Technical Memo for Laboratory Microcosm and Column Studies to Investigate Biobarrier Applications for Treatment of Perchlorate-Impacted Groundwater



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January 23, 2009

Mr. Daniel Zogaib
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Subject: Submittal of *Technical Memo for Laboratory Microcosm and Column Studies to Investigate Biobarrier Applications for Treatment of Perchlorate-Impacted Soils, Beaumont Site 2*

Dear Mr. Zogaib:

Please find enclosed two hard copies and two Adobe pdf files of the subject report prepared for Lockheed Martin Corporation for Beaumont Site 2.

If you have any questions or comments regarding this submittal, please contact me at 408.756.9595 or denise.kato@lmco.com.

Sincerely,

Denise Kato
Remediation Analyst Senior Staff

Enclosure

cc: Gene Matsushita, LMC (1 pdf and 1 hard copy)
John Eisenbeis, Ph.D, Camp, Dresser, McKee (1 pdf)
Thomas J. Villeneuve, Tetra Tech, Inc. (1 pdf and 1 hard copy)"

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Technical Memo

For

LABORATORY MICROCOSM AND COLUMN STUDIES TO INVESTIGATE BIOBARRIER APPLICATIONS FOR TREATMENT OF PERCHLORATE-IMPACTED GROUNDWATER

LOCKHEED MARTIN CORPORATION
BEAUMONT SITE 2

January 23, 2009

Submitted by:

Tetra Tech, Inc.

and

University of California, Riverside

Submitted to:

Lockheed Martin Corporation
Burbank, California

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ABBREVIATIONS AND ACRONYMS

µg/L	micrograms per liter
µm	micrometer
As	arsenic
ASTM	American Society for Testing and Materials
cm	centimeters
cm/d	centimeters per day
EHC	A proprietary plant-based amendment for generating reducing conditions in groundwater
EOS	Edible Oil Substrate
EPA	United States Environmental Protection Agency
Fe	iron
ft/d	feet per day
L/d	liters per day
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mL	milliliter
Mn	manganese
mV	millivolt
ORP	oxidation/reduction potential
PVC	polyvinyl chloride
Site	Lockheed Martin Corporation's Beaumont Site 2
SM	Standard Method
t	time
TKN	total Kjeldahl nitrogen
TM	Technical Memo
TOC	total organic carbon
UCR	University of California, Riverside
VOC	volatile organic compound

INTRODUCTION

This Technical Memo (TM) presents a summary of the results of the laboratory microcosm and column studies performed at the University of California, Riverside (UCR) to investigate biobarrier applications for treatment of perchlorate-impacted groundwater at Lockheed Martin Corporation's Beaumont Site 2 (herein referred to as the "Site"). An overview of the experimental procedures used to test potentially applicable amendments for effectiveness in stimulating biological reduction of perchlorate is also provided herein. The results of this study are used to make preliminary recommendations regarding potential possibilities for biobarrier implementation.

It is noted that additional studies were undertaken (some still ongoing) to test potential amendments for treating perchlorate in source reduction and vadose zone soil applications as well. Results of these additional studies are not presented here; rather they will be presented in a separate report following conclusion of the work. Further, a letter report was compiled during collection of soil and groundwater samples for the study, to document the procedures used, as well as analyses that were conducted on samples prior to sending them to the laboratory. The results are included and discussed herein either as part of the TM, or by reference. The letter report is included as Attachment 1.

SUMMARY OF APPROACH

For this laboratory study, the suitability of several pre-selected electron donor amendments were assessed for effectiveness in stimulating biological reduction of perchlorate in a biobarrier application to intercept and treat contaminated groundwater as it passes through it. The test included both a microcosm phase and a column phase. The microcosm phase was used to screen selected amendments in terms of effectiveness, and to gain a general understanding of the potential rate of treatment. In addition, nutrient requirements, pH effects, and impacts on secondary water quality parameters were assessed.

Following microcosm testing, column tests were conducted using media from the site (soil and groundwater) to provide an indication of likely field performance. Soil was packed into columns along with treatment amendments, and representative contaminated water was passed through to simulate the flow-through biobarrier system. Influent and effluent sampling was conducted to ascertain the effectiveness of the treatment occurring within the column. An initial column test was performed in conjunction with microcosm testing (Phase 1 column tests), and a follow-up set of column tests were set up and run to better understand the performance of the amendments being tested (Phase 2 column tests).

OBJECTIVES

The overall goal of the biobarrier microcosm tests was to determine the most effective of the selected amendments in stimulating perchlorate bioreduction in groundwater collected from the downgradient fringe of the plume. Specific information sought in the microcosm testing included:

- Comparative assessment of various amendments in terms of effectiveness in stimulating biological perchlorate reduction; and
- Rate of perchlorate bioreduction.

The goal of the initial set of biobarrier column tests was:

- To determine the likely performance of several amendments and biobarrier types to reduce perchlorate after initial construction.

Because the amendments themselves degrade over time, long-term performance of a biobarrier (beyond the initial installation period) was not determined in these relatively short tests.

After conducting the microcosm tests and initial biobarrier column tests, it was apparent that all of the pre-selected substrates tested were effective at stimulating perchlorate reduction, at similar rates. Therefore, a second set of biobarrier column tests were conducted with the following goals:

- Generate comparative data to help elucidate which substrate may be more preferable in a full-scale system;
- Generate perchlorate concentration profiles and breakthrough curves;
- Determine relative kinetics of perchlorate removal for each substrate; and
- Assess the effect of hydraulic retention time on perchlorate degradation

The following section summarizes the methods and procedures that were used to address these objectives.

SUMMARY OF METHODOLOGY

Groundwater and soil samples were collected at the Site and sent to UCR for the study. In addition, a number of analyses were conducted on the samples. As noted, details of the sampling and analytical procedures and results were summarized in a prior submittal, which is included herein as Attachment 1. Data relevant to the bench testing are presented and summarized in the following section.

Microcosm and column experiments were used to evaluate three amendments for the biobarrier plume interception application. These amendments are summarized in Table 1.

Table 1 Electron Donor Amendments used in Biobarrier Tests

Material	Source
Emulsified Vegetable Oil (EOS) 598	EOS Remediation, Inc.
EHC[1]	Adventus Americas
Compost, gravel, and mulch	Local Supplier

[1]EHC is a substrate that combines a plant-based carbon/energy source to stimulate microbial activity with a zero valent iron component to rapidly generate and sustain reducing conditions.

Concomitant with perchlorate reduction, remedial efforts may alter site geochemistry, which could lead to mobilization of certain naturally occurring inorganic constituents such as arsenic, iron, and manganese. This may have negative ramifications with respect to general groundwater quality in the immediate vicinity of the barrier. Other parameters to assess geochemistry and potential metal mobilization were also measured.

Microcosm Procedures and Methods

Microcosm testing assessed the impact of amendments, amendment concentrations, and the addition of a nutrient (diammonium phosphate). The following baseline parameters were measured upon arrival of the groundwater samples (prior to setting up the microcosms): perchlorate, nitrate, nitrite, total Kjeldahl nitrogen (TKN), phosphate, chloride, pH, total organic carbon (TOC), soluble arsenic (As), soluble iron (Fe), soluble manganese (Mn), sulfate, sulfide, and perchlorate-reducing bacteria. Metals (As, Fe, and Mn) analyses were performed on filtered samples.

For the biobarrier microcosms, Emulsified Oil Substrate (EOS), EHC (a proprietary integrated carbon and zero valent iron [ZVI] amendment for generating reducing conditions in groundwater), and compost (tree/manure, Kellogg, Inc., Ontario, CA.) were mixed with site soil and then placed into the microcosms. These amendments were added at dosages as listed in Table 2. Groundwater from the contaminant plume area near the property boundary was added to the microcosm in a solid/groundwater ratio of 1:4 (weight-to-weight [w/w]) in 250 milliliters (mL) glass serum bottles with a minimal headspace. The bottles were sealed with a septum cap that allowed for withdrawal of solution from the bottle. The microcosms were mixed by inversion three times per day to promote mixing the solid substrate with the groundwater.

Microcosms containing as-collected soil/groundwater [1:4 (w/w)] with no amendments were utilized as controls to quantify potential perchlorate degradation/loss from natural attenuation and other mechanisms. All amended and control microcosms were run in triplicate. See Table 2 for a summary of the biobarrier test conditions.

Table 2 Summary of Biobarrier Microcosm Test Conditions

Groundwater Source	Soil Mass + Groundwater Volume	Substrate			
		Non-Amended Control (Soil Only)	EOS	Compost	EHC
Plume area near property boundary Low ClO_4^- concentration	50 g soil or compost in 200 mL of groundwater	Subsurface soil near property boundary	Soil mixed with EOS solution to create 0.3% (w/w) EOS/soil mix. For nutrient amended microcosms, 1 g/L of diammonium phosphate was added to the groundwater.	Compost only. For nutrient amended microcosms, 1 g/L of diammonium phosphate was added to the groundwater.	Soil mixed with EHC to create 0.1% (w/w) EHC/soil mix. For nutrient amended microcosms, 1 g/L of diammonium phosphate was added to the groundwater.

[a]A 0.1% EOS solution is recommended by the manufacturer for laboratory testing.
[b]EHC concentrations are as recommended by the manufacturer for laboratory testing.

Water samples were withdrawn using a syringe and filter [0.45 micrometer (μm) pore size]. Perchlorate, nitrate, and TOC were measured periodically over a 90-day or shorter period. This included time t = 0 (immediately following addition of amendments) and four additional time points. Specific analytical methods are provided in a later section. It is noted that TOC was measured at t = 0 and the final sampling event.

Once the perchlorate was degraded to below detection levels, the water samples from each microcosm were analyzed for pH, oxidation/reduction potential (ORP), residual amendment (via TOC), nitrate, nitrite, soluble As, Fe, and Mn (filtered samples), and compared to initial baseline values.

Column Procedures and Methods

American Society for Testing and Materials (ASTM) Test Method D 4874-95 (Standard Test Method for Leaching Solid Material in a Column Apparatus) was used as a guide for the column tests. The method is a standard laboratory procedure for generating aqueous leachate from materials using a column apparatus. The method provides for the passage of an aqueous fluid through materials of known mass in a saturated up-flow mode. Analysis of column effluent provides information on the leaching characteristics of material under the conditions used in the test. It is intended that the sample used in the procedure be physically, chemically, and biologically representative of the material from the Site. While not intended to be the sole basis for engineering design, the method is expected to produce results that can be used, along with other information, as design input for the full-scale treatment system. A detailed discussion regarding the methodology can be found in [1].

Phase 1 Column Testing: For Phase 1 column testing, each column was constructed of 6-inch (15 centimeters [cm]) polyvinyl chloride (PVC) pipe with a total length of 2 ft (60 cm). Sampling ports were placed in the columns every 6 inches (15 cm) to permit sampling along the flow path. Two parallel packed columns were operated during these studies with packing medium as follows: (1) EOS-amended gravel/compost/mulch and (2) EHC-amended gravel/compost/mulch. EOS and EHC were mixed with the soil at ratios of 0.3% and 0.1% (w/w), respectively, prior to column packing. Columns were compacted using a standard compaction hammer (bulk density ≅ 1.4 g/cm^3), and were then saturated with site groundwater. Nutrient (diammonium phosphate) was not added initially (they were to be added only if poor treatment was achieved). Following saturation, site groundwater was introduced at a rate equal to an approximate approach velocity (flow rate/column X-sectional area) of 0.5 feet per day (ft/d) (15 centimeters per day [cm/d]) or about 2 liters per day (L/d) per column for this set-up. This represents the flow velocity, and is at the high end of what would be expected at the Site. Water samples were collected periodically and analyzed for perchlorate, pH, and ORP. Additional analyses for TOC, nitrate, nitrite, sulfate, sulfide, and metals (As, Mn, and Fe) were conducted periodically.

Phase 2 Column Testing: Instead of the 6 inch (15 cm) diameter columns used in the Phase 1 study, three sets of four parallel 2-inch (5.1 cm) diameter PVC pipe columns were constructed in

lengths of 6 inches (15 cm), 12 inches (30 cm), 18 inches (45 cm) and 24 inches (60 cm) for (1) soil alone (control), (2) EOS-amended soil, and (3) EHC-amended soil. This would allow for obtaining treatment performance as a function of column travel. EOS and EHC were mixed with the soil at ratios of 0.3% and 0.1% (w/w), respectively, prior to column packing (as recommended by the manufacturer). Multiple, smaller diameter parallel columns were used instead of one large column to reduce the volume of water needed to run the tests.

In addition, this simplified the sample collection procedure by allowing for collection of sufficient sample volume (20 to 25 mL), for the various analyses in a reasonable time period, and prevented significant disruption of the flow through the column during sampling. If samples were taken down the length of a single column, samples would need to be withdrawn by syringe. At low flow rates, if sample is taken in a reasonable time period (5 min), a significant amount of the water is withdrawn from the column (not just at the sampling port), disrupting the bulk flow. Thus, the sample may not be representative of the flow at the sampling location. For this low flow rate, the sampling time for a sufficient volume was on the order of 1.5 to 2.0 hrs per location. By using individual columns for the different lengths, the effluent from the columns were collected as a composite to represent performance as a function of length.

Columns were compacted and then saturated with site groundwater as described above. Following saturation, site groundwater initially was introduced into the columns at a rate equal to an approximate approach velocity of 0.5 ft/d (15 cm/d) or about 0.31 L/d and 1.24 L/d per column and set of columns, respectively. This velocity is in the higher range of groundwater velocities expected at the Site. Samples were collected periodically and analyzed for perchlorate, pH, and ORP from each column. Additional analyses for TOC and nitrite were conducted periodically as well.

Analytical Procedures

A summary of the analytical methods that were followed generally during this study in the UCR laboratory is given in Table 3.

Table 3 Summary of Analyses to be Used for Liquid Samples

Parameter	Analytical Method
pH	U.S. Environmental Agency (EPA) 150.1
Redox potential (ORP)	Standard Method (SM) 2580 [2]
Total organic carbon	EPA 415.1
Perchlorate	EPA 314.1
Chloride	ASTM D4327-03 [3]
Nitrate	ASTM D4327-03 [3]
Nitrite	ASTM D4327-03 [3]
Sulfate	ASTM D4327-037 [3]
Sulfide	ASTM D4658-03 [4]
Arsenic	EPA 200.7
Iron	EPA 200.7
Manganese	EPA 200.7

Quality Assurance/Quality Control

The data quality objective is to collect data with a high enough degree of certainty to distinguish performance differences between non-amended controls and beneficial performance in treatment microcosms upon addition of one or more electron donors. Alternatively, there should be sufficient data to state that performance under the various conditions are statistically similar. This objective requires accurate quantitative data for all measured constituents and a reasonable degree of certainty for the degradation rates determined. To ensure that these data quality objectives are met, analytical instruments were calibrated using commercially available reference standards for each set of samples. Matrix spikes and analytical duplicates were analyzed at least once in every twenty samples to assess accuracy. Triplicate microcosm samples were conducted for replication and possible statistical analyses. Observations and data collected in the laboratory were recorded in permanently bound, dedicated lab books.

RESULTS AND DISCUSSION

Results for the tests and a brief discussion are provided in the following subsections.

Data Assessment for as-received Groundwater and Soil Samples

Biobarrier soil samples were collected from a downgradient area where biobarrier implementation may be applied (refer to Attachment 1). Initial analytical results of the collected groundwater and soil samples are provided in Table 4, Table 5 and Table 6.

Table 4 Field Parameters for As-Received Groundwater Samples

Date	Temperature (°C)	EC (mS/cm)	pH	DO (mg/L)	ORP (mV)
Tt-MW2-7 (Biobarrier Area)					
8/15/2008	21.23	1.426	7.22	5.17	120.7
7/21/2008	20.78	1.267	7.11	3.54	172.1
4/18/2008	20.32	1.316	6.76	4.45	135.3

Notes:

°C – degrees celcius
DO – the dissolved oxygen
EC – electrical conductivity
mg/L – milligrams per liter
mS/cm – millisiemens per centimeter
mV – millivolts
NTU – nephalometric turbidity units.
ORP – oxidation - reduction potential

Dissolved oxygen and ORP data presented in Table 4 indicate that the groundwater environment in the vicinity of the biobarrier is aerobic. This is not optimal, as oxygen interferes with perchlorate (and nitrate) reduction. As shown in Table 5, the perchlorate level was approximately 500 micrograms per liter (µg/L). This is consistent with past monitoring results for groundwater in the biobarrier area, and is thus assumed to be a representative perchlorate concentration in this area. No volatile organic compounds (VOCs) were detected, which is also consistent with prior data collected in this area. The groundwater pH was in the range of 6.5 to 8.0 with the soil results

being slightly higher, which is generally favorable for biological treatment. The total organic carbon concentration was low in groundwater and soil [approximately 1 milligram per liter (mg/L) and 10 milligrams per kilogram (mg/kg), respectively], is not optimal for biological activity and is consistent with perchlorate persistence in the area. Nitrate was also present, suggesting a somewhat oxidized environment in which microbial growth and perchlorate reduction are not favored under current conditions.

Cation and anion groundwater data do not suggest any anomalous conditions that could adversely effect biobarrier implementation or performance. Further, the presence of significant sulfate in groundwater and soil samples (approximately 175 mg/L and 48 mg/kg, respectively) may be beneficial, as reduced sulfur species (sulfides) resulting from biotreatment can enhance precipitation of some solubilized metals, if this occurs. These metals were not detected in groundwater samples from the biobarrier area (Table 5), but Fe and Mn were detected in biobarrier area soils (Table 6).

With respect to nutrients, TKN, the sum of free-ammonia and of organic nitrogen compounds, was detected in groundwater and soil samples. The soil TKN level was 48.6 mg/kg, however the groundwater TKN level was very low (0.35 mg/L). Ammonia in the groundwater was relatively low (<0.2 mg N/L), however nitrate was present at 8 to 9 mg/L as N (Table 5). Since nitrate degradation consumes electron donor, this requirement should be taken into account in design of the full-scale treatment system. Total phosphorus was detected at trace levels in both soil and groundwater samples, however ortho-phosphate (the predominant biologically available form) was not detected (Tables 5 and 6). These results indicate the presence of these macronutrients, albeit at relatively low levels. The potential effects of enhancing these nutrients were assessed in the microcosm tests, as described below. Finally, microbiological testing showed that perchlorate-reducing bacteria were present in groundwater samples (refer to Attachment 1).

Biobarrier Microcosm Tests

Biobarrier microcosm results are included as Figures 1 though 8.

Reduction of Perchlorate and Nitrate: As shown in Figure 1 and Figure 2, perchlorate reduction was observed in all treatments with and without nutrient added, but not in the controls. As seen in Figures 3 through 5, nutrient addition enhanced the overall rate of perchlorate reduction for EOS and mulch, but not for the EHC treatment. However complete reduction occurred with and without nutrient addition for all substrates within a timeframe ranging from 5 to 12 days. In addition (and as expected), nitrate is also reduced effectively as shown in Figures 6 through 8 for all treatments. Nitrate reduction precedes perchlorate reduction, which is typical in most groundwater where these anions co-exist.

Table 5 Results of Analysis of As-Received Groundwater Samples

Sample Name	Perchlorate (µg/L)	Wet Chemistry (mg/L)					Nutrients (mg/L)						Alkalinity (mg/L)		
		pH (unitless)	Total Organic Carbon	Electroconductivity (µs)	Hardness (as $CaCO_3$)	Total Dissolved Solids	Ammonia (as N)	Total Kjeldahl Nitrogen	Nitrate as N	Ortho-Phosphate	Total Phosphorus	Total Sulfur	Total Alkalinity	Bicarbonate (HCO_3)	Carbonate (CO_3)
Biobarrier Area Groundwater:															
Testing Lab	502	6.76 f	1.01	1316 f	242 c	990	0.0911 BJa	0.35	8.2	< 0.0200	0.0245 Je	58.5	280	280	< 1.00
Testing Lab-DUP	580	7.71	1.05		243 c	1070	0.112 Ba	0.271	8.17	< 0.0200	0.0223 Je	58.3	300	300	< 1.00
UCR	505	7.71		1321	234	902			8.62	< 0.5					

Sample Name	Perchlorate (µg/L)	Anions (mg/L)		Cations (mg/L)				Trace Metals (mg/L)		
		Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium	Arsenic	Iron	Manganese
Biobarrier Area Groundwater:										
Testing Lab	502	186	176	81.0	9.64	0.733 Jq	240	< 0.0400	< 0.0400	< 0.00300
Testing Lab-DUP	580	186	175	81.1	9.74	0.700 Jq	237	< 0.0400	< 0.0400	< 0.00300
UCR	505									

Notes:

-- - not analyzed
µg/L – micrograms per liter
mg/L – milligrams per liter
MDL – Method Detection Limit
B – the sample result is less than 5 times (10 times for common organic laboratory contaminants) the amount of blank contamination. The result is considered not to have originated form the environmental sample, because cross-contamination is suspected.
J – the analyte was positively identified and the result is usable; however, the analyte concentration is an estimated value
a – the analyte was found in the method blank
c – by calculation
e – a holding time violation occurred
f – field measurement
q – the analyte detection was below the practical quantitation limit

Table 6 Results of Analysis of As-Received Soil Samples

Sample ID Location and Depth	Zone	Soil Results (mg/kg unless otherwise notes)										
		Arsenic	Iron	Manganese	Perchlorate (µg/kg)	pH (unitless)	Ortho-Phosphate	Total Phosphorus	Total Sulfide	Sulfate	Total Kjeldahl Nitrogen	Total Organic Carbon
Biobarrier Soil:												
SB2-7-15’	Aquifer	< 4.29	13,900	231	26.4	9.00 Je	< 0.214	0.278 Jq	< 4.00	40.6	48.6	< 10.7
SB2-7-15-DUP		< 4.29	14,600	240	14.2 Jg	8.98 Je	< 0.215	1.48	< 4.00	32.1	43.7	11.8 Jg

Notes:

-- - not analyzed
µg/L – micrograms per liter
meg/kg –
mg/L – milligrams per liter
MDL – Method Detection Limit (note that MDL varies depending on a variety of factors including amount of soil used, dilution factor, etc.)
B – the sample result is less than 5 times (10 times for common organic laboratory contaminants) the amount of blank contamination. The result is considered not to have originated form the environmental sample, because cross-contamination is suspected.
J – the analyte was positively identified and the result is usable; however, the analyte concentration is an estimated value
a – the analyte was found in the method blank
e – a holding time violation occurred
f – the duplicate/replicate sample’s relative percent difference was outside of control limits
q – the analyte detection was below the practical quantitation limit

Water Quality Changes: Biological perchlorate reduction requires reduced conditions. Thus, following addition of an organic substrate, water undergoes a change from oxidizing to reducing conditions. Under these conditions, As, Fe, and Mn can be reduced to more soluble species, and thus may be mobilized in the subsurface. In addition, nitrite nitrogen may be formed via reduction of nitrate. Nitrite was observed at low concentrations in the control microcosms at the end of the test, but not in the treated microcosms. Nitrite, a product of denitrification, is transient in nature in reducing environments. Thus, nitrite is generally not expected to be an issue in the field test. Initial and final water quality analyses for these constituents are provided in Tables 7 through 10.

