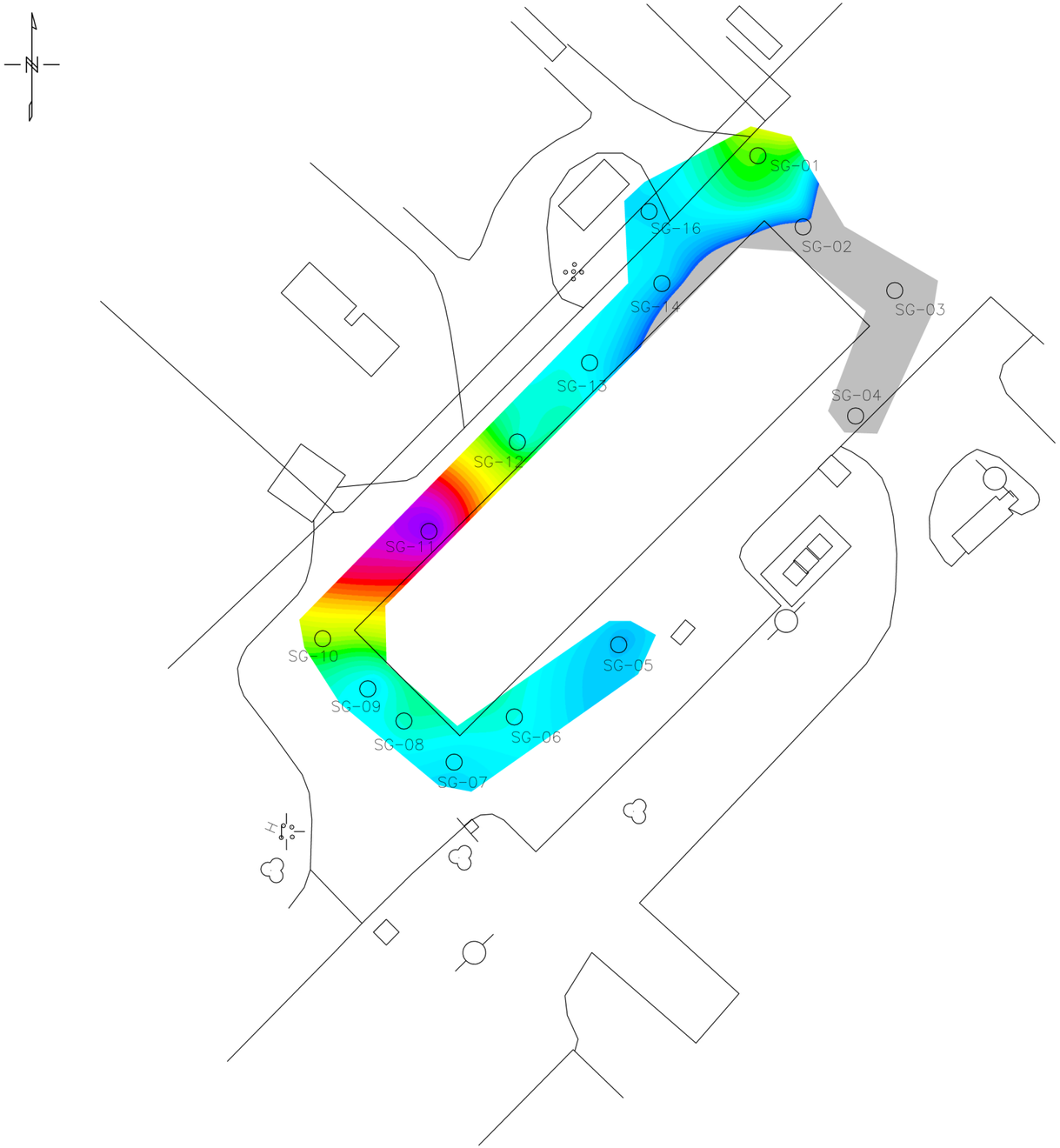
A minimum curvature algorithm was used to interpolate the data from the sample locations to a regularly-spaced grid. The resulting surface is considered to be the smoothest possible surface that will fit the observed values at each sample location (i.e., data honoring). The interpolation is performed in log space, with grid cell sizes approximately one-tenth the average distance between sample locations. For example, when AGI Universal Samplers are placed about 50 feet apart, the grid cell size is set to five feet.

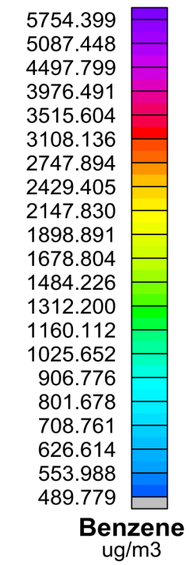
Where observations trend from lower to higher values, and moving towards the edge of the area sampled, the contour surface will continue to rise (showing warmer colors) as no additional data exist to constrain the interpolation. Where observations trend from high to low, towards the edge of the area sampled, the opposite is true.