Table 7 Initial-Final Water Analyses for Control Microcosms

Parameter	MDL, mg/L	Without Nutrient		With Nutrient	
		Initial, mg/L	Final, mg/L	Initial, mg/L	Final, mg/L
Nitrite as N	0.090	0.31	2.2	ND	1.5
Arsenic	0.070	ND	ND	ND	ND
Iron	0.15	ND	ND	ND	ND
Manganese	0.070	ND	ND	ND	ND

Notes:

mg/L – milligrams per liter
MDL – Method Detection Limit

Table 8 Initial-Final Water Analyses for EOS Amended Microcosms

Parameter	MDL, mg/L	Without Nutrient		With Nutrient	
		Initial, mg/L	Final, mg/L	Initial, mg/L	Final, mg/L
Nitrite as N	0.090	0.53	ND	0.60	ND
Arsenic	0.070	ND	ND	ND	ND
Iron	0.15	ND	ND	ND	ND
Manganese	0.070	ND	ND	ND	ND

Notes:

mg/L – milligrams per liter
MDL – Method Detection Limit

Table 9 Initial-Final Water Analyses for EHC Amended Microcosms

Parameter	MDL, mg/L	Without Nutrient		With Nutrient	
		Initial, mg/L	Final, mg/L	Initial, mg/L	Final, mg/L
Nitrite as N	0.090	0.57	ND	1.1	ND
Arsenic	0.070	ND	ND	ND	ND
Iron	0.15	ND	ND	ND	ND
Manganese	0.070	ND	ND	ND	ND

Notes:

mg/L – milligrams per liter
MDL – Method Detection Limit

Table 10 Initial-Final Water Analyses for Compost/Mulch Microcosms

Parameter	MDL, mg/L	Without nutrient		With nutrient	
		Initial, mg/L	Final, mg/L	Initial, mg/L	Final, mg/L
Nitrite as N	0.090	ND	ND	ND	ND
Arsenic	0.070	ND	ND	ND	ND
Iron	0.15	0.76	27	0.54	17
Manganese	0.070	0.035	1.5	0.034	1.1

Notes:

mg/L – milligrams per liter
MDL – Method Detection Limit

Increases in concentrations of these constituents (due to solubilzation) were not observed for either the EOS or EHC amended soil microcosms (Table 8 and 9, respectively). However notable solubilzation of iron and manganese appeared to have occurred in the compost/mulch microcosms (Table 10). However, because soil was not used in the compost/mulch microcosms, the source of the iron and manganese is attributed to the compost/mulch itself.

Phase 1 Column Testing – Compost/Mulch/Gravel Amended with EOS and EHC

Repeated analysis of samples collected from these columns caused clogging problems in the chromatography columns due to the high levels of organic matter leaching from the mulch. Thus, the number of perchlorate analyses was limited in the Phase 1 columns. Figure 9 shows the results of the Phase 1 column testing using the 60 cm columns. The top graph in Figure 9 depicts the influent and effluent perchlorate concentrations as a function of time. As can be seen in this graph, nearly complete perchlorate removal was observed using the 60 cm column. After four months of continuous operation, the effluent perchlorate concentration was non-detectable (less than 4 μg/L) from both the EOS and EHC amended compost/mulch/gravel columns (Figure 9, top graph).

Perchlorate reduction was also found to be nearly complete within the first 12 inches (30 cm) of column length over a period of approximately 4 months (see Figure 9 middle and bottom graphs). Nitrate was not detected as well within 6 inches (15 cm) of column travel and longer (data not shown). This indicates the effectiveness of both of these treatments in reducing perchlorate and nitrate under simulated treatment conditions, but does not differentiate between substrates as to which may be more effective.

The pH in both of the columns consistently dropped from 7.6 in the influent to between 6.4 and 6.6 (see Table 11) due to presence of humic acids associated with the compost/mulch. ORP measurements (data not shown) were highly variable due to sample exposure to the atmosphere during effluent collection; values ranged from -200 to +100 millivolts (mV). Nevertheless, it can be inferred from the reduction of perchlorate and nitrate that anaerobic conditions were generated/maintained within the columns.

During the first week after startup, filtered TOC values were about 1,000 mg/L from both columns. After four months of operation, the TOC readings from both columns were about 50 mg/L. TOC of the solid matrix was not measured. This provides some information regarding leachability of TOC, however it is noted that a TOC mass balance of the EOS and EHC is beyond the scope of this work, and would not be appropriate given the infrequency of the TOC measurement as well as the lack of a compost biobarrier control. The compost is a source of TOC.

Table 11 Influent/Effluent Characteristics for Phase 1 Compost/Mulch/Gravel Biobarrier Columns

	EOS-Amended		EHC-Amended	
Parameter	**Influent**	**Effluent**	**Influent**	**Effluent**
pH	7.48	6.50	7.48	6.51
TOC, mg/L	1.1	814 - 49	1.1	1570 - 54

Notes:

mg/L – milligrams per liter
TOC – total organic carbon

Finally, as was observed in the compost/mulch microcosms, the effluent from both of the compost/mulch/gravel columns, contained concentrations of Fe and Mn that were elevated over background (see Table 12; refer to Table 5 for background levels). As with the microcosms, this likely originated largely from the compost/mulch, and for the EHC-amended column, from the EHC itself (for the Fe). This indicates a minor potential for solubilization of these metals, if EOS is used (especially if compost/mulch is added), but the iron level resulting from the EHC treatment was significant, and could potentially cause aquifer clogging either directly, or due to iron-oxidizing bacteria. In most cases, these reduced, soluble metal species are expected to attenuate as they migrate downgradient from the biobarrier and redox conditions return to background (generally aerobic), an observation which will be verified in the field. It is stressed that these results provide an indication of the potential for metals to leach from the biobarrier area, but this may not be directly translatable to the field. Thus, the results would have to be verified in field testing/application.

Table 12 Effluent Water Analyses for Compost/Mulch/Gravel Biobarrier Columns

Parameter	**MDL, mg/L**	**EOS amended, mg/L**	**EHC amended, mg/L**
Nitrite as N	0.090	ND	ND
Arsenic	0.070	ND	ND
Iron	0.15	2.6	70
Manganese	0.070	0.45	0.77

Notes:

mg/L – milligrams per liter
MDL – Method Detection Limit

Phase 2 Column Testing – Control, EOS and EHC Amended Soils

As shown in Figures 10 through 12, perchlorate reduction was observed in the soil columns amended with either EOS or EHC, but not in the control column. In each of these figures, perchlorate concentrations from the influent, 6 inches (15 cm), 12 inches (30 cm), 18 inches (45 cm), and 24 inches (60 cm) columns are shown. A spike in the perchlorate concentrations occurred around Day 32 through Day 38 due to an error in which groundwater from the source area was used as the influent instead of groundwater from the proposed biobarrier area. The groundwater from the source area has concentrations of perchlorate a couple of orders of magnitude higher than the groundwater from the area proposed for the biobarrier.

After brief fluctuations during the startup period, little or no perchlorate reduction was observed within the control column set (Figure 10). However, for the EOS-amended soil column set (Figure 11), perchlorate reduction was nearly complete within 6 inches of column travel when the approach velocity was 0.5 ft/d. When the approach velocity was raised, the zone of perchlorate reduction became extended. At an approach velocity of 1.0 ft/d, the entire 24 inches (60 cm) of column length was required to achieve complete removal. Elevated perchlorate concentrations were observed at the 6 inch, 12 inch, and 18 inch lengths. At an approach velocity of 2.0 ft/d, little or no perchlorate reduction occurred in any of the columns. However, when the approach velocity was reduced again to 0.5 ft/d, perchlorate reduction was again observed at the 12 inch, 18 inch, and 24 inch lengths.

The original EHC-amended soil had been prepared about one month before this portion of the study was initiated. In contrast, the EOS-amended soil columns were prepared two days before the start of Phase 2. As can be seen in Figure 12, erratic results were obtained with the EHC columns prior to Day 32. Thus, those columns were replaced with newly prepared EHC amended soil columns. Treatment performance improved and was steady thereafter. Perchlorate reduction was nearly complete within 12 inches of column travel when the approach velocity was 0.5 ft/d. When the approach velocity was raised, the zone of perchlorate reduction became extended. At an approach velocity of 1.0 ft/d, the entire 24 inches (60 cm) of column length was required to achieve complete removal. Elevated perchlorate concentrations were observed at the 6 inch, 12 inch, and 18 inch lengths. At an approach velocity of 2.0 ft/d, little or no perchlorate reduction occurred in any of the columns. However, when the approach velocity was reduced again to 0.5 ft/d, perchlorate reduction was restored, but completely only for the 24 inch column. Elevated perchlorate concentrations were observed at the 6 inch, 12 inch, and 18 inch lengths.

Thus, although not conclusive, the longevity of EHC may be less than that of the EOS at the concentrations tested. These results verify efficient perchlorate reduction under simulated field conditions, and without the addition of mulch. However, because both substrates performed similarly in terms of kinetics in response to varied approach velocities (and hence retention times) it can not be determined which may be more effective, as was hoped.

The pH in all three columns (control, EOS/soil, EHC/soil) remained steady through the length of the columns, between 7.4 and 7.6 throughout the testing (see Table 13). Similar to the Phase 1

columns, ORP measurements (data not shown) were highly variable due to sample exposure to the atmosphere during sampling; values ranged from -200 to +100 mV. TOC of the effluent decreased during the duration of the study.

Table 13 Influent/Effluent Characteristics for Phase 2 Columns

	EOS-Amended		EHC-Amended	
Parameter	**Influent**	**Effluent**	**Influent**	**Effluent**
pH	7.48	6.50	7.48	6.51
TOC, mg/L	1.1	77 - 32	1.1	730 - 35
Sulfate, mg/L	194	185	194	185
Sulfide, mg/L	ND	0.25	ND	0.13

Notes:

mg/L – milligrams per liter
MDL – Method Detection Limit

TOC values in the effluent from both the 24" EOS-amended and EHC-amended soil columns decreased during Phase 2 as shown in Figure 13. Based on these TOC data, it appears that EHC may initially leach TOC at a faster rate than EOS. However as noted previously, the respective donors were added to the columns at the manufacturer's recommended loading rate, not necessarily on an equivalent carbon basis, and conducting a mass balance on the substrate was beyond the scope of the study. Nevertheless, these data suggest that, at the recommended loading rate, EHC may have a propensity to leach carbon more readily than EOS.

Minor decreases in sulfate concentration were observed between the influent and the effluent of the 24 inch columns. Soluble sulfide increased slightly from below the detection limit in the influent to about 0.15 mg/L in the 24 inch column effluent. Sulfate and sulfide trends were similar in both columns (data not shown). Overall, although ORP measurements were inconclusive, removal of perchlorate is ample evidence that anaerobic conditions were generated. However the lack of substantial reductions in sulfate levels and/or generation of sulfide indicate that the ORP of the system was not in the sulfate reducing range. Based on this information, sulfide precipitation would likely not be a factor in metals immobilization. However, this would likely not be the case in the field, where sulfate reducing conditions could be generated in the subsurface using these products.

Increased concentrations of Fe and Mn were observed relative to baseline conditions (Table 14; refer to Table 5 for background levels) in effluent from both the EOS- and EHC-amended 24 inch columns. Although measurable, these concentrations were generally lower than those observed in the compost/mulch/gravel (Phase 1) columns. However soluble Fe and Mn concentrations detected in the Phase 1 columns are, in part, attributable to addition of mulch/compost. Thus, this effect is likely to be reduced if mulch/compost is not added to the system. However these results do indicate a minor potential for solubilization of Fe and Mn in a full-scale system. Further, as previously noted, the reduced, soluble metal species are expected to attenuate as they migrate downgradient from the biobarrier and redox conditions return to

normal. Again, it is noted that these results provide an indication of the potential for metals to leach from the biobarrier area, but this may not be directly translatable to the field. Thus, the results would have to be verified in the field.

Table 14 Effluent Water Analyses for Amended Soil Biobarrier Columns

Parameter	MDL, mg/L	EOS amended, mg/L	EHC amended, mg/L
Nitrite as N	0.090	ND	ND
Arsenic	0.070	ND	ND
Iron	0.15	~0.05	4.0
Manganese	0.070	0.14	0.77

Notes:

mg/L – milligrams per liter
MDL – Method Detection Limit

Quality Assurance/Quality Control

Three sets of microcosm experiments were conducted to test several electron donors for the purpose of stimulating perchlorate reduction in a biobarrier plume interception application. These experiments were used to confirm the white paper investigation results in which perchlorate bioreduction was expected to occur with one or more of the electron donor amendments. Triplicate microcosm tests were performed for replication purposes and some statistical analysis, was to be conducted, if required (trends were readily evident and statistical analysis was not required).

Chloride was monitored in an attempt to determine via mass balance if it is the end product of perchlorate degradation. Chloride increases were non-observable above the background concentration (data not shown), likely because background chloride levels exceeded the perchlorate levels by more than two orders of magnitude. Thus a mass balance could not be performed.

Based on the white paper, nitrate was found to be a known competing electron acceptor to perchlorate, and was monitored to assess its impact. It was found that nitrate is either concomitantly reduced with perchlorate or it is preferentially reduced (i.e., nitrate is reduced before perchlorate). Another competing electron donor is dissolved oxygen (DO). DO (7 to 9 mg/L) was present in the column influent for these column studies; DO in the influent was not controlled. If DO is not present or is present at lower levels in the field, electron donor demand may be less than for the columns, and performance may thus be better.

For the column studies, it was not practical to run replicate columns. However, quality was promoted through use of established protocols and methods as prescribed by ASTM Test Method D 4874-95 [2], and through extensive experience of the University laboratory in conducting

studies of this nature. Influent samples were analyzed along with in-column and effluent samples to verify any observed perchlorate removal and changes in other parameters.

SUMMARY OF FINDINGS/CONCLUSIONS

In summary, initial soil and groundwater parameters were measured for samples from the biobarrier area to verify perchlorate levels, and provide initial characterization of samples. The perchlorate level was found to be consistent with prior measurements. Additional data suggested a somewhat oxidized environment in which perchlorate reduction is not likely to occur to a significant degree under native conditions, but would likely be amenable to biostimulation.

Biobarrier Microcosm Tests

Microcosm tests revealed that complete perchlorate reduction occurred with and without nutrient addition for all substrates within a timeframe ranging from 5 to 12 days. Nitrate was also reduced effectively, preceding perchlorate reduction. The effect of adding nutrients, at least in the short term, was minimal. In addition, mobilization of As, Mn, and Fe was not observed for either the EOS- or EHC-amended microcosms, but Mn and Fe were measured in the compost/mulch microcosms. This was attributable to the compost/mulch itself.

Biobarrier Column Tests

In Phase 1 column testing using EOS- and EHC-amended compost/mulch/gravel columns, perchlorate and nitrate reduction was found to be nearly complete within the first 12 inches (30 cm) of column length over a period of approximately 4 months, indicating the effectiveness of the treatments. Also, as was observed in the compost/mulch microcosms, the effluent from both of the compost/mulch/gravel columns contained concentrations of Fe and Mn that were slightly elevated over background. As with the microcosms, this likely originated largely from the compost/mulch. The Phase 2 column tests verified complete reduction of perchlorate under simulated field conditions using EOS- and EHC-amended microcosms without mulch, but failed to differentiate between substrates as had been hoped. Minimal solubilization of Fe and Mn was observed in these columns as well.

Summary of Major Conclusions

Major conclusions of the biobarrier laboratory tests are as follows:

- Compost/mulch, EOS, and EHC were shown in microcosm and column testing to be very effective in stimulating biological reduction of perchlorate in site aquifer material.
- The rates of reduction were similar, with complete reduction occurring in the microcosms within a timeframe of between 5 and 12 days.
- Despite concerted efforts using column testing to assess which substrate may be more effective, the kinetics of perchlorate reduction using EOS and EHC were essentially indistinguishable.
- Although not conclusive, the longevity of EHC may be less than that of the EOS at the concentrations tested. When the flow velocity was re-established at 0.5 ft /d, the length of

column required to achieve complete perchlorate removal was greater in the EHC-amended columns compared to the EOS-amended columns.

- Results generally indicated a minor propensity for solubilization of metals due to artificially-induced reducing conditions. However solubilization of Fe may be significant if EHC is used.

Thus, based on the laboratory study, both EOS and EHC are considered to be acceptable alternatives for field implementation in a biobarrier application, although EOS may be preferable in terms of longevity and appears to have less potential for solubilizing Fe than EHC (Fe is a component of EHC). As mentioned previously, EOS and EHC were not added based on equal electron donor equivalents, but rather were added based on the manufacturer's recommended loading rates. This is deemed appropriate for assessing likely performance from a practical perspective. The final decision would be made incorporating considerations based on field implementability from an engineering standpoint and material costs.

NET-EFFECTS OF TREATMENT ON GROUNDWATER QUALITY

In situ bioremediation (ISB) technologies are gaining wide acceptance as viable and economic remediation technologies for contaminated groundwater [5]. However, addition of amendments to the subsurface may cause changes in several groundwater quality parameters. In general, these changes are well-understood and are relatively short lived and/or localized. Conditions return to background following completion of the treatment action, or after the affected groundwater migrates a sufficient distance from the treatment zone. This study included various measurements to get a preliminary idea of what, if any, parameters may be of issue in this regard. The following discussion briefly describes the general impacts to groundwater quality which are expected to result from implementation of the proposed biobarrier.

Substrate Composition/Degradation

Input to the biobarrier system will most likely be EOS and possibly compost (see following section). EOS, which is widely used for in situ bioremediation applications, consists mainly of food-grade soybean oil and water, with minor amounts of additional food additives, emulsifiers, and preservatives. Compost, which is routinely applied as a soil conditioner for a number of applications consists mainly of partially-degraded plant material and various mineral constituents. Both of these amendments are degraded within the barrier area via natural microbial processes. Typically, degradation products will include less complex, more easily degradable organic metabolites (including organic acids), which are ultimately degraded to CO_2 and H_2O. Additionally, in the case of the compost, products will also include minor amounts mineral constituents such as potassium, phosphorous, and ammonium, and trace metals, and w2ill likely impart color and odor to the treated groundwater.

Electron Acceptor Reactions and Potential Geochemical Changes

The biodegradation process will consume available electron acceptors, beginning with depletion of oxygen and nitrate (the latter is converted to nitrogen gas; nitrite is an intermediate, but was found to be insignificant in the microcosm studies). Typically, perchlorate is then reduced,

yielding harmless chloride and water. In the area where the biobarrier will likely be installed (the southern property boundary), perchlorate concentrations are expected to be in the range of 500 µg/L, whereas native chloride levels are over two orders of magnitude higher, at approximately 185 mg/L. Thus, even if perchlorate reduction is complete (as expected), the contribution of chloride resulting would be trivial, and essentially could not be measured.

Further, Fe, Mn, and As (if present) can also be reduced to more soluble forms. However, this was assessed in the microcosm and column experiments as described above, and was determined to be negligible for EOS (iron solubilization was found to be significant in the EHC treatments). Finally, under strongly reducing conditions, reduction of sulfate can lead to production of sulfides, and methanogenic bacteria can produce methane, but if these were produced, only low concentrations are expected.

Other effects may include increases in alkalinity resulting from the carbon dioxide produced by microbial activity. However this is beneficial, and helps maintain groundwater pH because it buffers the groundwater system against organic acids generated during biodegradation. As noted above, pH was shown to be relatively stable in the microcosm and column tests, and is not expected to be an issue. Finally, the ORP level will be lowered in the treatment zone.

Expected Net Effects

In designing and maintaining a biobarrier it is acknowledged that some geochemical effects in groundwater will be observed beyond the barrier, and there is typically a buffer zone beyond the barrier where any such effects would be expected to attenuate. Based on the inputs and reactions discussed, and results presented above, is expected that some amount of easily-degradable TOC (and resulting color/odor if compost is used) will likely be present in the effluent groundwater.

No significant reaction byproducts of potential interest (except for Fe, if EHC is used) were identified as being potentially significant, and pH changes were minimal. The treated groundwater immediately downstream of the barrier is, however, expected to be highly reduced (anaerobic), and there may be minor amounts of sulfides and methane present. These constituents are easily oxidized and/or immobilized as the treated water migrates downgradient and mixes with ambient (aerobic) groundwater, and natural conditions are usually restored within a short distance of the barrier. Monitoring wells will be strategically located in the field application to ensure that this is the case.

IMPLICATIONS FOR FULL-SCALE DESIGN

The completed biobarrier bench-scale tests – the column tests in particular – indicate that this technology appears to be a feasible technology to implement in the field. Even though it was difficult to distinguish between the kinetics of the EOS and the EHC substrates, there were minor experimental observations and suggestions that the longevity of EHC may be less than that of the EOS at the concentrations tested. Furthermore, the Fe content of the EHC and the effluent dissolved concentrations measured in this study for this metal could be problematic in field applications, both from a regulatory standpoint as well as a matrix clogging issue. Given the

likely requirement for long-term operations of these types of biobarriers and cost factors associated with these two substrates, EOS may be preferable for field applications. However, even though the column study indicated limited use of the compost and more dependence on the EOS, field applications may be better served using a blend of compost and EOS, particularly in the case of a trench-like biobarrier as opposed to a series of substrate injection wells. The compost not only serves as a long-term carbon and nutrient source, but also a mechanism via which the EOS can be mixed with and adsorbed onto for initial biobarrier construction. Repeated injection of EOS into the compost/gravel barrier might also be easier than into soil.

The observation of metals, predominantly Fe and Mn in the effluent at higher levels than background levels indicates the creation of geochemical conditions that could lead to transient increases in the field. However, because background geochemical conditions are more aerobic (Refer to Table 4), these transient increases (if observed in the field) are expected to return to background levels over time.

The larger implication of this observation is the role it will have on the physical location of the boundary biobarrier at the site. Given that the reducing influence of the biobarrier substrate could transmit downgradient of the barrier itself, it is recommended that it be located upgradient of the actual property boundary, at a distance to be determined based on several factors - including the need to immobilize any metals that may have gone into solution under reducing conditions. Therefore, the biobarrier should be located at a sufficient distance upgradient of the boundary at which groundwater metal concentrations would return to background levels as it encounters more aerobic conditions and the effects of the carbon substrate diminishes. In practice, the “safe” location of the biobarrier will also ensure that there is sufficient downgradient flexibility for the construction of effectiveness and verification monitoring wells.

Varying and increasing the approach velocity in the column studies pointed to an upper limit at which perchlorate breakthrough would ultimately be an issue. However, the selected lower approach velocity of 0.5 ft/day at which the column tests began, perchlorate breakthrough was not observed through the entire length of the column. The approach velocity of 0.5 ft/day itself is expected to be at the higher end of what may be expected at the Site. Doubling the approach velocity also did not result in breakthrough of perchlorate in the column tests. These observations broadly indicate that a finite practical thickness of a field biobarrier of 24 inches would provide sufficient residence time to prevent perchlorate breakthrough, as long as carbon substrate is available. In addition, none of the studies indicated the need for micronutrients. If the selected blend of substrate in the field consists of vegetable oil (or its emulsified form) and compost, the latter should provide any unanticipated nutrient demand from microorganisms.

The actual longevity of the selected substrates in the field and the direct and indirect measures of perchlorate breakthrough in the field will have to be ascertained with monitoring wells. The bench-scale study was not designed to provide information on longevity and did not provide any indications, whereby, longevity could be estimated or extrapolated. However, most biobarriers do experience a shortage of carbon substrate over time, and therefore need replenishment, which

can be performed via engineered mechanisms. This and other details of field implementation will be outlined in the design work plan for the boundary biobarrier.