Contour minimums and maximums used in the color interval assignment are established based on the QA blank levels (trip and method blanks), method detection limits, and maximum values observed. The minimum contour level (gray color) is established using the maximum QA blank level or method detection limit, whichever is greater, per compound or groups of compounds . The maximum contour level is set at the maximum value observed, per compound or groups of compounds. Contour interval assignments can be modified at the client's request.

Project Specific Comments

None.





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US survey foot

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WWW.AGISURVEYS.NET

Tetra Tech
Greater Strawberry Point Area
Benzene
Estimated Soil Gas Concentrations

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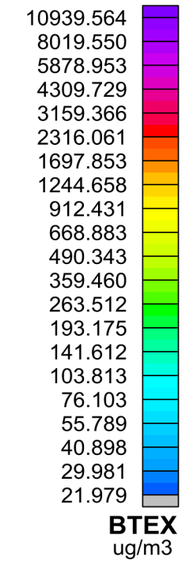
REV. DATE:	REV. #:	PROJECT NUMBER: 01281	



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US survey foot

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WWW.AGISURVEYS.NET

Tetra Tech
Greater Strawberry Point Area
BTEX
Estimated Soil Gas Concentrations

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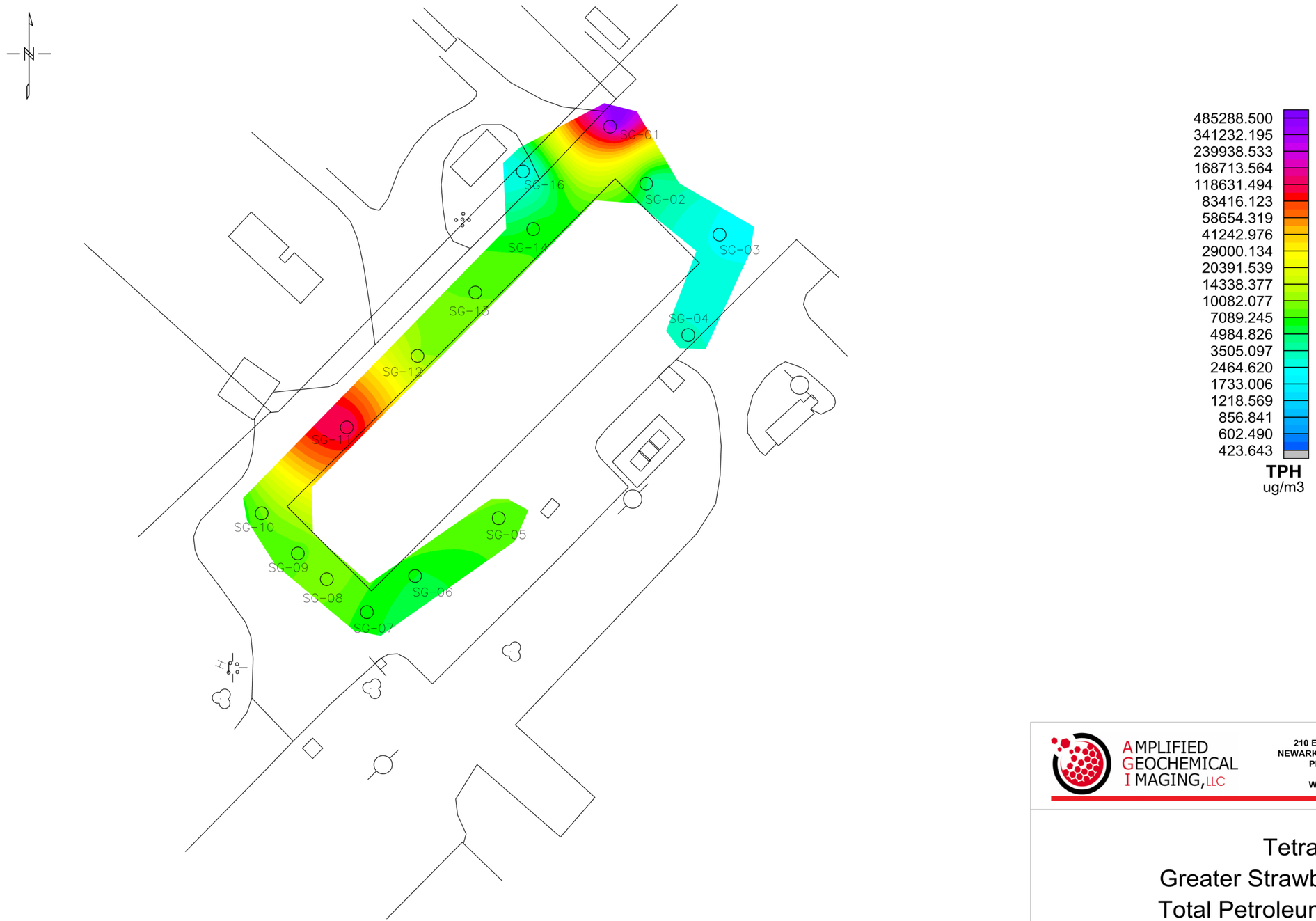