REFERENCES

[1] Standard Methods for the Examination of Water and Wastewater, 21st ed., American Public Health Association, Water Environment Federation, and American Water Works Association, 2005.

[2] ASTM D4874-95, Standard Test Method for Leaching Solid Waste in a Column Apparatus, Annual Book of ASTM Standards, vol. 11.04, ASTM D-4874-95 (reapproved 2001), American Society for Testing and Materials, 2003.

[3] ASTM D4327-03 Standard Test Method for Anions in Water by Chemically Suppressed Ion Chromatography, Annual Book of ASTM Standards, vol. 11.01, American Society for Testing and Materials, 2003.

[4] ASTM D4658-03 Standard Test Method for Sulfide Ion in Water, Annual Book of ASTM Standards, vol. 11.01, American Society for Testing and Materials, 2003.

[5] A Systematic Approach to *In Situ* Bioremediation in Groundwater. Interstate Technology and Regulatory Council (ITRC) In Situ Bioremediation Team. Found at http://www.itrcweb.org/Documents/ISB-8.pdf, 2002.

FIGURES

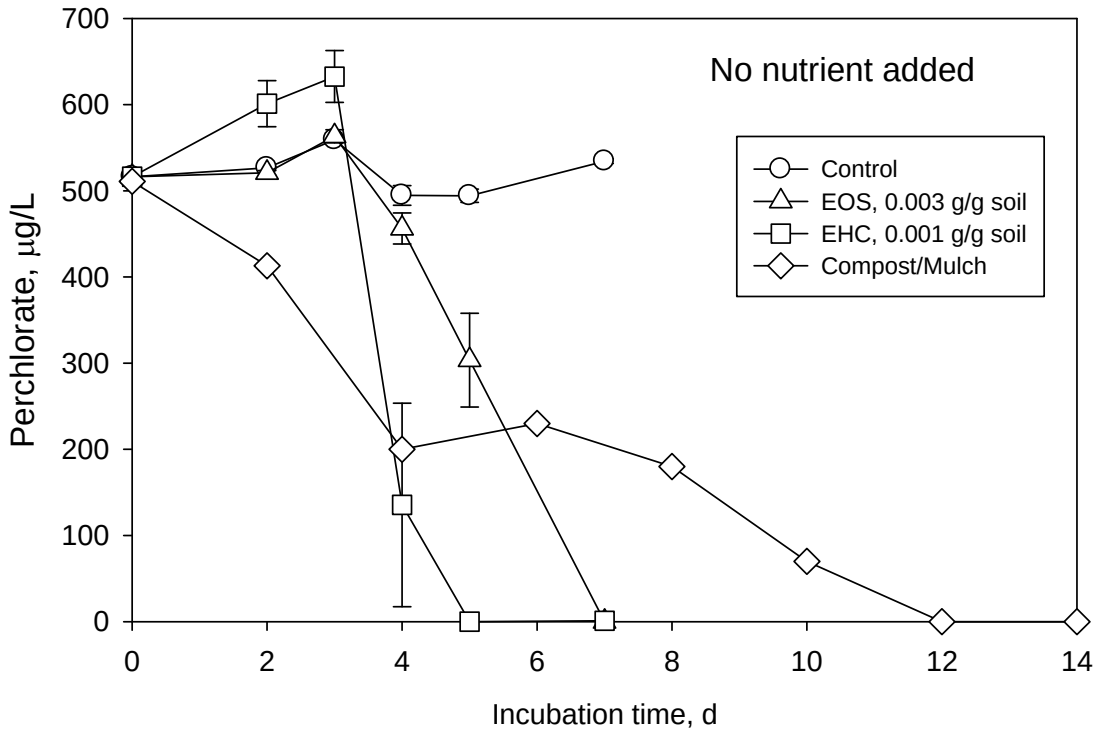


Figure 1. Perchlorate Reduction in Biobarrier Microcosms with No Nutrient Added

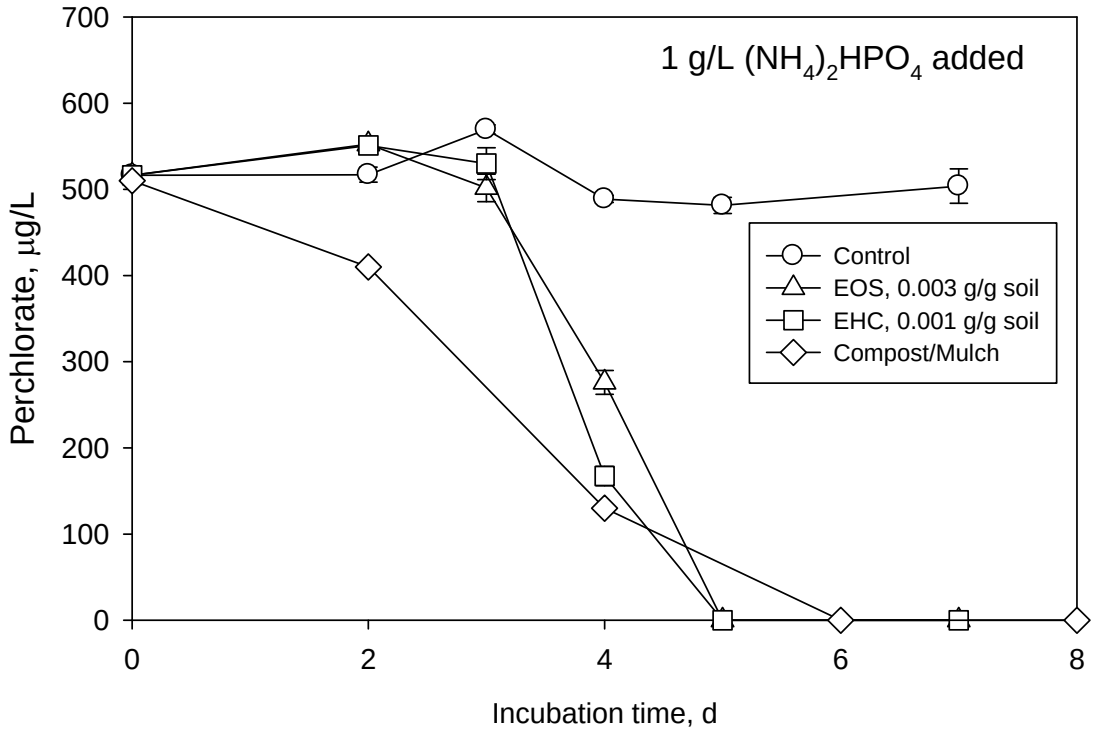


Figure 2. Perchlorate Reduction in Biobarrier Microcosms with 1 g/L $(NH_4)_2HPO_4$ Added

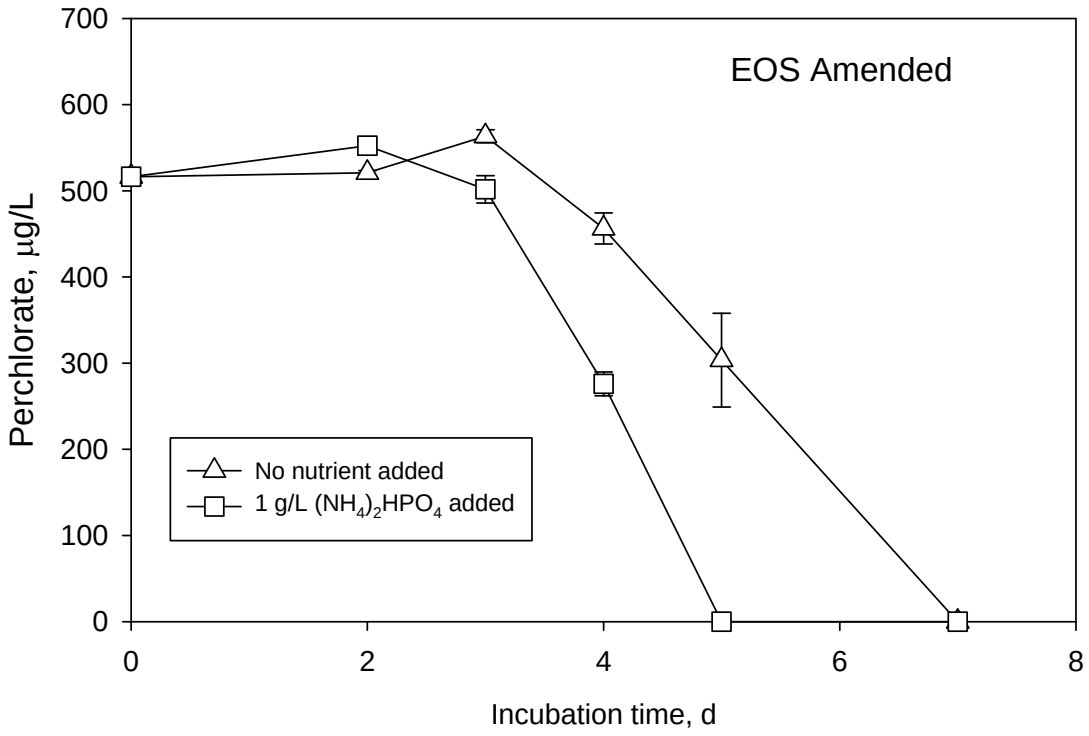


Figure 3. Perchlorate Reduction in EOS Amended Biobarrier Microcosms

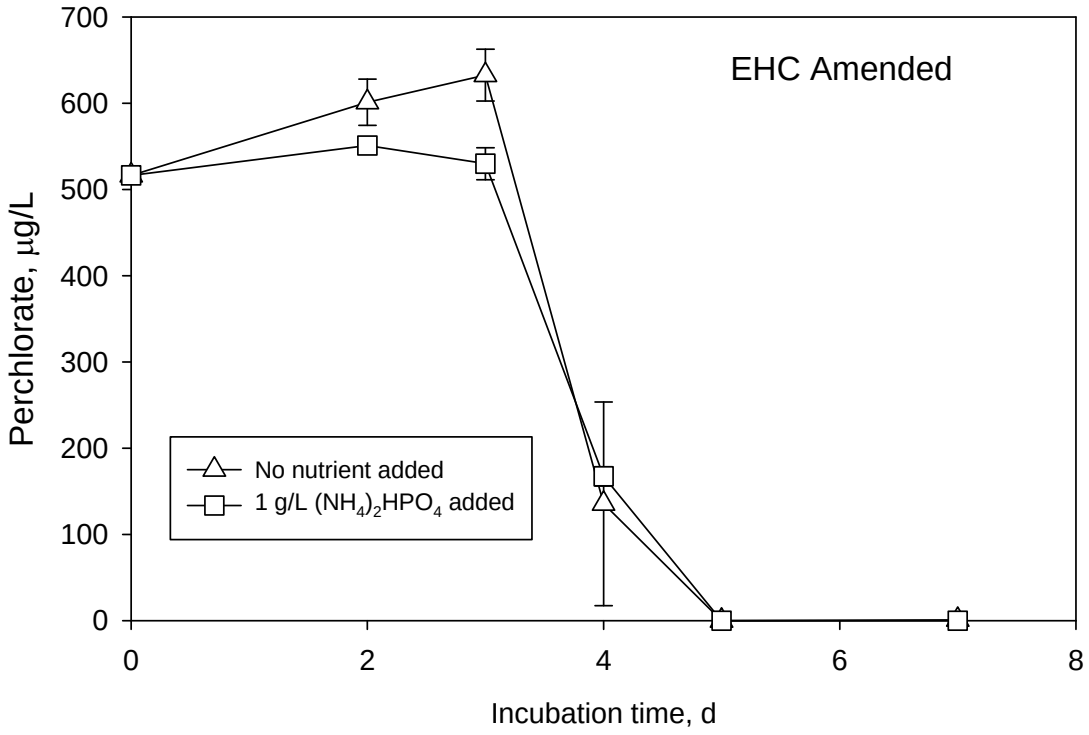


Figure 4. Perchlorate Reduction in EHC Amended Biobarrier Microcosms

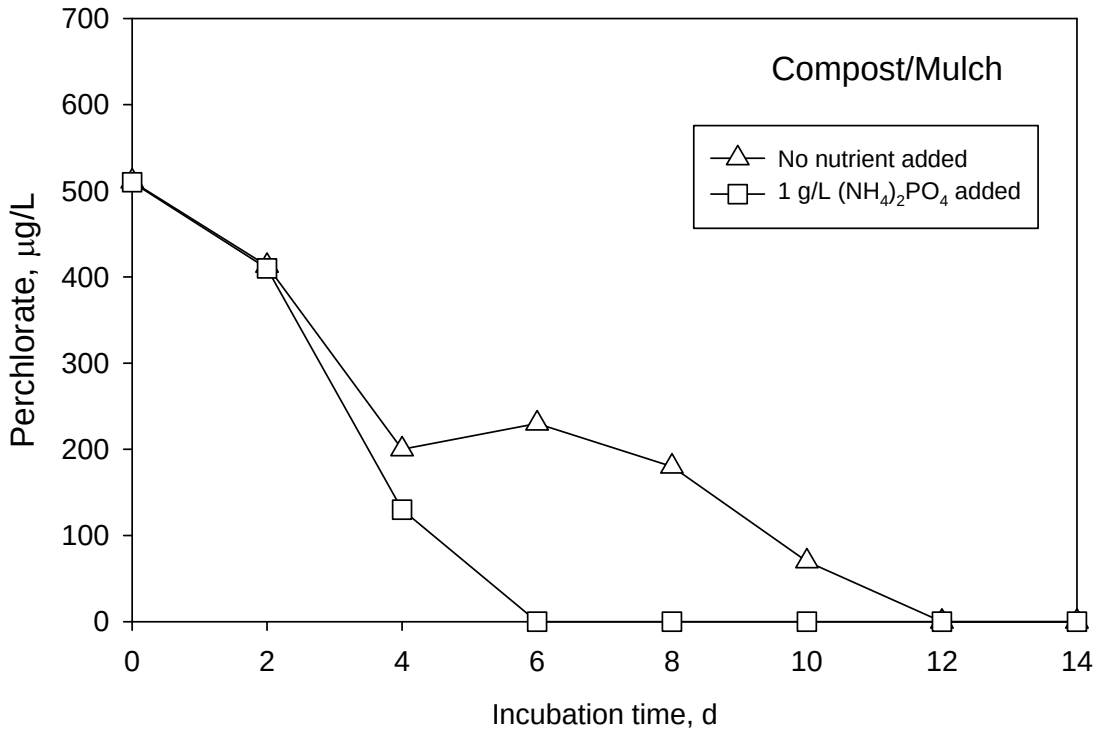


Figure 5. Perchlorate Reduction in Compost/Mulch Biobarrier Microcosms

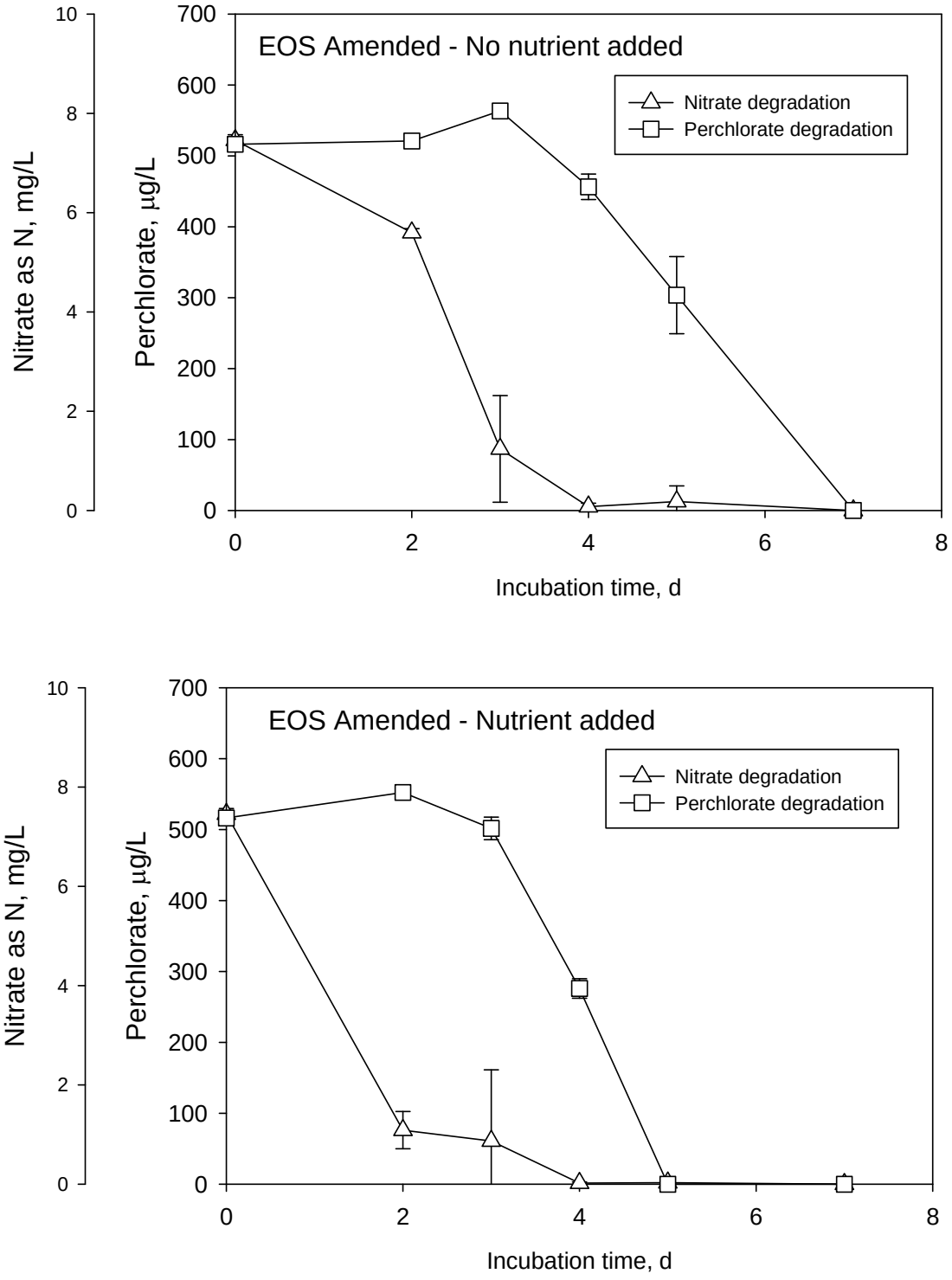
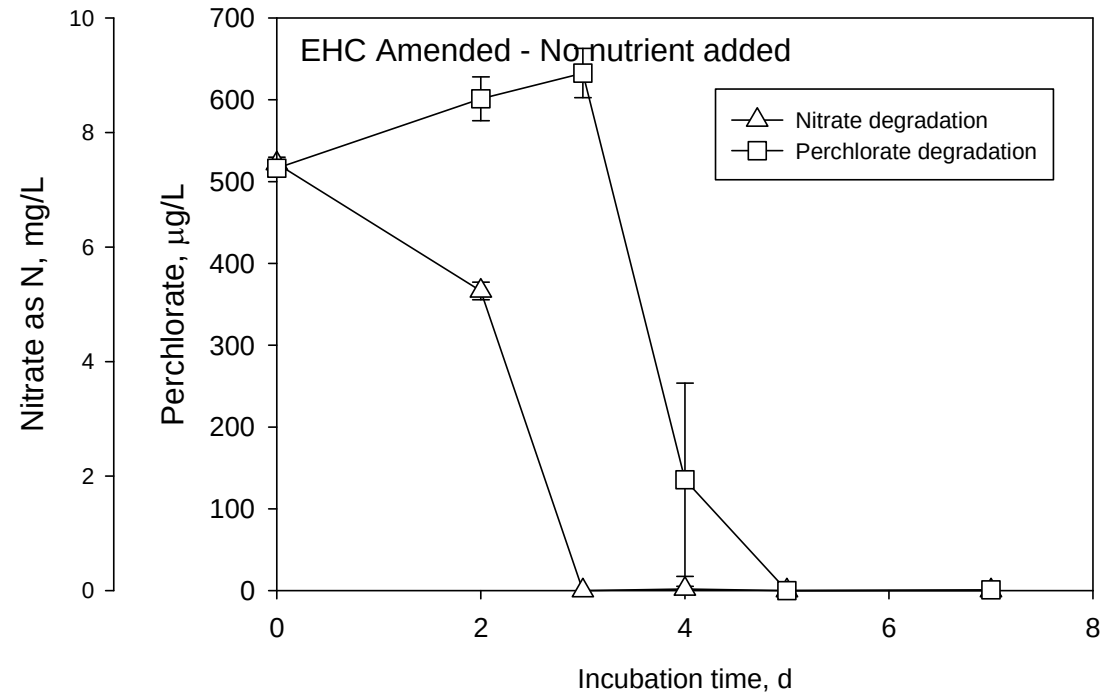


Figure 6. Nitrate and Perchlorate Reduction in EOS Amended Biobarrier Microcosms



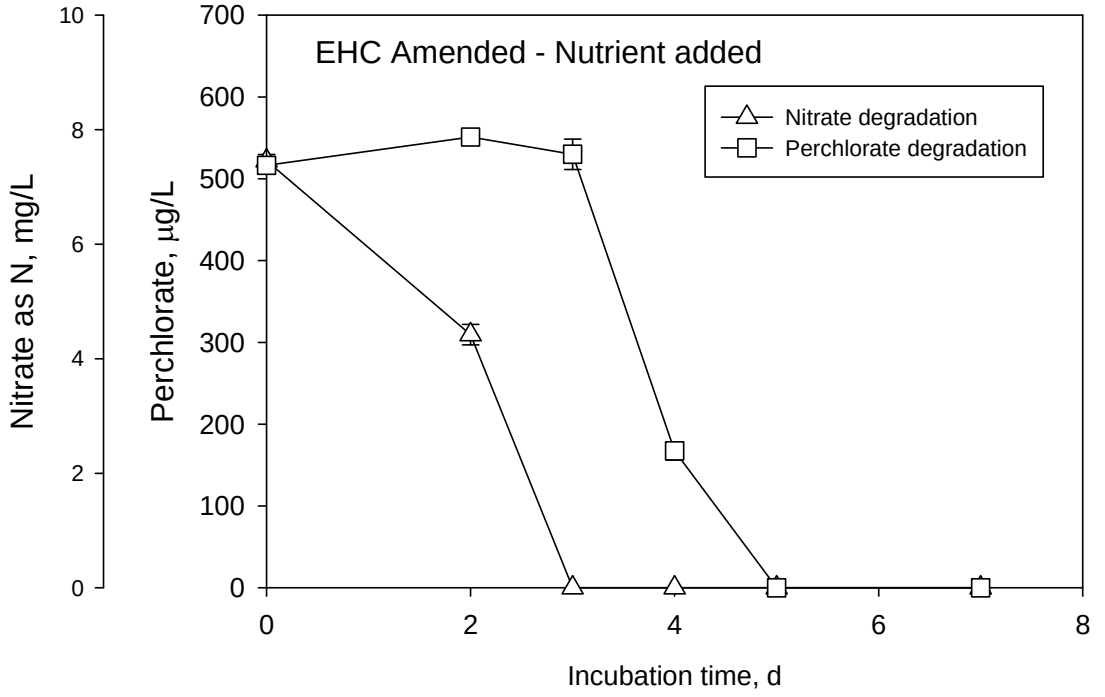


Figure 7. Nitrate and Perchlorate Reduction in EHC Amended Biobarrier Microcosms

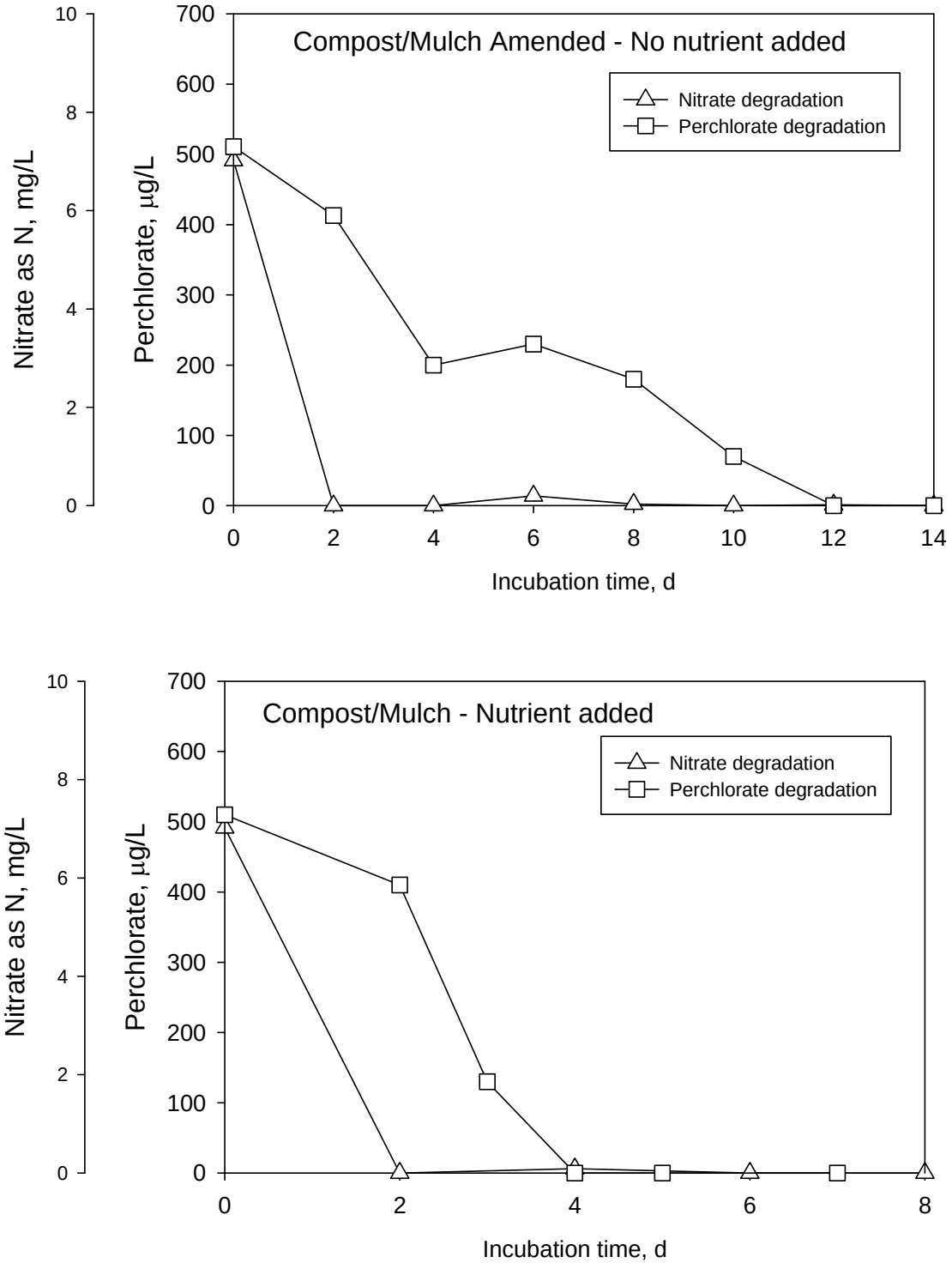


Figure 8. Nitrate and Perchlorate Reduction in Compost/Mulch Biobarrier Microcosms

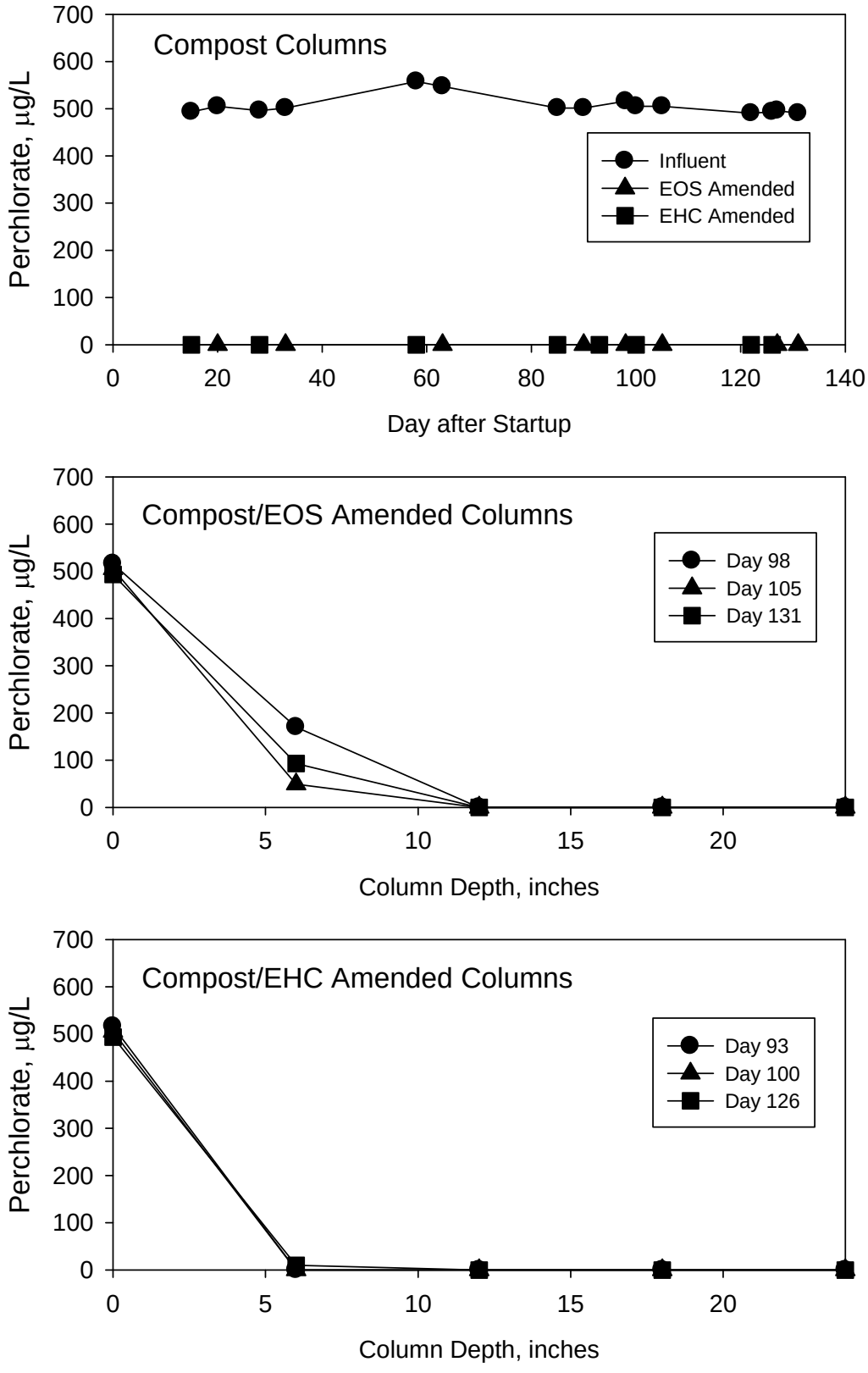


Figure 9. Perchlorate Reduction in Phase 1 Compost/Mulch/Gravel Biobarrier Columns

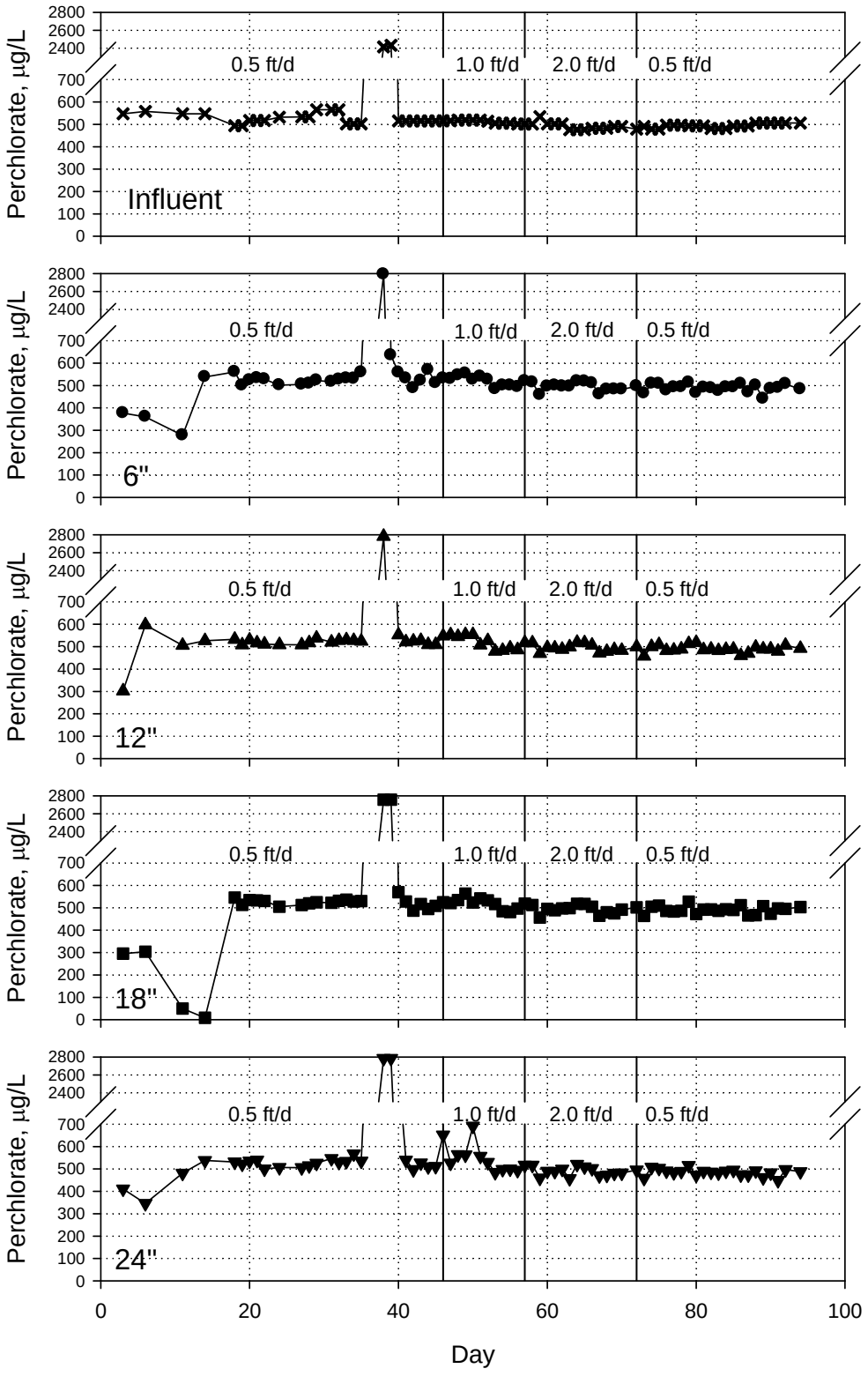


Figure 10. Perchlorate Reduction in Phase 2 Control Biobarrier Columns

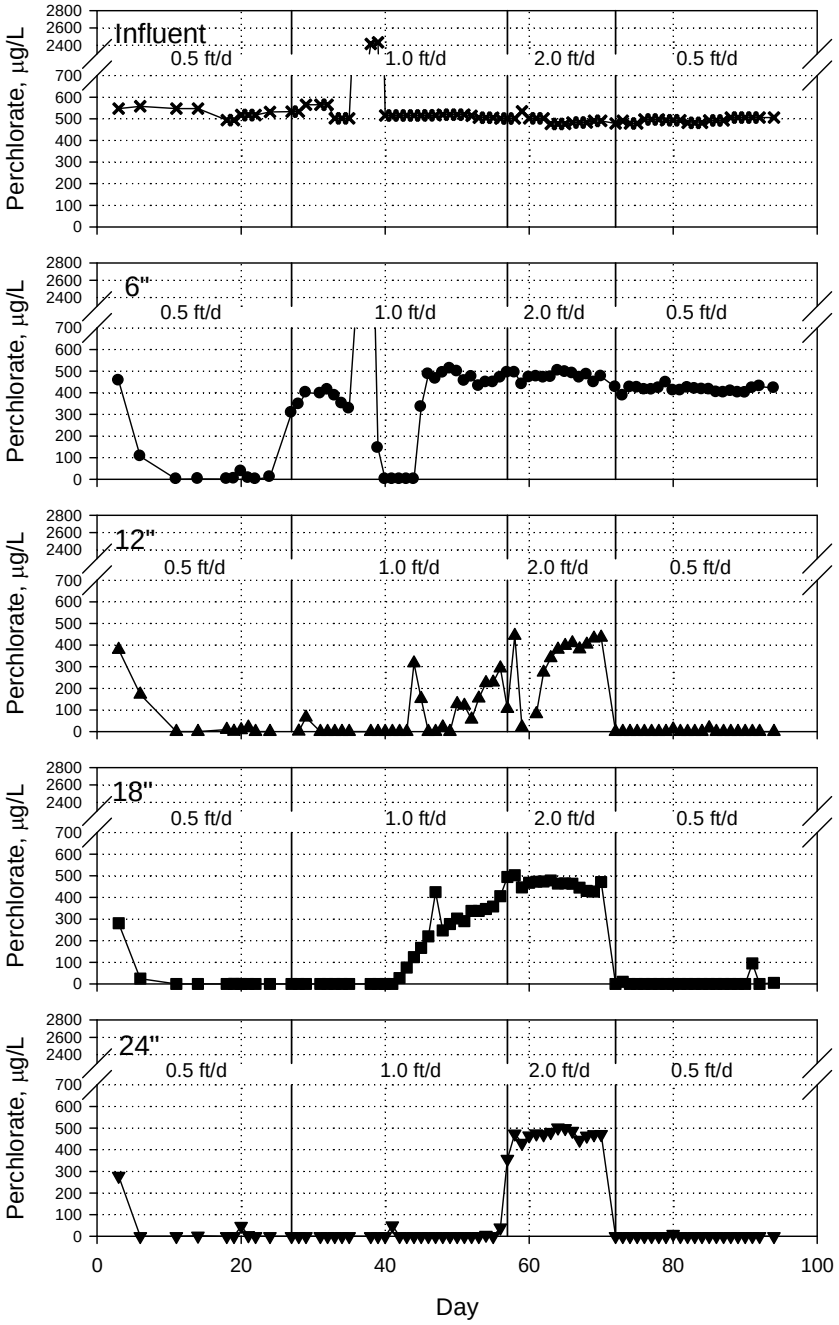


Figure 11. Perchlorate Reduction in Phase 2 EOS Amended Soil Biobarrier Columns

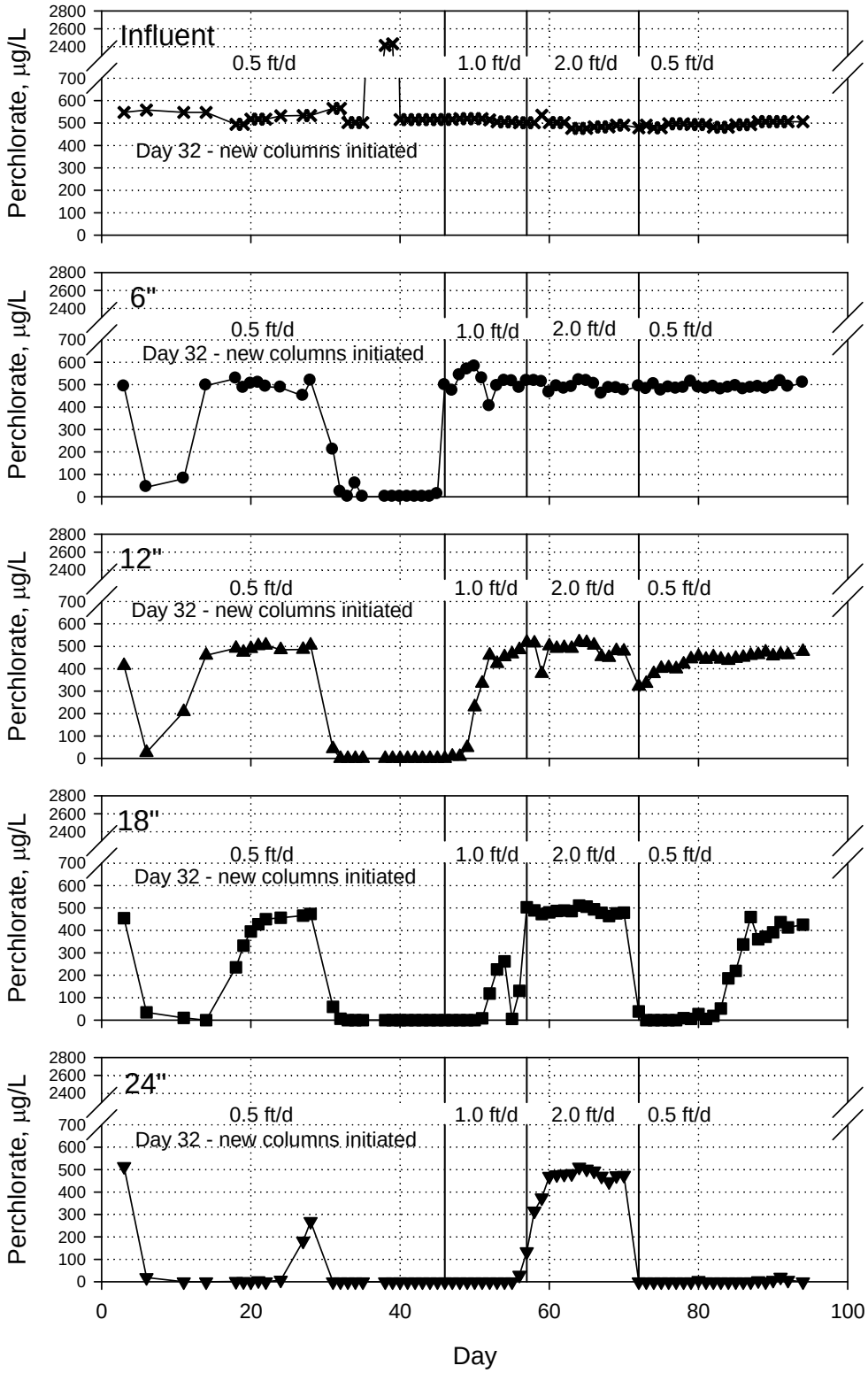


Figure 12. Perchlorate Reduction in Phase 2 EHC Amended Soil Biobarrier Columns

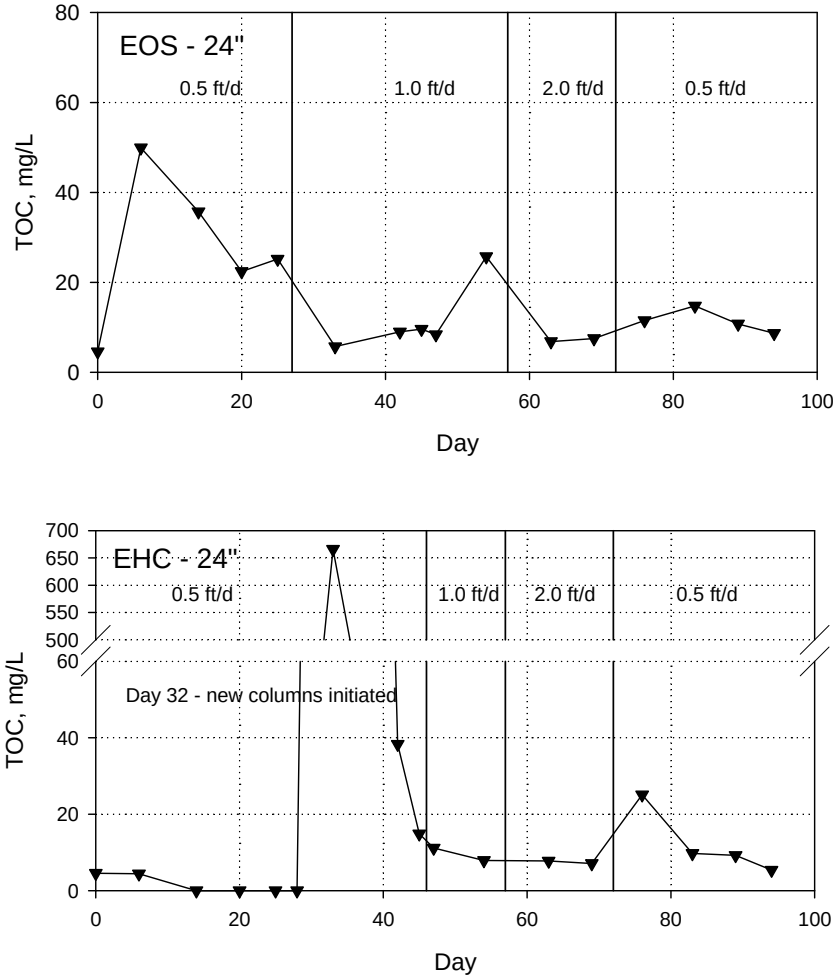
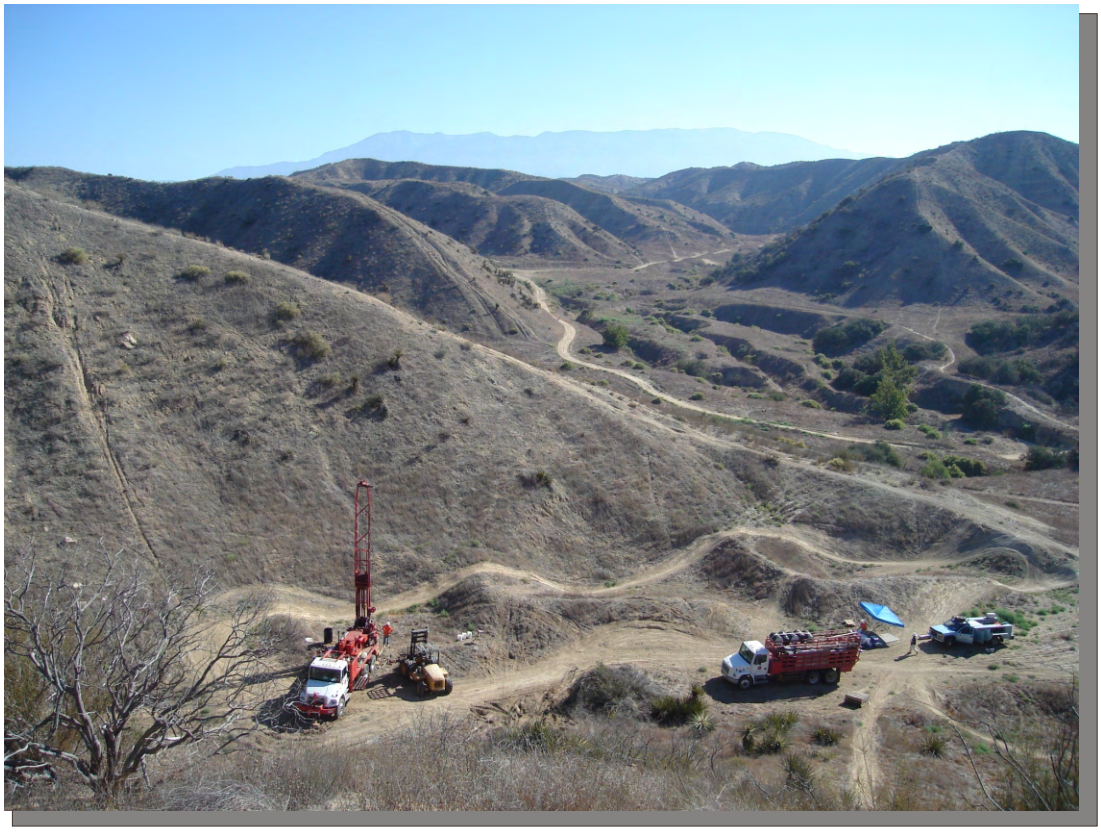


Figure 13. Effluent TOC (24" Columns) in Phase 2 EOS and EHC Amended Soil Biobarrier Columns.