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US survey foot

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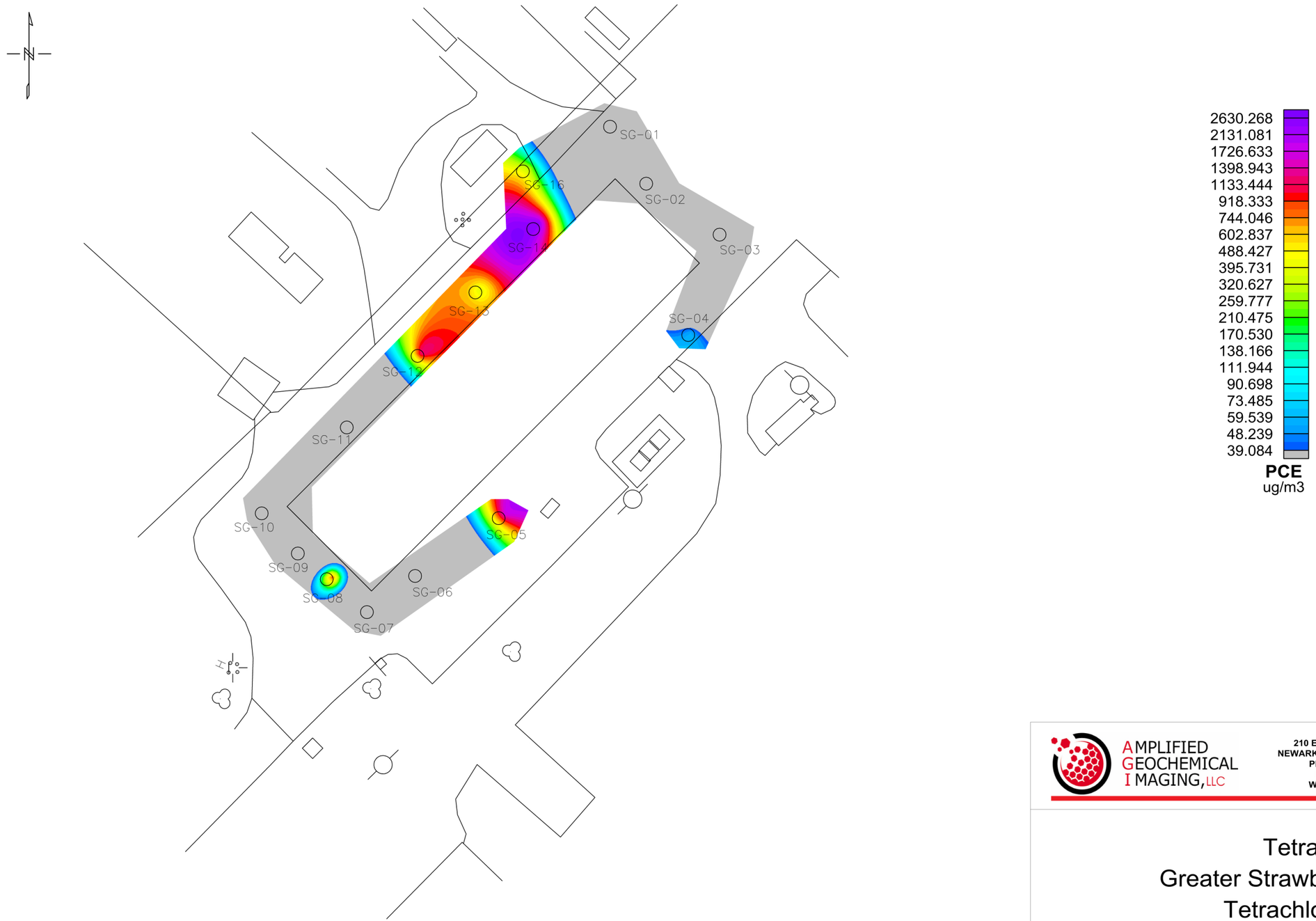
Tetra Tech
Greater Strawberry Point Area
Total Petroleum Hydrocarbons
Estimated Soil Gas Concentrations