ATTACHMENT 1

SITE INVESTIGATION REPORT FOR SOIL AND GROUNDWATER INVESTIGATIONS FOR EVALUATION OF BIOREMEDIATION AT THE PRIMARY SOURCE AREA AND SOUTHERN PROPERTY BOUNDARY, LOCKHEED MARTIN BEAUMONT SITE 2

Technical Memo For Laboratory Microcosm And Column Studies To Investigate Biobarrier Applications For Treatment Of Perchlorate-impacted Groundwater



Lockheed Martin Corporation, Beaumont Site 2
Beaumont, California

Prepared for:

LOCKHEED MARTIN

TETRA TECH

348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408

TC# 22289-0202 / November 2008

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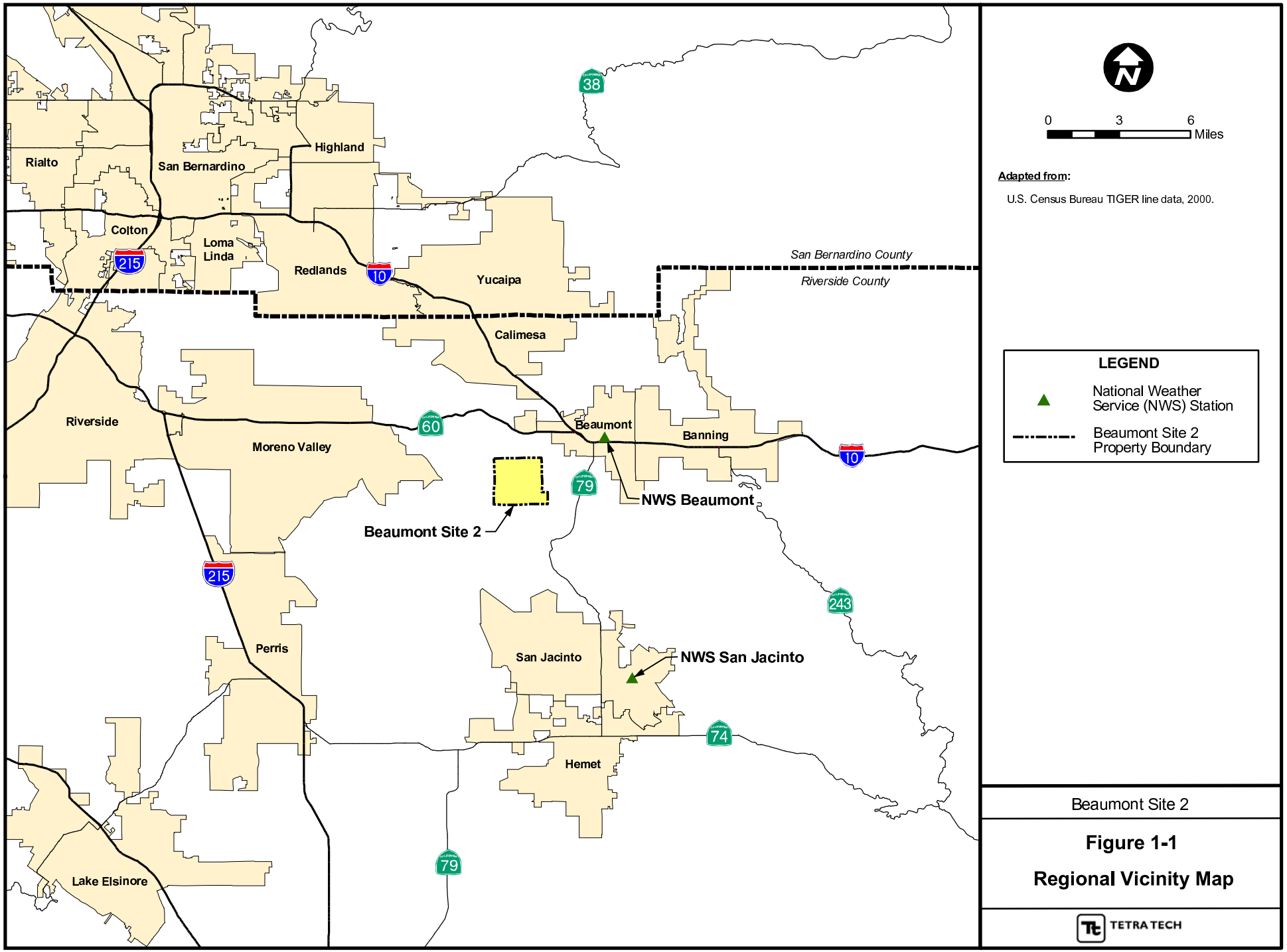
1.0 INTRODUCTION

Tetra Tech has prepared this subject report on behalf of Lockheed Martin Corporation (LMC) to document the collection of soil and groundwater for treatability studies to be conducted by the University of California at Riverside (UCR). The soil and groundwater were collected in two locations at LMC's former Beaumont Site 2, herein referred to as the Site (Figure 1-1). The soil and groundwater investigations were conducted at the southern property boundary, located south of the former homestead and the four known Operational Areas, J, K, L, and M (Figure 1-2) and the primary source area near the former test bay #3 in Operational Area K (Figure 1-3). The investigations were conducted in accordance with the *Work Plan For Laboratory Microcosm Studies To Investigate Applications For Treatment Of Perchlorate-Impacted Groundwater And Soils, Lockheed Martin Corporation, Beaumont Site 2* (Microcosm Work Plan), which provides an overview of the experimental procedures used to test potentially applicable amendments for effectiveness in stimulating biological reduction of perchlorate (Tetra Tech, January 2008). Drilling and soil sampling was performed in accordance with the approved *Groundwater Monitoring Well Installation Work Plan* (Work Plan) (Tetra Tech, May 2006), and groundwater sampling activities were conducted in accordance with the *Groundwater Sampling and Analysis Plan* (SAP) (Tetra Tech, May 2007).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38
Highland
Rialto
San Bernardino
Colton
Loma Linda
215
Redlands
10
Yucaipa
San Bernardino County
Riverside County
Calimesa
Riverside
60
Moreno Valley
Beaumont
Banning
10
79
NWS Beaumont
Beaumont Site 2
215
243
Perris
San Jacinto
NWS San Jacinto
74
Hemet
79
Lake Elsinore
0
3
6
Miles
Adapted from:
U.S. Census Bureau TIGER line data, 2000.
LEGEND
National Weather Service (NWS) Station
Beaumont Site 2 Property Boundary
Beaumont Site 2
Figure 1-1
Regional Vicinity Map
TETRA TECH

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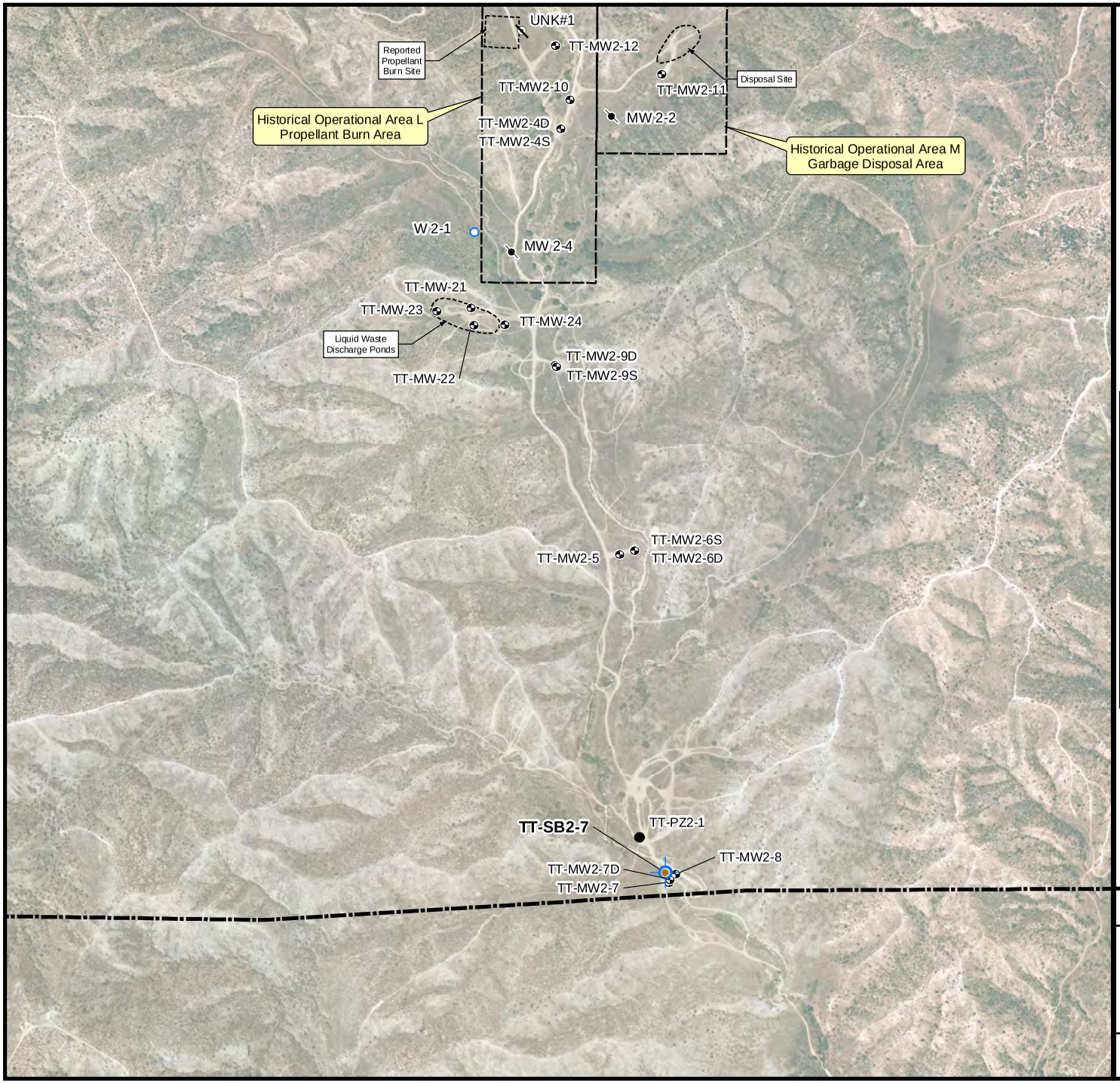

N

0 400 800 Feet

Adapted from: March 2007 aerial photograph.

LEGEND

- Soil and Groundwater Sampling Location
- Groundwater Monitoring Well Location
- Piezometer Well Location
- Destroyed Production Well Location
- Destroyed Monitoring Well Location
- Reported Production Well Location
- Historical Operational Unit Boundary
- Beaumont Site 2 Property Boundary

Beaumont Site 2

Figure 1-2

Site 2 Southern Property Boundary - Soil and Groundwater Sampling Locations

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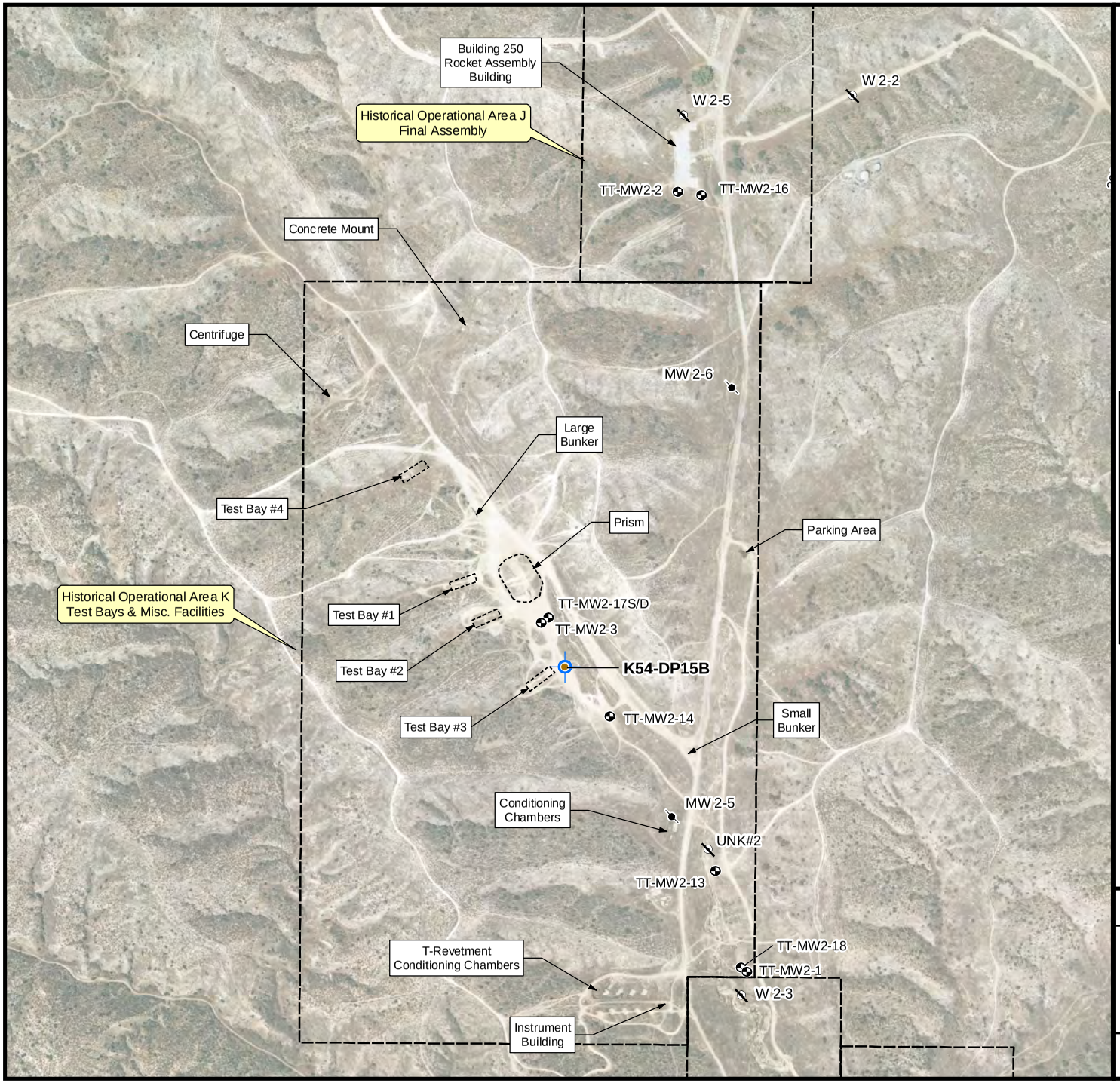


0 300 600 Feet

Adapted from: March 2007 aerial photograph.

LEGEND

- Soil and Groundwater Sampling Location
- Groundwater Monitoring Well Location
- Destroyed Production Well Location
- Destroyed Monitoring Well Location
- Historical Operational Unit Boundary
- Beaumont Site 2 Property Boundary

Beaumont Site 2

Figure 1-3
Site 2 Primary Source Area Soil and Groundwater Sampling Locations

TETRA TECH

2.0 POTENTIAL BIOBARRIER AREA

Southern Property Boundary – On 17-18 April 2008, soil and groundwater samples were collected near the southern property boundary and well TT-MW2-7 and -7D (Figure 1-2), using the hollow-stem auger (HSA) drilling technique with 8-inch augers and a split-spoon sampler. The boring, identified as TT-SB2-7, was advanced to a total depth of 32 feet bgs. Copies of the soil boring logs generated during field activities can be found in Appendix A.

The initial boring was continuously cored using the spilt spoon sampler and tested for lithology following the Unified Soil Classification System (USCS) and geotechnical parameters. A step-out boring was sampled for analytical testing and collection of soil for the microcosm and column studies. Soil samples were collected from the aquifer for testing and for submission to UCR. After each sample was collected, the sampling equipment was decontaminated. Decontamination consisted of a phosphate-free Liquinox® detergent wash and two potable water rinses.

Because of the amount of soil needed for the microcosm and column studies, samples for UCR were collected directly from the cuttings after the augers had reached the desired interval and placed in cleaned, 5-gallon buckets. A total of 125 gallons of groundwater were collected from nearby well TT-MW2-7 and delivered to UCR the same day with the soil collected (approximately 30 gallons) for the microcosm and column studies.

3.0 PRIMARY SOURCE AREA

Test Bay #3 – On 05 and 07 May 2008, soil and groundwater samples were collected at one location near Test Bay #3 and previous boring K54-DP15 (Figure 1-3). The soil samples were collected using the HSA drilling technique. The highest results of perchlorate in Area K had been previously detected at 4,510 micrograms per kilogram (µg/kg) in boring K54-DP15 at 20 feet bgs. The boring, identified as K54-DP15B, was advanced near the original boring to a total depth of 80 feet bgs on the northwest corner of the concrete pad located in front of the former Test Bay #3. Copies of the soil boring logs generated during field activities can be found in Appendix A.

Samples were collected every 5 feet until about 70 feet bgs using the spilt spoon sampler and tested for lithology following the USCS and off-site laboratory analyses of perchlorate (314.0) to support the treatability study and to be used for further characterization of Area K. After each sample was collected the sampling equipment was decontaminated. One groundwater grab sample was collected from the open borehole via disposable bailer and tested for perchlorate and volatile organic compounds (VOCs, SW8260B)

as a screening tool for groundwater characterization in Area K. Soil samples for UCR were collected directly from the cuttings after the augers had reached the desired interval in both the vadose zone and in the aquifer. A total of 15 gallons of groundwater were also collected from nearby well TT-MW2-17S and delivered to UCR the same day with the soil collected at K54-DP15B (approximately 15 gallons) for the microcosm and column studies.

Laboratory Testing

Soil samples were placed into glass jars with Teflon lined lids and cleaned 5-gallon buckets, and groundwater samples were collected from nearby wells for off-site analytical testing and for the microcosm and column studies. The buckets were delivered to UCR for the microcosm and column studies. The analytical samples were placed in chilled coolers, sealed, and shipped via courier to EMAX Laboratory (EMAX) and Test America, both State of California-certified laboratories. Samples were subcontracted to BioInsights, located in Murphysboro, IL, for analysis biochemical parameters in order to determine the presence and quantity of perchlorate-reducing bacteria. In addition, samples at representative depths were collected in steel sleeves and sent to Environmental Geotechnology Laboratory (EGL) for testing of geotechnical parameters. The field, laboratory, and pilot testing analyses and methods are summarized on Table 1.

Samples for analytical testing were collected in the appropriate containers in accordance with the Work Plan (Tetra Tech, 2006), SAP (Tetra Tech, 2007), and Microcosm Work Plan (Tetra Tech, 2008). Field quality control (QC) samples consisted of trip blanks (TBs) and field duplicates. Copies of Chain-of-Custody (CoC) forms and field sampling sheets are provided in Appendix B.

Data Quality Review

The results from batch QC samples were evaluated in accordance with EPA standards. These QC samples consisted of method blanks, laboratory control samples, continuing calibration verification samples, and MS/MSD samples. Holding times, sample preservation methods, field duplicates, and field blanks were also evaluated. The data review showed all samples were compliant with all QC control limit criteria. Field duplicates were used to monitor unbiased laboratory precision. Relative percent difference (RPD), the measure of duplicate precision, is calculated for results at or above the practical quantitation limit (PQL). A total of two field duplicates were collected and analyzed. Field duplicates reported with RPDs less than 40% met acceptance criteria , and precision was within the control limits for this data set. One sample (SB15B-60') and its duplicate were calculated with an RPD of greater than 40% and thus, qualified as estimated (flagged with a "J"). In conclusion, the analytical results and data collected for this

investigation can be used for their intended purpose. All data not qualified are of known precision and accuracy. All "B" qualified results are considered not to have originated from the environmental samples, as cross-contamination is suspected. All "J" qualified results indicate that the analyte was positively detected and the data are usable as estimated concentrations.

Results of Investigation

Lithologies encountered in the HSA borings consisted of sands and silts with little gravel and minor amounts of and clays present in thin lenses or nodules. There were no clay layers continuous throughout the area of investigation, but there was a notably thick layer sequence (approximately 15 feet thick) of clayey sand and sandy clay in boring K54-DP15B from approximately 65 feet bgs to total depth. Completely weathered (non-cemented) siltstone and silty sandstones of the San Timoteo formation were encountered in the southern property boundary boring (TT-SB2-7) at approximately 15 feet bgs, followed by lithified, highly weathered San Timoteo Formation (wSTF) at approximately 25.5 feet bgs. In boring K54-DP15B, located near Test Bay #3, the top of the wSTF was encountered at approximately 10.5 feet bgs. Neither boring was advanced deep enough to encounter competent bedrock.

A summary of the sampling results from the field activities is included in Tables 2 through 5. Note that only the analytes positively detected are shown. A complete list of analytes tested for is included in the laboratory data package in Appendix C.

Table 1
Biobarrier and Source Area Sampling Methodology
Beamont Site 2

Soil		Groundwater	
Geotechnical Parameters:	**Method:**	**Field Parameters:**	**Method:**
Sieve & Hydrometer Analysis/USCS Soil Classification	ASTM D422	EC	Field Instrument
Total Porosity & Triaxial Permeability	ASTM D5084	pH	Field Instrument
Dry Density	ASTM D2937	DO	Field Instrument
Moisture Content	ASTM D2216	ORP	Field Instrument
Specific Gravity	ASTM D854	Turbidity	Field Instrument
Inorganic and Organic Analytes:		**Inorganic and Organic Analytes:**	
Arsenic	EPA Method 6010B	Fe, Mn, As	EPA Method 6010B
Iron	EPA Method 6010B	Cations (Ca, Mg, Na, K)	EPA Method 6010B
Manganese	EPA Method 6010B	Total P	EPA Method 365.2
Total P	EPA Method 365.2	Orthophosphate (as Soluble P)	EPA Method 365.2
Perchlorate	EPA Method 314.0 Modified	Perchlorate	EPA Method 314.0
Sulfate	EPA Method 300.0	Anions (Cl, SO_4, NO_3 as N)	EPA Method 300.0
pH	EPA Method 9045C	Total Dissolved Solids	EPA Method 160.1
Total Sulfide	EPA Method 376.1	Ammonia as N	EPA Method 350.2
Total Organic Carbon	EPA Method 415.1	Total Organic Carbon	EPA Method 415.1
Total Kjeldal Nitrogen	EPA Method 351.3	Total Kjeldal Nitrogen	EPA Method 351.3
Cation Exchange Capacity	EPA Method 9081	Alkalinity (as $CaCO_3$)	EPA Method 2320B
Presence of Chlorite Dismutase Gene	Proprietary	Total S	EPA Method 6010B
MPN Quantification of Perchlorate-Reducing Bacteria	SM 9221 C	Volatile Organic Compounds	EPA Method SW8260B
Bulk Soil for Microcosm and Column Studies		**Groundwater for Microcosm and Column Studies**	
Pilot Test:	**Amount:**	**Pilot Test:**	**Amount:**
Biobarrier Microcosms	15 gallons	Biobarrier Microcosms	15 gallons
Biobarrier Columns	15 gallons	Biobarrier Columns	115 gallons
Source Area Microcosms	15 gallons	Source Area Microcosms	15 gallons
Vadose Zone Microcosms	15 gallons	Vadose Zone Microcosms	N/A

Notes:
ASTM - American Society for Testing and Materials
DO - dissolved oxygen
EC - electrical conductivity
EPA - United States Environemtnal Protection Agency
N/A - Not applicable
ORP - oxidation/reduction potential
SM - Standard Methods

Table 2
Summary of Soil Geotechnical Sampling Results
Beaumont Site 2

		Geotechnical Results						
Sample ID: Location and Depth	**Sample Date**	**Soil Type (USCS)**	**Moisture Content (%)**	**Dry Density (pcf)**	**Specific Gravity**	**Total Porosity (%)**	**Effective Confined Pressure (psi)**	**Saturated Hydraulic Conductivity (cm/sec**
Biobarrier Soil:								
SB2-7-15-16.5'	4/17/2008	SM	12.4	121.4	2.677	27.32	9.9	6.2E-06
SB2-7-29.5-30.5'	4/17/2008	SM	9.0	115.3	2.681	31.08	17.5	2.5E-05
Source Area Soil:								
15B-20-21'	5/5/2008	ML	9.6	107.0	2.749	37.62	11.1	1.9E-05
15B-70-71'	5/5/2008	CL	16.9	113.0	2.761	34.41	43.1	1.5E-07

Notes:
% - percent
CL - Lean Clay
cm/sec - centimeters per second
ML - Silt
pcf - pound per cubic foot
psi - pounds per square inch
SM - Silty Sand
USCS - Unified Soil Classification System

Table 3
Summary of Soil Organic and Inorganic Laboratory Results
Beaumont Site 2

	Soil Results (mg/kg unless otherwise noted)											
Sample ID: Location and Depth	**Cation Exschange Capacity (meq/kg)**	**Arsenic**	**Iron**	**Manganese**	**Perchlorate (µg/kg)**	**pH (unitless)**	**Ortho-Phosphate (Soluble P)**	**Total Phosphorus**	**Total Sulfide**	**Sulfate**	**Total Kjeldahl Nitrogen (TKN)**	**Total Organic Carbon (TOC)**
MDL	10	4.27-4.63	5.34-5.79	0.214-0.232	10.6-1,160	NA	0.214-0.232	0.214-0.232	4.00-4.63	2.67-2.90	2.56-5.19	5.34-10.7
Biobarrier:												
SB2-7-15'	210	< 4.29	13,900	231	26.4	9.00 Je	< 0.214	0.278 Jq	< 4.00	40.6	48.6	< 10.7
SB2-7-15-DUP	180	< 4.29	14,600	240	14.2 Jq	8.98 Je	< 0.215	1.48	< 4.00	32.1	43.7	11.8 Jq
Source Area:												
15B-5'	--	--	--	--	<10.6	--	--	--	--	--	--	--
15B-10'	--	--	--	--	<10.6	--	--	--	--	--	--	--
15B-15'	--	--	--	--	<10.5	--	--	--	--	--	--	--
15B-20'	160	< 4.27	20,700	369	<10.7	9.30 Je	0.395 Jq	1.02 Jq	16.0	5.28 Jq	17.6 Ba	102
15B-25'	--	--	--	--	<10.5	--	--	--	--	--	--	--
15B-30'	--	--	--	--	<10.4	--	--	--	--	--	--	--
15B-35'	--	--	--	--	<10.6	--	--	--	--	--	--	--
15B-40'	--	--	--	--	<10.7	--	--	--	--	--	--	--
15B-45'	--	--	--	--	62.9	--	--	--	--	--	--	--
15B-50'	--	--	--	--	73.7	--	--	--	--	--	--	--
15B-55'	--	--	--	--	78.6	--	--	--	--	--	--	--
15B-60'	--	--	--	--	15,700 Jf	--	--	--	--	--	--	--
15B-60'-DUP	--	--	--	--	9,660 Jf	--	--	--	--	--	--	--
15B-70'	120	< 4.63	22,300	417	18,000	8.78	< 0.232	0.869 Jq	20.0	18.7	8.37 Ba	28.1

Notes:

-- - Not analyzed
µg/kg - micrograms per kilogram
meq/kg -
mg/kg - milligrams per kilogram
MDL - Method Detection Limit (Note that MDL varies depending on a variety of factors including amount of soil used, dilution factor, etc.)
NA - Not applicable
B - The sample result is less than 5 times (10 times for common organic laboratory contaminants) the amount of blank contamination. The result is considered not to have originated from the environmental sample, because cross-contamination is suspected.
J - The analyte was positively identified and the result is usable; however, the analyte concentration is an estimated value
a - The analyte was found in the method blank
e - A holding time violation occurred
f - The duplicate/replicate sample's relative percent difference was outside of control limits
q - The analyte detection was below the practical quantitation limit.

Table 4
Summary of Soil Biochemical Results
Beaumont Site 2

		Biochemical Results		
Sample ID: Location and Depth	**Sample Date**	**Presence of Chlorite Dismutase Gene**	**Quantification (cells/g)**	**Polymerase Chain Reaction (PCR) Identificatio**
	MDL	NA	2-50 cells/ml	NA
Biobarrier Soil:				
SB2-7-15-16.5'	4/17/2008	Positive	1.8E+03	--
SB2-7-29.5-30.5'	4/17/2008	Positive	1.4E+02	--
Source Area Soil:				
15B-20-21'	5/5/2008	Positive	9.3E+03	--
15B-70-71'	5/5/2008	Positive	1.6E+04	--

Notes:

-- - Not analyzed
cells/g - cells per gram (most probable number)
cells/ml - cells per milliliter (most probable number)
NA - Not applicable

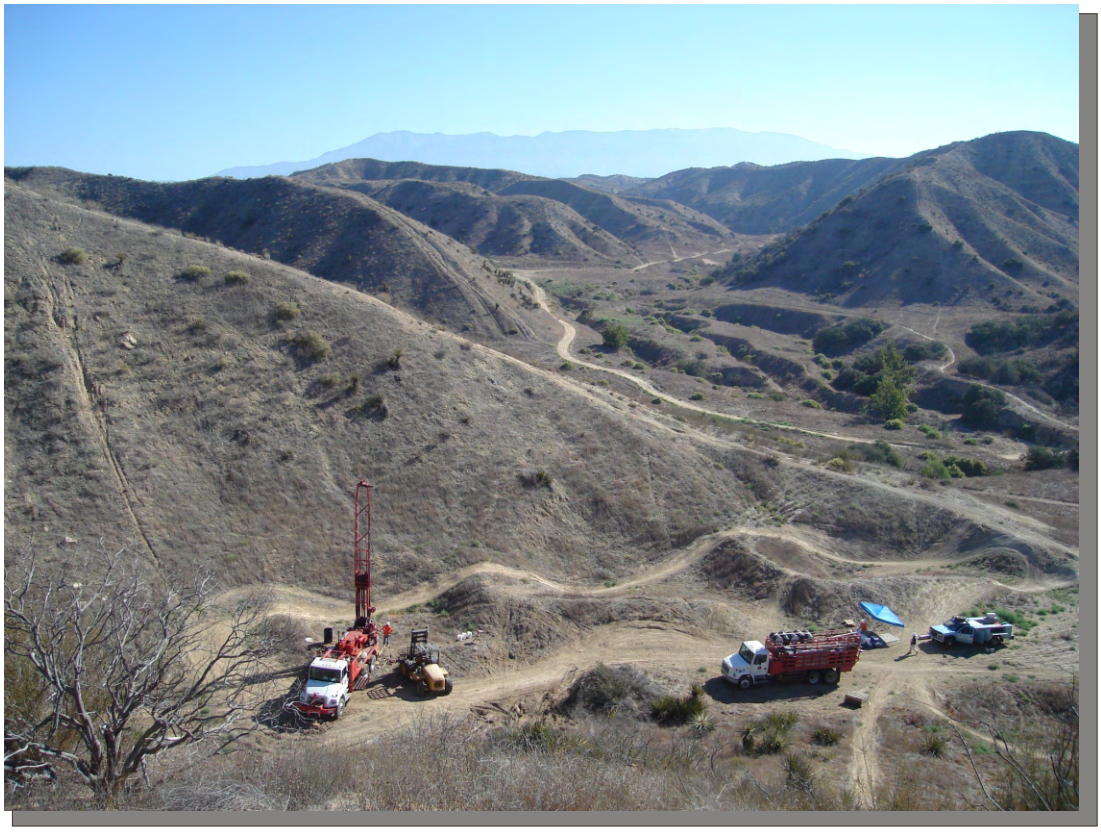
Table 5
Summary of Groundwater Organic and Inorganic Laboratory Results
Beaumont Site 2

	Wet Chemistry (mg/l)								Alkalinity (mg/l)			Anions (mg/l)			Cations (mg/l)							VOCs (µg/l)	
Sample Name	**Perchlorate (µg/l)**	**Ammonia (as N)**	**Total Kjeldahl Nitrogen (TKN)**	**Ortho-Phosphate (Soluble P)**	**Total Phosphorus**	**Total Sulfur**	**Total Dissolved Solids**	**Total Organic Carbon (TOC)**	**Total Alkalinity (as CaCO3)**	**Bicarbonate (as CaCO3)**	**Carbonate (as CaCO3)**	**Chloride**	**Nitrate as N**	**Sulfate**	**Arsenic**	**Calcium**	**Iron**	**Magnesium**	**Manganese**	**Potassium**	**Sodium**	**Acetone**	**Methylene Chloride**
MDL	25.0-5,000	0.0500	0.0500	0.0200	0.0200	0.30	5.00	0.500	1.00	1.00	1.00	2.00-2.50	0.100	1.25-5.00	0.0400	0.100	0.0400	0.100	0.003000	0.100	0.100	5.0	1.0
Biobarrier Groundwater:																							
TT-MW2-7	502	0.0911 BJaq	0.350	< 0.0200	0.0245 Jeq	58.5	990	1.01	280	280	< 1.00	186	8.20	176	< 0.0400	81.0	<0.0400	9.64	<0.00300	0.733 Jq	240	--	--
TT-MW2-7-DUP	580	0.112 Ba	0.271	< 0.0200	0.0223 Jeq	58.3	1070	1.05	300	300	< 1.00	186	8.17	175	< 0.0400	81.1	<0.0400	9.74	<0.00300	0.700 Jq	237	--	--
Source Area Groundwater:																							
TT-MW2-17D	57,800	0.135	0.462	0.126	0.107	20.1	670	2.62	97.5	97.5	< 1.0	305	7.95	55.6	< 0.0400	73.5	0.0666 Jq	13.7	0.0325	3.47	187	--	--
Source Area Grab Sample:																							
15B-59'	157,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.4 Jq	2.2 BJaq

Notes:

-- - Not analyzed
µg/l - micrograms per liter
mg/l - milligrams per liter
MDL - Method Detection Limit
B - The sample result is less than 5 times (10 times for common organic laboratory contaminants) the amount of blank contamination. The result is considered not to have originated from the environmental sample, because cross-contamination is suspected.
J - The analyte was positively identified and the result is usable; however, the analyte concentration is an estimated value
a - The analyte was found in the method blank
e - A holding time violation occurred
q - The analyte detection was below the practical quantitation limit.

Technical Memo For Laboratory Microcosm And Column Studies To Investigate Biobarrier Applications For Treatment Of Perchlorate-impacted Groundwater



Volume II Appendices

Prepared for:

LOCKHEED MARTIN

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San Bernardino, California 92408

TC# 22289-0202 / November 2008

APPENDIX A – SOIL BORING LOGS

TETRA TECH

BORING LOG
Boring ID: Tt-SB2-7

Project:	LMC Beaumont Site 2	Borehole Depth:	32 feet bgs	Sampling Method: Split-Spoon	Page 1 of 2
Location:	Site 2 Southern Property Boundary	Borehole Diameter:	8 inches		
Project No.:	19893-02/22289-0201			Northing (feet): TBA	
Logged By:	David Bertolacci	Reviewed By:		Easting (feet): TBA	
Date Boring Started:	17-Apr-2008	Drilling Contractor:	BC2 Environmental	Ground Surface Elevation (feet MSL): TBA	
Date Boring Completed:	17-Apr-2008	Drilling Method:	Hollow-Stem Auger	Top of Casing Elevation (feet MSL): TBA	

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	Interval and Lithologic Description	OVA (ppm, BZ = breathing zone)
0							Surface: Dirt/Grass.	
	H				SP		0 to 5 feet bgs. POORLY GRADED SAND: (10 YR 6/3) pale	
1	A						brown, dry, poorly graded, 95% very loose, subrounded to	
	N						subangular, very fine to medium-grained sand, 5% nonplastic	
2	D						fines, no odor or staining.	
3	A							
	U							
4	G							
	E							
5	R							
					SP		5 to 6.5 feet bgs. POORLY GRADED SAND: (10 YR 6/3) pale	
6							brown, dry, poorly graded, 95% very loose, subrounded to	
							subangular, very fine to medium-grained sand, 5% nonplastic	
7							fines, trace hard, flattenned fine gravel, maximum size = 1/2 inches,	
							no odor or staining.	
8								
9								
10								
					SP-SM		10 to 11.5 feet bgs. POORLY GRADED SAND WITH SILT:	
11							(2.5 Y 6/3) light yellowish brown, dry, poorly graded, 90% very	
							loose to loose, subrounded to subangular, very fine to coarse-	
12							grained sand, 10% nonplastic fines, trace hard, subrounded to	
							subangular fine gravel, maximum size = 3/8 inches, no odor or staining.	
13								
14								
15							1st water at 15 fet bgs and upper San Timoteo Contact (completely weathered)	
	100%	12	1100	SB2-7-15'	SP		15 to 18.5 feet bgs: POORLY GRADED SAND WITH GRAVEL -	
16		15		SB2-7-15.5			weathered sandstone; no cement, (2.5Y 6/2) light brownish gray,	
		20		SB2-7-16'			wet, poorly graded, medium dense, 85% subrounded, medium- to	
17	100%	15	1330	SB2-7 -			very coarse-grained sand, 15% friable to hard, subangular, coarse	
		30		15-30'			gravel, maximum size = 1 inch, no odor, increasing gravel to 18.5	
18		50/2"	1335	SB2-7 -			feet bgs.	
	100%	17		15'-DUP				
19		33			SP		18.5 to 19.5 feet bgs: transition to POORLY GRADED SAND -	
		50/4"					light brownish gray, wet, fine- to medium-grained sand, no gravel.	
20							19.5 to 20 feet bgs: NO RECOVERY.	

TETRA TECH

BORING LOG
Boring ID: Tt-SB2-7

Project:	LMC Beaumont Site 2	Borehole Depth:	32 feet bgs	Sampling Method: Split-Spoon	Page 2 of 2
Location:	Site 2 Southern Property Boundary	Borehole Diameter:	8 inches		
Project No.:	19893-02/22289-0201			Northing (feet): TBA	
Logged By:	David Bertolacci	Reviewed By:		Easting (feet): TBA	
Date Boring Started:	17-Apr-2008	Drilling Contractor:	BC2 Environmental	Ground Surface Elevation (feet MSL): TBA	
Date Boring Completed:	17-Apr-2008	Drilling Method:	Hollow-Stem Auger	Top of Casing Elevation (feet MSL): TBA	

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	Interval and Lithologic Description	OVA (ppm, BZ = breathing zone)
20								
	100%	31	1330	SB2-7 -	SP		20 to 23 feet bgs: POORLY GRADED SAND - (10YR 5/3 to 2.5Y	
21		36		15-30'			7/2) brown to pale yellow, wet, poorly graded, dense, 100%	
		50/3"		SB2-7 -			subrounded, very fine- to fine-grained sand, micaceous, no odor.	
22	100%	21		15'-DUP			Color change from 15 feet bgs first observed in cuttings with augers at 20 feet bgs.	
		27						
23		40					Increasing fines at 23 feet bgs.	
		50/3"			SP-SM		23 to 25.5 feet bgs: POORLY GRADED SAND WITH SILT -	
24	15%						As above, with SILTY SAND stringers, 90% subrounded,	
							very fine- to fine-grained sand, 10% nonplastic fines, no odor.	
25		38						
	50%	50/2"					Weathered San Timoteo Formation at 25.5 feet bgs (highly weathered).	
26					SM		25.5 to 27 feet bgs: SILTY SAND - (2.5Y 5/3 to 4/3) light olive	
		50					brown to olive brown, wet, poorly graded, medium stiff to very	
27	50%	44					dense, 70% subrounded, very fine-grained sand, 30% nonplastic	
					SLST		fines, micaceous, platy layering, no odor.	
28		50			SP		At 27 feet bgs: SILTSTONE layer, brown, 2 inches thick, followed by SP	
	50%	50/6"					27 to 32 feet bgs: POORLY GRADED SAND - (2.5Y 7/2) light	
29							gray, wet, poorly graded, very dense, 100% subrounded to	
		50/3"					subangular, very fine- to coarse-grained sand, micaceous, no odor.	
30	50%		1215	SB2-7-29.5				
				SB2-7-30'				
31		50						
	50%							
32								
							Total Depth = 32 feet bgs.	
33							Boring continuosly cored from 15 feet bgs to total depth.	
							Step-out boring sampled from 15 feet bgs (augers at 20 feet bgs) to	
34							30 feet bgs for biobarrier microcosm and soil column studies. 30	
							gallons of soil collected total at 1330. Both borings backfilled with	
35							portland type II/V and bentonite grout slurry.	
36								
37								
38								
39								
40								

TETRA TECH

BORING LOG
Boring ID: K-54-DP15B
(next to former K-54-DP15 borehole)

Project:	LMC Beaumont Site 2	Borehole Depth:	80 feet bgs	Sampling Method: Split-Spoon	Page 1 of 4
Location:	Site 2 Prism Area, Test Bay #3	Borehole Diameter:	8 inches		
Project No.:	22289-0201			Northing (feet): TBA	
Logged By:	David Bertolacci	Reviewed By:		Easting (feet): TBA	
Date Boring Started:	5-May-2008	Drilling Contractor:	BC2 Environmental	Ground Surface Elevation (feet MSL): TBA	
Date Boring Completed:	5-May-2008	Drilling Method:	Hollow-Stem Auger	Top of Casing Elevation (feet MSL): TBA	

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	Interval and Lithologic Description	OVA (ppm, BZ = breathing zone)
0							Surface: Dirt.	
	HAND AUGER				SM		0 to 5 feet bgs: SILTY SAND - (10YR 5/3) brown, dry, poorly graded, loose, 70% subrounded, very fine- to fine-grained sand, 30% nonplastic fines, trace organic debris (buried wood), no odor.	
5		7	1005	SB15B-5'	SM		5 to 6.5 feet bgs: SILTY SAND - (10YR 5/3) brown, dry, poorly graded, loose, 70% subrounded, very fine- to fine-grained sand, 30% nonplastic fines, trace organic debris (buried wood), no odor.	
	100%	8						
		11						
10							10 to 10.5 feet bgs: SILTY SAND - As above.	
		10			SM		Top of weathered San Timoteo Formation at 10.5 feet bgs.	
	100%	13	1009	SB15B-10'	SP (SS)		10.5 to 11.5 feet bgs: POORLY GRADED SAND (WEATHERED SANDSTONE) - (10YR 6/2) light brownish gray, dry, poorly graded, loose, 100% sub-rounded, very fine- to fine-grained sand, trace nonplastic fines, micaceous, no odor.	
		20						
15								
		14	1015	SB15B-15'	SP		15 to 16.5 feet bgs: POORLY GRADED SAND - (10YR 6/2) light brownish gray, dry, poorly graded, loose, 90% sub-rounded, very fine- to medium-grained sand, 10% friable to hard, subangular to angular, fine gravel, maximum size = 1/2 inches,trace nonplastic fines, micaceous, no odor.	
	100%	17						
		21						
20								

TETRA TECH

BORING LOG
Boring ID: K-54-DP15B
(next to former K-54-DP15 borehole)

Project:	LMC Beaumont Site 2	Borehole Depth:	80 feet bgs	Sampling Method: Split-Spoon	Page 2 of 4
Location:	Site 2 Prism Area, Test Bay #3	Borehole Diameter:	8 inches		
Project No.:	22289-0201			Northing (feet): TBA	
Logged By:	David Bertolacci	Reviewed By:		Easting (feet): TBA	
Date Boring Started:	5-May-2008	Drilling Contractor:	BC2 Environmental	Ground Surface Elevation (feet MSL): TBA	
Date Boring Completed:	5-May-2008	Drilling Method:	Hollow-Stem Auger	Top of Casing Elevation (feet MSL): TBA	

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	Interval and Lithologic Description	OVA (ppm, BZ = breathing zone)
20	65%	26	1020	SB15B-20'	SP		20 to 21.5 feet bgs: POORLY GRADED SAND - (10YR 6/2)	
		50					light brownish gray, dry, poorly graded, loose, 90% sub-	
21							rounded, very fine- to medium-grained sand, 10% friable to hard,	
22							subangular to angular, fine gravel, maximum size = 1/2 inches,trace	
							nonplastic fines, micaceous, no odor, decreasing gravel.	
23								
24								
25								
	100%	23	1029	SB15B-25'	SP		25 to 26.5 feet bgs: POORLY GRADED SAND - (10YR 6/2)	
26		30					light brownish gray, dry to damp, poorly graded, loose to medium	
		35					dense, 100% subrounded, very fine- to fine-grained sand, trace	
27							nonplastic fines, micaceous, no odor.	
28								
29								
30								
	50%	35	1033	SB15B-30'	SP		30 to 31.5 feet bgs: POORLY GRADED SAND - (10YR 6/2)	
31		50/5"					light brownish gray, dry to damp, poorly graded, medium dense,	
							100% subrounded, very fine- to fine-grained sand, trace	
32							nonplastic fines, micaceous, no odor.	
33								
34								
35								
	100%	21	1040	SB15B-35'	SP-SM		35 to 36.5 feet bgs: POORLY GRADED SAND WITH SILT -	
36		27					(10YR 6/2 - 5/3) light brownish gray to brown, dry to damp,	
		30					poorly graded,medium dense, 90% subrounded, very fine- to	
37							medium-grained sand, 10% nonplastic fries, interbedded SP, SM	
							layering, micaceous, no odor.	
38								
39								
40								