DATE DRAWN: 5 Feb 2015	DRAWN BY: JH	ORIG. CAD: C-Base:gsp....dwg	SITE CODE:
REV. DATE:	REV. #:	PROJECT NUMBER: 01281	



Scale 1:600

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US survey foot

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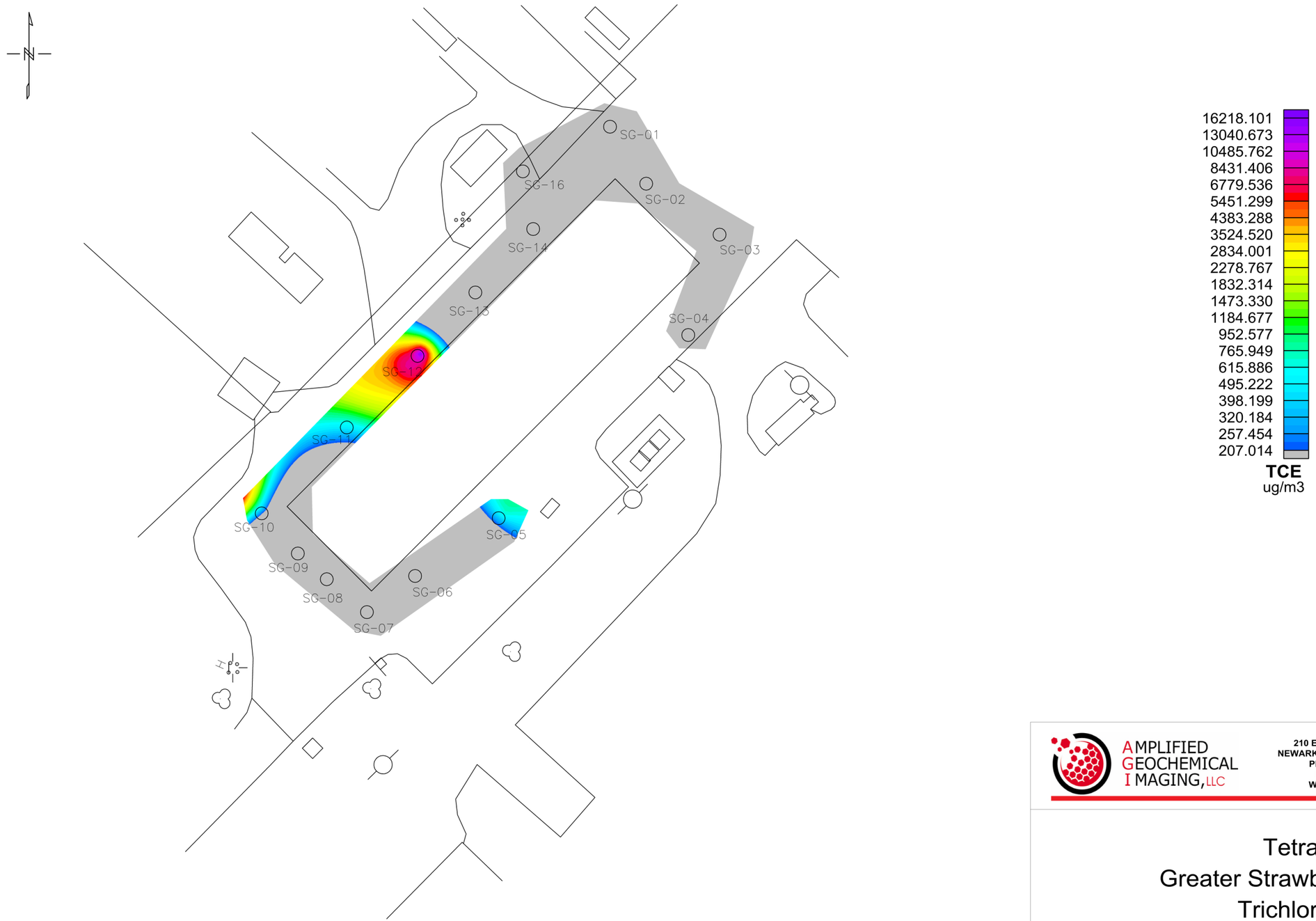
Tetra Tech
Greater Strawberry Point Area
Tetrachloroethene
Estimated Soil Gas Concentrations

DATE DRAWN: 5 Feb 2015	DRAWN BY: JH	ORIG. CAD: C-Base:gsp....dwg	SITE CODE:
REV. DATE:	REV. #:	PROJECT NUMBER: 01281	



Scale 1:600

25 0 25 50 75 100 125

US survey foot

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Tetra Tech
Greater Strawberry Point Area
Trichloroethene
Estimated Soil Gas Concentrations

DATE DRAWN: 5 Feb 2015	DRAWN BY: JH	ORIG. CAD: C-Base:gsp....dwg	SITE CODE:
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