TETRA TECH

BORING LOG
Boring ID: K-54-DP15B
(next to former K-54-DP15 borehole)

Project:	LMC Beaumont Site 2	Borehole Depth:	80 feet bgs	Sampling Method: Split-Spoon	Page 3 of 4
Location:	Site 2 Prism Area, Test Bay #3	Borehole Diameter:	8 inches		
Project No.:	22289-0201			Northing (feet): TBA	
Logged By:	David Bertolacci	Reviewed By:		Easting (feet): TBA	
Date Boring Started:	5-May-2008	Drilling Contractor:	BC2 Environmental	Ground Surface Elevation (feet MSL): TBA	
Date Boring Completed:	5-May-2008	Drilling Method:	Hollow-Stem Auger	Top of Casing Elevation (feet MSL): TBA	

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	Interval and Lithologic Description	OVA (ppm, BZ = breathing zone)
40	50%	28	1047	SB15B-40'	SP-SM		40 to 41.5 feet bgs: POORLY GRADED SAND WITH SILT -	
		50/5"					(10YR 6/2 - 5/3) light brownish gray to brown, dry to damp,	
41							poorly graded,medium dense to dense, 90% subrounded, very fine-	
							to medium-grained sand, 10% nonplastic fries, interbedded SM, SP,	
42							and hard SANDSTONE layering, micaceous, no odor.	
43								
44								
45	67%	34	1053	SB15B-45'	SP		45 to 46.5 feet bgs: POORLY GRADED SAND - (10YR 5/2)	
		50					grayish brown, damp, dense, 100% subrounded, very fine-	
46							to fine-grained sand, micaceous, no odor.	
47								
48								
49								
50	100%	19	1059	SB15B-50'	SM		50 to 50.5 feet bgs: SILTY SAND - (2.5Y 5/4 to 10YR 5/2) light	
		24			SP		olive brown to grayish brown, damp, medium dense to dense,	
51		29					70% subrounded, very fine- to fine-grained sand, 30% nonplastic	
							fines, micaceous, no odor.	
52							50.5 to 51.5 feet bgs: POORLY GRADED SAND - (10YR 5/2)	
							grayish brown, damp, dense, 100% subrounded, very fine-	
53							to fine-grained sand, micaceous, no odor.	
							Hard grinding noted in augers at approximately 52 feet bgs; gravel noted in cuttings.	
54								
55	67%	50/1'	1103	SB15B-55'	SP-SM		55 to 56.5 feet bgs: POORLY GRADED SAND WITH SILT -	
							(2.5Y 5/4 to 10YR 5/2) light olive brown to grayish brown, damp,	
56							very dense, 85% subrounded, very fine- to coarse-grained sand,	
							10% nonplastic fines, 5% hard, subrounded to subangular, fine	
57							to coarse gravel, maximum size = 2 inches, micaceous, no odor.	
							Interbedded SP and SM layers , followed by SP with gravel and	
58							CLAY in bottom of shoe.	
59			1317	SB15B-59'			First Water at approximately 60 feet bgs, measured at 59.16 feet bgs	
							after drilling to 65 feet bgs and allowing 2 hours to equilibrate.	
60								

TETRA TECH

BORING LOG
Boring ID: K-54-DP15B
(next to former K-54-DP15 borehole)

Project:	LMC Beaumont Site 2	Borehole Depth:	80 feet bgs	Sampling Method: Split-Spoon	Page 4 of 4
Location:	Site 2 Prism Area, Test Bay #3	Borehole Diameter:	8 inches		
Project No.:	22289-0201			Northing (feet): TBA	
Logged By:	David Bertolacci	Reviewed By:		Easting (feet): TBA	
Date Boring Started:	5-May-2008	Drilling Contractor:	BC2 Environmental	Ground Surface Elevation (feet MSL): TBA	
Date Boring Completed:	5-May-2008	Drilling Method:	Hollow-Stem Auger	Top of Casing Elevation (feet MSL): TBA	

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	Interval and Lithologic Description	OVA (ppm, BZ = breathing zone)
60	100%	23	1116	SB15B-60'	SP		60 to 61.5 feet bgs: POORLY GRADED SAND WITH GRAVEL - (10YR 5/2) grayish brown, wet, medium dense to dense, 85% subrounded, medium- to coarse-grained sand, 15% hard, subrounded, coarse gravel, maximum size = 1 inch, trace fines with no to low plasticity, micaceous, no odor, interbedded SM layers.	
61		27	1119	SB15B-60' -DUP				
		32						
62								
63								
64								
65	100%		1128	SB15B-65'	SC/CL		65 to 66.5 feet bgs: SANDY CLAY AND CLAYEY SAND - (10YR 4/2) light olive brown, wet, very dense to very stiff, 60% subrounded, very fine- to fine-grained sand, 40% fines with no to low plasticity, micaceous, no odor, interbedded CL and SC layers.	
66								
67								
68								
69								
70	100%	27	1128	SB15B-70'			70 to 71.5 feet bgs: SANDY CLAY - (10YR 4/2) light olive brown, wet, very dense to very stiff, 60% subrounded, very fine- to fine-grained sand, 40% fines, with no to low plasticity, micaceous, no odor.	
71		32						
		50						
72								
73								
74								
75							75 to 80 feet bgs: SANDY CLAY - logged from cuttings: (10YR 4/2) light olive brown, wet, very dense to very stiff, 60% subrounded, very fine- to fine-grained sand, 40% fines, with no to low plasticity, micaceous, no odor.	
76								
77								
78								
79								
80								

Total Depth = 80 feet bgs. Boring backfilled with bentonite/cement slurry.

APPENDIX B – FIELD DATA SHEETS

INSTRUMENT CALIBRATION DAILY LOG

Activities: Soil Boring / Sampling **Page** 1 **Of** 1 **Pages**

Project Name: Beaumont Site 2 Biobarrier Studies **Location:** Southern Property Boundary

Project No.: 22289 **Task No.:** 0201 **Date:** 04/17/2008

Time	Instrument Make/Model	Calibration Gas/ Span Setting (OVA, HNU . . .)	Calibration (Other – Ph Meter, Ec Meter, Etc.)	Standard/ Manufacturing/ Lot#	Instrument Reading	Remarks
0930	MiniRAE 2000 S/N:000566	Isobutylene 100ppm	—	7-360-13 exp: 03/2011	101 ppm	

Tetra Tech Respresentative: David Bertolacci **Signature:**

Reviewed By: **Signature:**

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GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET - SAMPLING

DATE 04/18/2008 SITE NAME / NUMBER 22289-0201

PROGRAM NAME Luc Beaumont site 2 Biobarrier/Column Studies

MONITORING WELL IDENTIFICATION T1-MW2-7

SAMPLE I.D. _____ DUPLICATE I.D. _____

STATIC WATER LEVEL (ft btoc) 17.67 WELL DEPTH (ft btoc) 26.50.

WATER COLUMN (feet) _____ CASING/TUBE DIAMETER (ft/in) 4"

WELL /PUMP VOLUME (V) (gal/ml) _____ 3 v (gal/ml) _____

PURGING DEVICE: ☑ Grundfos Pump ☐ Peristaltic Pump ☐ Bladder Pump

SAMPLING DEVICE: ☐ Purging Pump ☐ Disposable Bailer ☐ Other

OVA: ☐ FID ☐ PID In Casing (ppm) (initial) _____ (vented to) _____

IN BREATHING ZONE (ppm) (initial) _____ (vented to) _____

FINAL PUMP DEPTH (ft btoc) 25

SAMPLER'S SIGNATURE _____

WELL SAMPLE TIME _____ DUPLICATE SAMPLE TIME _____

Time	Activity	Water Level (ft btoc)	Pump Depth (ft btoc)	Temp (°C)	EC (ms/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)	Color	Volume Purged (gals/ml)	Well/Pump Volumes Purged	Flow Rate (gal/min ml/min)
0830	pump on	17.67	25								0	0	650 = 0.17 gpm
0833		17.95											
0836		17.97											
0840	increase flow	17.99											1,200 = 0.32
0845	monitoring	18.08		20.73	1.326	6.54	11.1 DUP 9.44	3.00	138.5	clear			0.32 gpm
0850		18.14		20.67	1.321	6.51	6.94	3.20	138.9	clear			
0855		18.14		20.64	1.317	6.35	3.83	3.61	140.3	clear			
0900		18.14		20.59	1.313	6.58	2.93	4.00	139.5	clear			
0905		18.14		20.58	1.311	6.61	2.15	4.14	139.1	clear			
0910	increase flow	sampling 18.45	↓	20.32	1.316	6.76	2.54	4.45	135.3	clear			0.57 gpm
0915	water level	18.76											
0920	" "	18.85											

Colorimetric test (taken prior to sampling) Alkalinity (ppm): _____ Fe^{+2} (ppm): _____ D.O. (ppm): _____

Water level at time of sampling (ft btoc): _____ Turbidity at time of sampling: _____

Pump Settings: CPM: _____ PSI: _____ Recharge: _____ Discharge: _____

Comments: _____

$\frac{60\,sec}{1\,min} \cdot \frac{1000\,ml}{28\,sec} = 2,143\,mL/min = 0,57\,gpm$

PARAMETERS FOR WATER QUALITY STABILIZATION

Temperature collect readings	Conductivity ± 3 %
pH ± 0.1	DO ± 0.3 mg/L
Turbidity < 10 NTUs (if > 10 NTUs ± 10 %)	
WL ± 0.1 foot	ORP ± 10 mV

Note:

If volatiles are detected in the breathing zone during the initial screening, the breathing zone will be periodically monitored during purging and sampling activities.

All water levels and pump depths are measured from the reference point (notch) in the top of the well casing.

If no reference point is observed then the casing high point should be notched and measurements should be collected from this point.

Every attempt should be made to limit water level drawdown to less than 0.33 feet and purge rate to less than 0.5 L/min.

1 gal = 3,78412 L
= 3784.12 ml

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GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET - SAMPLING

DATE _____ SITE NAME / NUMBER _____ PURGING DEVICE: ☐ Grundfos Pump ☐ Peristaltic Pump ☐ Bladder Pump

PROGRAM NAME _____ SAMPLING DEVICE: ☐ Purging Pump ☐ Disposable Bailer ☐ Other

MONITORING WELL IDENTIFICATION _____ OVA: ☐ FID ☐ PID In Casing (ppm) (initial) _____ (vented to) _____

SAMPLE I.D. _____ DUPLICATE I.D. _____ IN BREATHING ZONE (ppm) (initial) _____ (vented to) _____

STATIC WATER LEVEL (ft btoc) _____ WELL DEPTH (ft btoc) _____ FINAL PUMP DEPTH (ft btoc) _____

WATER COLUMN (feet) _____ CASING/TUBE DIAMETER (ft/in) _____ SAMPLER'S SIGNATURE _____

WELL /PUMP VOLUME (V) (gal/ml) _____ 3 v (gal/ml) _____ WELL SAMPLE TIME _____ DUPLICATE SAMPLE TIME _____

Time	Activity	Water Level (ft btoc)	Pump Depth (ft btoc)	Temp (°C)	EC (ms/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)	Color	Volume Purged (gals/ml)	Well/Pump Volumes Purged	Flow Rate (gal/min ml/min)
0925	water level	18.85	25										0.57
0930	water level	stable											

Colorimetric test (taken prior to sampling) Alkalinity (ppm): _____ Fe^{+2} (ppm): _____ D.O. (ppm): _____

Water level at time of sampling (ft btoc): _____ Turbidity at time of sampling: _____

Pump Settings: CPM: _____ PSI: _____ Recharge: _____ Discharge: _____

Comments: _____

PARAMETERS FOR WATER QUALITY STABILIZATION

Temperature collect readings	Conductivity ± 3 %
pH ± 0.1	DO ± 0.3 mg/L
Turbidity < 10 NTUs (if > 10 NTUs ± 10 %)	
WL ± 0.1 foot	ORP ± 10 mV

Note:

If volatiles are detected in the breathing zone during the initial screening, the breathing zone will be periodically monitored during purging and sampling activities.

All water levels and pump depths are measured from the reference point (notch) in the top of the well casing.

If no reference point is observed then the casing high point should be notched and measurements should be collected from this point.

Every attempt should be made to limit water level drawdown to less than 0.33 feet and purge rate to less than 0.5 L/min.

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GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET - SAMPLING

DATE 5-5-08 SITE NAME / NUMBER Site 2

PROGRAM NAME

MONITORING WELL IDENTIFICATION Tt-MW2-14

SAMPLE I.D. Tt-MW2-14 DUPLICATE I.D.

STATIC WATER LEVEL (ft btoc) 65.61 WELL DEPTH (ft btoc) 74.41

WATER COLUMN (feet) 8.80 CASING/TUBE DIAMETER (in)

WELL /PUMP VOLUME (V) (gal/ml) 3 v (gal/ml) N/A

PURGING DEVICE: ☒ Grundfos Pump ☐ Peristaltic Pump ☐ Bladder Pump

SAMPLING DEVICE: ☒ Purging Pump ☐ Disposable Bailer ☐ Other

OVA: ☐ FID ☐ PID In Casing (ppm) (initial) — (vented to) —

IN BREATHING ZONE (ppm) (initial) — (vented to) —

FINAL PUMP DEPTH (ft btoc)

SAMPLER'S SIGNATURE h marquis

WELL SAMPLE TIME 1252 DUPLICATE SAMPLE TIME —

Time	Activity	Water Level (ft btoc)	Pump Depth (ft btoc)	Temp (°C)	EC (ms/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)	Color	Volume Purged (gals/ml)	Well/Pump Volumes Purged	Flow Rate (~~gal/min~~ ml/min)
1215	Start pump	65.61	72	—	—	—	—	—	—	clear			800 .21gpm
1220		67.80		22.99	1.825	7.25	7.84	5.01	125.7				
1225		68.85		24.09	1.862	7.38	5.96	3.87	122.5				
1230		69.80		24.87	1.895	7.48	3.60	3.40	117.5				
1235		70.03		25.22	1.910	7.52	3.98	3.25	112.5				
1240		70.01		25.67	1.927	7.55	5.47	3.29	110.0				
1245		70.01		26.24	1.955	7.57	6.39	2.95	106.9				
1250		70.04		26.65	1.979	7.58	9.08	2.47	103.3				

Colorimetric test (taken prior to sampling) Alkalinity (ppm): — Fe^{+2} (ppm): — D.O. (ppm): —

Water level at time of sampling (ft btoc): 70.64 Turbidity at time of sampling: 9.08

Pump Settings: CPM: — PSI: — Recharge: — Discharge: —

Comments: ≈ 80' of tubing used.

PARAMETERS FOR WATER QUALITY STABILIZATION

Temperature collect readings	Conductivity ± 3 %
pH ± 0.1	DO ± 0.3 mg/L
Turbidity < 10 NTUs (if > 10 NTUs ± 10 %)	
WL ± 0.1 foot	ORP ± 10 mV

Note:

If volatiles are detected in the breathing zone during the initial screening, the breathing zone will be periodically monitored during purging and sampling activities.

All water levels and pump depths are measured from the reference point (notch) in the top of the well casing.

If no reference point is observed then the casing high point should be notched and measurements should be collected from this point.

Every attempt should be made to limit water level drawdown to less than 0.33 feet and purge rate to less than 0.5 L/min.

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GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET - SAMPLING

Page ____ of ____

DATE 5/7/08 PROJECT NUMBER UCR Study

PROGRAM NAME Basnt Site 2

MONITORING WELL IDENTIFICATION TT-MW2-17D

SAMPLE I.D. TT-MW2-17D DUPLICATE I.D. _____

STATIC WATER LEVEL (ft btoc) 71.14 TOTAL WELL DEPTH (feet) 101.92

WATER COLUMN (feet) _____ CASING/TUBE DIAMETER (in/ft) 2

WELL/PUMP VOLUME (V) (gal / ml) _____ 3 V (gal / ml) _____

PURGING DEVICE ☒ Grundfos Pump ☐ Peristaltic Pump ☐ Bladder Pump

SAMPLING DEVICE ☒ Purging Pump ☐ Disposable Bailer ☐ _____

OVA: ☐ FID ☒ PID In Casing (ppm) (initial) 0.0 (vented to) _____

BREATHING ZONE (ppm) (initial) 0.0 (vented to) _____

FINAL PUMP DEPTH (ft btoc) 98

SAMPLER'S SIGNATURE _____

WELL SAMPLE TIME 1150 DUPLICATE SAMPLE TIME _____

Time	Activity	Water Level (ft btoc)	Pump Depth (ft btoc)	Temp (°C)	EC (ms/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)	Color	Volume Purged (gal ~~/ml~~)	Well/Pump Volumes Purged	Flow Rate (GPM / ~~ml/min~~)
1115	start pm	71.14	98	—						—	0	0	0.2
1120		74.06		19.65	1.108	7.08	34.0	2.25	48.3	cloudy	1.0		
1125		74.03		23.08	1.290	6.88	19.3	2.49	65.1	clear	2.0		
1130		74.04		24.02	1.295	6.76	11.3	1.94	54.0	clear	3.0		
1135		74.03		24.13	1.313	7.06	10.22	1.28	47.5	clear	4.0		
1140		74.06		24.96	1.334	7.24	7.89	0.60	46.7	clear	5.0		
1145		74.08		24.76	1.332	7.21	6.64	0.47	45.5	clear	6.0		
1150		74.08		24.76	1.337	7.27	5.81	0.41	47.1	clear	7.0		

Alkalinity (ppm) — **Fe^{+2} (ppm)** — Taken immediately before sampling

Water level at time of sampling (ft btoc): _____ Turbidity at time of sampling: _____

Comments: _____

PARAMETERS FOR WATER QUALITY STABILIZATION	
Temperature ± 1°C (1.8°F)	Dissolved Oxygen ± 3 ppm
pH ± 0.1	Turbidity ≤ 5 NTUs
Conductivity ± 5%	Water Level ± 0.1 foot

System Sampling Volume (SSV) = 155 * Diameter of discharge tubing in inches(D)^2 * Length of discharge tubing in feet (h) + Bladder Volume (300ml)

Time required to Purge SSV (minutes): _____

Note: All water levels and pump depths are measured from the notch in the top of the well casing. If volatiles are detected in the breathing zone during the initial screening, the breathing zone will be periodically monitored during purging and sampling activities and recorded in the logbook.

X:\Public\Tech\Field Coordination\Forms\Field Forms\Environmental Field Forms\Monitoring Well Purging.doc

TETRA TECH
348 W Hospitality Ln. Suite 100
San Bernardino, CA 92408
Tel (909) 381-1674 | Fax (909) 889-139

GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET - SAMPLING

DATE 08/15/2008 SITE NAME / NUMBER 22289-0201/Site 2 PURGING DEVICE: ☑ Grundfos Pump ☐ Peristaltic Pump ☐ Bladder Pump

PROGRAM NAME LMC Beaumont Site 2 Bioremediation SAMPLING DEVICE: ☑ Purging Pump ☐ Disposable Bailer ☐ Other

MONITORING WELL IDENTIFICATION T1-mw2-7 OVA: ☐ FID ☐ PID In Casing (ppm) (initial) _____ (vented to) _____

SAMPLE I.D. N/A DUPLICATE I.D. — IN BREATHING ZONE (ppm) (initial) _____ (vented to) _____

STATIC WATER LEVEL (ft btoc) 18.88 WELL DEPTH (ft btoc) 26.5 FINAL PUMP DEPTH (ft btoc) 24.5

WATER COLUMN (feet) _____ CASING/TUBE DIAMETER (ft/in) 4" SAMPLER'S SIGNATURE _____

WELL /PUMP VOLUME (V) (gal/ml) _____ 3 v (gal/ml) _____ WELL SAMPLE TIME 1225 DUPLICATE SAMPLE TIME —

Time	Activity	Water Level (ft btoc)	Pump Depth (ft btoc)	Temp (°C)	EC (ms/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)	Color	Volume Purged (gals/ml)	Well/Pump Volumes Purged	Flow Rate (gal/min ml/min)
1145	pump on	18.88	24.5								0	0	0.33
1150	increase flow	19.71									1.67		0.88
1155	monitoring	20.37		20.78	1.425	7.63	10.49	2.29	144.9	clear			
1200		21.03		20.71	1.416	7.51	24.8	2.65	141.4	clear			
1205		22.05		20.74	1.415	7.40	23.7	2.95	130.2	clear			
1210		22.50		20.78	1.420	7.32	31.8	3.55	122.5	slightly cloudy			
1215	* reduce flow	22.97	↓	20.82	1.421	7.35	42.1	4.10	117.3	slightly cloudy			0.47
1220	↓	23.00		21.28	1.430	7.33	88.5	4.88	114.5	slightly cloudy			
1225	stable, sampling	23.00	↓	21.23	1.426	7.22	81.3	5.17	120.7	cloudy			↓
	* collect 65 gallons	~~60~~ 65											
1445	well dry												

Colorimetric test (taken prior to sampling) Alkalinity (ppm): _____ Fe^{+2} (ppm): _____ D.O. (ppm): _____

Water level at time of sampling (ft btoc): _____ Turbidity at time of sampling: _____

Pump Settings: CPM: _____ PSI: _____ Recharge: _____ Discharge: _____

Comments: 1L/48sec = 1L/0.8min = 1.25L/min = 0.33 gpm
1L/18 sec = 1L/0.3 min = 3.33 L/min = 0.88 gpm
1L/34 sec = 1L/0.57 min = 1.76 L/min = 0.47 gpm

PARAMETERS FOR WATER QUALITY STABILIZATION

Temperature collect readings	Conductivity ± 3 %
pH ± 0.1	DO ± 0.3 mg/L
Turbidity < 10 NTUs (if > 10 NTUs ± 10 %)	
WL ± 0.1 foot	ORP ± 10 mV

Note:
If volatiles are detected in the breathing zone during the initial screening, the breathing zone will be periodically monitored during purging and sampling activities.
All water levels and pump depths are measured from the reference point (notch) in the top of the well casing.
If no reference point is observed then the casing high point should be notched and measurements should be collected from this point.
Every attempt should be made to limit water level drawdown to less than 0.33 feet and purge rate to less than 0.5 L/min.

TETRA TECH
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San Bernardino, CA 92408
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GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET - SAMPLING

DATE 07/21/2008 SITE NAME / NUMBER 22289 - 0201 PURGING DEVICE: ☑ Grundfos Pump ☐ Peristaltic Pump ☐ Bladder Pump

PROGRAM NAME LMC Site 2 Biobarrier SAMPLING DEVICE: ☑ Purging Pump ☐ Disposable Bailer ☐ Other

MONITORING WELL IDENTIFICATION Tt - mw2 - 7 OVA: ☐ FID ☑ PID In Casing (ppm) (initial) 0.0 (vented to) ___

SAMPLE I.D. — DUPLICATE I.D. — IN BREATHING ZONE (ppm) (initial) 0.0 (vented to) ___

STATIC WATER LEVEL (ft btoc) 19.02 WELL DEPTH (ft btoc) 26.5 FINAL PUMP DEPTH (ft btoc) 24.5

WATER COLUMN (feet) ___ CASING/TUBE DIAMETER (ft/in) 4" SAMPLER'S SIGNATURE [signature]

WELL /PUMP VOLUME (V) (gal/ml) ___ 3 v (gal/ml) ___ WELL SAMPLE TIME ___ DUPLICATE SAMPLE TIME ___

Time	Activity	Water Level (ft btoc)	Pump Depth (ft btoc)	Temp (°C)	EC (ms/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)	Color	Volume Purged (gals/ml)	Well/Pump Volumes Purged	Flow Rate (gal/min ml/min)
1009	Pump on	19.02	24.5	—	—	—	—	—	229.3	—	0	0	0.40
1014	Monitoring	19.04	↓	21.41	1.295	7.07	15.2	6.19	~~[illegible]~~	clear			↓
1019	↓	19.05	↓	21.27	1.288	7.05	16.2	5.30	215.2	clear			↓ increase flow
1024	↓	19.23	↓	20.83	1.271	7.03	7.62	2.66	197.6	clear			0.62
1029	↓	19.31	↓	20.84	1.271	7.04	3.94	3.34	186.8	clear			↓
1034	↓	19.32	↓	20.83	1.270	7.07	~~2.68~~	~~3.15~~	181.2	clear			↓
1039	~~stable, collect sample (55 gallons)~~	19.32		20.78	1.267	7.11	2.15	3.54	172.1	clear			↓
1044	stable, collect sample (55 gallons)												

Colorimetric test (taken prior to sampling) Alkalinity (ppm): ___ Fe^{+2} (ppm): ___ D.O. (ppm): ___

Water level at time of sampling (ft btoc): ___ Turbidity at time of sampling: ___

Pump Settings: CPM: ___ PSI: ___ Recharge: ___ Discharge: ___

Comments: 1 L in 39.83 sec = 1 L / 0.6638333 min = 1.5064023 L/min
" " 25.63 sec = 1 L / 0.4271667 min = 0.40 Gal/min
= 2.3410065 L/min = 0.62 Gal/min

PARAMETERS FOR WATER QUALITY STABILIZATION

Temperature collect readings	Conductivity ± 3 %
pH ± 0.1	DO ± 0.3 mg/L
Turbidity < 10 NTUs (if > 10 NTUs ± 10 %)	
WL ± 0.1 foot	ORP ± 10 mV

Note:
If volatiles are detected in the breathing zone during the initial screening, the breathing zone will be periodically monitored during purging and sampling activities.
All water levels and pump depths are measured from the reference point (notch) in the top of the well casing.
If no reference point is observed then the casing high point should be notched and measurements should be collected from this point.
Every attempt should be made to limit water level drawdown to less than 0.33 feet and purge rate to less than 0.5 L/min.

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GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET - SAMPLING

DATE 08/29/2008 SITE NAME / NUMBER 22289-0201

PROGRAM NAME LMC Basement Site 2 Remediation

MONITORING WELL IDENTIFICATION TT-MW2-7

SAMPLE I.D. N/A DUPLICATE I.D. N/A

STATIC WATER LEVEL (ft btoc) 19.05 WELL DEPTH (ft btoc) 30.14

WATER COLUMN (feet) _____ CASING/TUBE DIAMETER (ft/in) _____

WELL /PUMP VOLUME (V) (gal/ml) _____ 3 v (gal/ml) _____

PURGING DEVICE: ☒ Grundfos Pump ☐ Peristaltic Pump ☐ Bladder Pump

SAMPLING DEVICE: ☒ Purging Pump ☐ Disposable Bailer ☐ Other

OVA: ☐ FID ☐ PID In Casing (ppm) (initial) _____ (vented to) _____

IN BREATHING ZONE (ppm) (initial) _____ (vented to) _____

FINAL PUMP DEPTH (ft btoc) 28

SAMPLER'S SIGNATURE _____

WELL SAMPLE TIME _____ DUPLICATE SAMPLE TIME _____

Time	Activity	Water Level (ft btoc)	Pump Depth (ft htoc)	Temp (°C)	EC (ms/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)	Color	Volume Purged (gals/ml)	Well/Pump Volumes Purged	Flow Rate (gal/min ml/min)
1002	Pump on	19.05	28								0	0	0.45
1007	Monitoring	19.74	↓	21.00	1.418	6.98	59.3	3.48	170.4	cloudy			↓
1012	↓	20.15		21.24	1.428	7.24	9.21	2.42	149.2	clear			
1017		20.28		21.27	1.425	7.30	8.56	2.73	141.4	clear			
1022		20.42		21.24	1.420	7.26	7.35	2.82	137.9	clear			
1027		20.46		21.25	1.418	7.27	7.64	2.91	136.0	clear			
1032		20.57		21.24	1.415	7.28	5.56	3.11	130.4	clear			
1037		20.71		21.30	1.415	7.29	6.52	3.47	126.5	clear			
1042	↓	20.75		21.48	1.416	7.33	6.16	3.60	124.2	clear			
1047	sampling	20.79	↓	21.44	1.416	7.32	6.56	3.89	122.8	clear			↓

Colorimetric test (taken prior to sampling) Alkalinity (ppm): _____ Fe^{+2} (ppm): _____ D.O. (ppm): _____

Water level at time of sampling (ft btoc): _____ Turbidity at time of sampling: _____

Pump Settings: 116.1 Hz CPM: _____ PSI: _____ Recharge: _____ Discharge: _____

Comments: 1L in 35.60 sec. = 1L/0.593333 min = 1.6853934 L/min ÷ 3.785 = 0.45 gpm

PARAMETERS FOR WATER QUALITY STABILIZATION

Temperature collect readings	Conductivity ± 3 %
± pH ± 0.1	DO ± 0.3 mg/L
Turbidity < 10 NTUs (if > 10 NTUs ± 10 %)	
WL ± 0.1 foot	ORP ± 10 mV

Note:

If volatiles are detected in the breathing zone during the initial screening, the breathing zone will be periodically monitored during purging and sampling activities.

All water levels and pump depths are measured from the reference point (notch) in the top of the well casing.

If no reference point is observed then the casing high point should be notched and measurements should be collected from this point.

Every attempt should be made to limit water level drawdown to less than 0.33 feet and purge rate to less than 0.5 L/min.

Tetra Tech, Inc.
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pH/TEMPERATURE/CONDUCTIVITY/TURBIDITY/DISSOLVED OXYGEN FIELD CALIBRATION FORM

Project Name: LMC Beaumont site 2
Calibration by: DCB
Date: 08/29/2008
Instrument Manufacturer: YSI 556
Model: 556 MPS
Instrument Serial Number: 01G0785AK
Battery: Good

CALIBRATION RESULTS

	Pre-Sampling	Post-Sampling
Time:	0930	N/A

Calibration Solution Parameters	Standard Solution	Solution Manufacturer:	Lot No.:	Expiration Date:	Instrument Response	
					Pre-Sampling	Post-Sampling
pH Buffer	4.01	Oakton	2801177	12/2009	4.01	N/A
pH Buffer	7.00	Oakton	2804496	04/2010	7.00	
Temperature	--	--	--	--	29.13°C	
Conductivity	1413 (µS/cm)	Califech	6137	2/8/2009	1.538	
Turbidity	0.0 (NTUs)	--	--	--	N/A	
Dissolved Oxygen[1]	Air	--	--	--		
	~~0.0 (ppm)~~	N/A	N/A	N/A	6.58	
	Oxygenated H_2O	--	--	--	N/A	
ORP	YSI 3682 Zobell Solution				↓	↓

Comments:

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GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET - SAMPLING

DATE 10/10/08 SITE NAME / NUMBER Beaumont Site 2 PURGING DEVICE: ☒ Grundfos Pump ☐ Peristaltic Pump ☐ Bladder Pump

PROGRAM NAME LMC Beaumont SAMPLING DEVICE: ☐ Purging Pump ☐ Disposable Bailer ☐ Other

MONITORING WELL IDENTIFICATION TT-MW2-17D OVA: ☐ FID ☒ PID In Casing (ppm) (initial) 0.0 (vented to) 0.0

SAMPLE I.D. TT-MW2-17D DUPLICATE I.D. — / — IN BREATHING ZONE (ppm) (initial) 0.0 (vented to) 0.0

STATIC WATER LEVEL (ft btoc) 70.98 WELL DEPTH (ft btoc) ~~Blank~~ 102' FINAL PUMP DEPTH (ft btoc) 100

WATER COLUMN (feet) 31.02 CASING/TUBE DIAMETER (ft/in) 2" SAMPLER'S SIGNATURE Burt Haas

WELL ~~PUMP~~ VOLUME (V) (gal~~/ft~~) 5.21 3 v (gal~~/ft~~) 15.63 WELL SAMPLE TIME 0949 DUPLICATE SAMPLE TIME —

Time	Activity	Water Level (ft btoc)	Pump Depth (ft btoc)	Temp (°C)	EC (ms/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)	Color	Volume Purged (gal~~/ft~~)	Well/Pump Volumes Purged	Flow Rate (gal/min ~~ml/min~~)
0917	Begin Purge	—											0.5
0921		76.55	100	24.33	1.323	6.66	20.6	3.30	140.9	slightly cloudy	2.0	0.38	
0925		76.91		24.84	1.363	7.10	10.22	2.75	126.7	clear	4.0	0.76	
0929		76.60		24.84	1.373	7.28	26.8	2.53	119.1	slightly cloudy	6.0	1.15	
0934		76.64		25.00	1.385	7.37	9.04	2.31	116.5	clear	8.0	1.53	
0939		76.66		25.19	1.397	7.45	7.75	2.19	113.2	clear	10.0	1.91	
0943		76.72		25.15	1.402	7.48	5.42	2.12	111.6	clear	12.0	2.30	
0947		76.69		24.81	1.408	7.55	4.38	1.95	109.5	clear	14.0	2.68	
0948	End Purge	—											
0949	Sample	Collect 55 gallons											

Colorimetric test (taken prior to sampling) Alkalinity (ppm): — Fe^{+2} (ppm): — D.O. (ppm): —

Water level at time of sampling (ft btoc): 76.70 Turbidity at time of sampling: 4.38

Pump Settings: CPM: — PSI: — Recharge: — Discharge: —

Comments:

PARAMETERS FOR WATER QUALITY STABILIZATION	
Temperature collect readings	Conductivity ± 3 %
pH ± 0.1	DO ± 0.3 mg/L
Turbidity < 10 NTUs (if > 10 NTUs ± 10 %)	
WL ± 0.1 foot	ORP ± 10 mV

Note:

If volatiles are detected in the breathing zone during the initial screening, the breathing zone will be periodically monitored during purging and sampling activities.

All water levels and pump depths are measured from the reference point (notch) in the top of the well casing.

If no reference point is observed then the casing high point should be notched and measurements should be collected from this point.

Every attempt should be made to limit water level drawdown to less than 0.33 feet and purge rate to less than 0.5 L/min.

TETRA TECH, INC.
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SHIP TO: EGL

CHAIN OF CUSTODY RECORD

DATE 04/17/2008 PAGE 1 OF 2

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2 Biobarrier Columns + Microcosms
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures)

LINE ITEM	SAMPLE NO.	DATE	TIME	Total Porosity	Permeability, Moisture Content, & Density (ASTM D5084, SP&9100)	Grain Size Distribution (ASTM D422 (ii) sieve and hydrometer)	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
1.	SB2-7-15-16.5'	04/17/2008	1100	X	X	X	Un	S	SS	3	NR
2.	SB2-7-29.5-30.5'	04/17/2008	1215	X	X	X	Un	S	SS	2	NR
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											

PARAMETERS

TURN-AROUND TIME
Standard

OBSERVATIONS/COMMENTS

17-April 2008

FILTERING:
☐ FILTERED ☐ UNFILTERED

MATRIX TYPE:
S - Soil
M - Sediment
W - Water

CONTAINER TYPE:
G - Glass Bottle/Jar
SS - Stainless Steel Sleeve
SB - Brass Sleeve
P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only)
HCL
NaOH
NR (None required)
H_2SO_4

RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY:
David Bertolacci		TETRA TECH, INC.	04/17/2008	1800	5
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT/SHIPMENT NO.
					Courier (04/18/2008)
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	

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Site 2 UCL Study

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San Bernardino, California 92408
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FAX: (909) 889-1391

SHIP TO: EMAX

CHAIN OF CUSTODY RECORD

DATE 4/17/08 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumt Site 2
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0801
SAMPLERS (Signatures)

TURN-AROUND TIME: Standard

PARAMETERS

LINE ITEM	SAMPLE NO.	DATE	TIME	Arsenic	Iron	Manganese	Phosphorus (P)	Perchlorate (314.0)	pH	Sulfate/Sulfide	Total Kjeldahl Nitrogen TKN	Total Organic Carbon TOC						FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	SB2-7-15	4/17/08	1330	X	X	X	X	X	X	X	X	X						U	S	G	2	NR	
2.	SB2-7-15-Dup	4/17/08	1330	X	X	X	X	X	X	X	X	X						U	S	G	2	NR	
3.																							
4.																							
5.																							
6.																							
7.																							
8.																							
9.																							
10.																							

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil, M - Sediment, W - Water

CONTAINER TYPE: G - Glass Bottle/Jar, SS - Stainless Steel Sleeve, SB - Brass Sleeve, P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL, NR (None required), NaOH, H_2SO_4

RELINQUISHED BY	SIGNATURE	TETRA TECH, INC.	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 4
Christopher Pa			4/17/08	1800	
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT/SHIPMENT NO.
Curtis Morales		Top Line	4/18/08	15:00	Carm
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	

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Site 2 UCR Study

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FAX: (909) 889-1391

SHIP TO: Test America

CHAIN OF CUSTODY RECORD

DATE 4/17/08 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures)

TURN-AROUND TIME: Standard

PARAMETERS

LINE ITEM	SAMPLE NO.	DATE	TIME	Cation Exchange Capacity (CEC)	Perchlorate Reductase Bacteria Concentration	PCR Plate Count Test	Living Compounds Test	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	SB2-7-15	4/17/08	1330	X	X		X	U	S	G	2	NR	
2.	SB2-7-15-Dup	4/17/08	1330	X	X		X	U	S	G	2	NR	
3.													
4.													
5.													
6.													
7.													
8.													
9.													
10.													

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil, M - Sediment, W - Water

CONTAINER TYPE: G - Glass Bottle/Jar, SS - Stainless Steel Sleeve, SB - Brass Sleeve, P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL, NR (None required), NaOH, H_2SO_4

RELINQUISHED BY	SIGNATURE	TETRA TECH, INC.	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 4
Christopher Rau			4/17/08	1800	
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT/SHIPMENT NO.
Michi Hustin		TAI	4/18/08	1420	Carry
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	

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Site 2 UCR Study

CHAIN OF CUSTODY RECORD

TETRA TECH, INC.
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San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: Eurofins Lab

DATE 04/12/2008 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LA Equipment Site 2 Dissolved Copper Column + Field Blank
PROJECT MANAGER: Tuan-Vi Le
TC #: 22289-0201
SAMPLERS (Signatures)

LINE ITEM	SAMPLE NO.	DATE	TIME	Alkalinity	Basic Anions (Cl, SO4, NO3)	Perchlorate (314.0)	TDS (160.1)	Soluble P	Soluble Cations (Ca, K, Na, Mg)	Fe, Mn, Al, S	N (all forms + TKN)	Total P	TOC				FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	T+-MW2-7	04/12/2008	0910	X	X	X	X	X	X	X	X	X	X				UF	W	P	3	HNO3	
2.	T+-MW2-7DUP	04/12/2008	0915	X	X	X	X	X	X	X	X	X	X				F	W	P	3	HNO3	Duplicate
3.																						
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

TURN-AROUND TIME: Standard

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SS - Stainless Steel Sleeve; SB - Brass Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NaOH; NR (None required); H_2SO_4

RELINQUISHED BY	SIGNATURE		DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY:
David Tuchscherer		TETRA TECH, INC.	04/12/2008	1300	6
RECEIVED BY: Carlos Morales	SIGNATURE	COMPANY: Top Cire	DATE: 4/18/08	TIME: 1500	METHOD OF SHIPMENT/SHIPMENT NO.: Courier
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	

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DISTRIBUTION: White and Pink = Tetra Tech, Inc. Canary = Laboratory

TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: EGL

CHAIN OF CUSTODY RECORD

DATE 05/05/2008 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: UIC Beaumont Site 2 Source Area Columns + Microcosms
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures)

LINE ITEM	SAMPLE NO.	DATE	TIME	Total Porosity	ASTM D5084/EPA 9100 Permeability Moisture Content Density	ASTM D422(ii) sieve and Hydrometer Grain Size Distribution	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
1.	15B-20-21'	05/05/2008	1020	X	X	X	Un	S	SS	2	NR
2.	15B-70-71'	05/05/2008	1330	X	X	X	Un	S	SS	2	NR
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											

PARAMETERS

TURN-AROUND TIME: Standard

OBSERVATIONS/COMMENTS

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SS - Stainless Steel Sleeve; SB - Brass Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NaOH; NR (None required); H_2SO_4

RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 4
David Bertolacci		TETRA TECH, INC.	05/05/2008	1730	
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT/SHIPMENT NO. Courier
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	

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TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: EMax

CHAIN OF CUSTODY RECORD

DATE 5-5-08 PAGE 1 OF 2

CLIENT: Tetra Tech
PROJECT NAME: Lmc Beaumont Site 2
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures): D. Bertolacci

LINE ITEM	SAMPLE NO.	DATE	TIME	Arsenic	Iron	Manganese	Phosphours(P)	Perchlorate (314.0)	PH	Sulfate/Sulfide	Total Kieldal Nitrogen TKN	Total organic carbon TOC						FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	15B-5'	5-5-05	1005					X										UN	S	G	1	None	
2.	15B-10'		1009					X													1		
3.	15B-15'		1015					X													1		
4.	15B-20'		1020	X	X	X	X	X	X	X	X	X									2		
5.	15B-25'		1029					X													1		
6.	15B-30'		1033					X													1		
7.	15B-35'		1040					X													1		
8.	15B-40'		1047					X													1		
9.	15B-45'		1053					X													1		
10.	15B-50'	↓	1059					X										↓	↓	↓	1	↓	

PARAMETERS

TURN-AROUND TIME: Standard

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SS - Stainless Steel Sleeve; SB - Brass Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NaOH; NR (None required); H_2SO_4

RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY:
David Bertolacci		TETRA TECH, INC.	05/05/2008	1730	11 out of 17
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT/SHIPMENT NO.
					Courier
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	

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TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: EMax

CHAIN OF CUSTODY RECORD

DATE 5-5-08 PAGE 2 OF 2

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures): D. Bertolacci

LINE ITEM	SAMPLE NO.	DATE	TIME	Arsenic	Iron	Manganese	Phosphours(P)	Perchlorate (314.0)	PH	Sulfate/Sulfide	Total Kjeldal Nitrogen (TKN)	Total Organic carbon (TOC)						FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	15B-55'	5-5-08	1103					X										U	S	G	1	NC	NC
2.	15B-60'		1116					X													1		
3.	15B-60'-DUP		1119					X													1		
4.	15B-65'		1128					X													1		Hold
5.	15B-70'	↓	1330	X	X	X	X	X	X	X	X	X						↓	↓	↓	2	↓	
6.																							
7.																							
8.																							
9.																							
10.																							

TURN-AROUND TIME: Standard

FILTERING: ☐ FILTERED ☒ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SS - Stainless Steel Sleeve; SB - Brass Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NaOH; NR (None required); H_2SO_4

RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 6/17
David Bertolacci		TETRA TECH, INC.	5-5-08	1730	
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT/SHIPMENT NO. Courier
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	

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TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: EMAX

CHAIN OF CUSTODY RECORD

DATE 05/05/2008 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2 Source Area Columns & Microcosms
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures)

LINE ITEM	SAMPLE NO.	DATE	TIME	VOCs (SW8260B)	Perchlorate (314.0)	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
1.	LTB-050508	05/05/2008	0730	X		Un	W	G	2	HCl
2.	15B-59'	05/05/2008	1317	X	X	Un	W	G/P	4	HCl/NR
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										

PARAMETERS

TURN-AROUND TIME: Standard

OBSERVATIONS/COMMENTS

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SS - Stainless Steel Sleeve; SB - Brass Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NaOH; NR (None required); H_2SO_4

RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY:
David Bertolacci		TETRA TECH, INC.	05/05/2008	1730	6
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT/SHIPMENT NO.
					Courier
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	

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TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: Test America

CHAIN OF CUSTODY RECORD

DATE 05/05/2008 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2 Source Area Columns & Microcosms
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures)

TURN-AROUND TIME: standard

OBSERVATIONS/COMMENTS: *Biological samples to John Coates' Lab - Instruct them that we are working w/ Dr. Deshusses, of UCR

PARAMETERS

LINE ITEM	SAMPLE NO.	DATE	TIME	Cation Exchange Capacity (CEC)	Perchlorate Reducing Bacteria Concentration (Plate Count)	Living Components Test (PCR)	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
1.	15B-20'	05/05/2008	1020	X	X	X	Un	S	G	6	NR
2.	15B-70'	05/05/2008	1330	X	X	X	Un	S	G	6	NR
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil, M - Sediment, W - Water

CONTAINER TYPE: G - Glass Bottle/Jar, SS - Stainless Steel Sleeve, SB - Brass Sleeve, P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL, NR (None required), NaOH, H_2SO_4

RELINQUISHED BY	SIGNATURE		DATE	TIME	
David Bertolacci		TETRA TECH, INC.	05/05/2008	1730	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 12
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT/SHIPMENT NO. Courier
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	

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TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: EMAX

CHAIN OF CUSTODY RECORD

DATE 5-7-08 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: UCR Study site 2
PROJECT MANAGER: Tom Villeneuve
TC #: 2289-0201
SAMPLERS (Signatures): Holly A Hanke

LINE ITEM	SAMPLE NO.	DATE	TIME	Alkalinity, TDS,	basic anions (Cl, SO_4, NO_3)	perchlorate, soluble ρ	basic cations (Ca, Mg, Na, K)	Fe, Mn, As, Total S	nitrogen (all forms - ammonia, TKN)	Total ρ	TOC							FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
1.	TT-MW2-17D	5-7-08	1150	X	X	X	X	X	X	X	X							U	W	P	4	See bottle
2.																						
3.																						
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

TURN-AROUND TIME: Standard

OBSERVATIONS/COMMENTS:

FILTERING: ☐ FILTERED ☑ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SB - Brass Sleeve; SS - Stainless Steel Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NaOH; NR (None required); H_2SO_4

RELINQUISHED BY	SIGNATURE		COMPANY	DATE	TIME	
Holly Hanke	Holly A Hanke		TETRA TECH, INC.	5-7-08	1525	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 4
RECEIVED BY	SIGNATURE		COMPANY	DATE	TIME	METHOD OF SHIPMENT/SHIPMENT NO.
			OnTime Courier	5-7-08	1515	Courier
RELINQUISHED BY	SIGNATURE		COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE		COMPANY	DATE	TIME	

DISTRIBUTION: White and Pink = Tetra Tech, Inc. Canary = Laboratory

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TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: Centrum / Microbac
1401 Research Pk Dr
Riverside, CA 92507
951 - 779 - 0310

CHAIN OF CUSTODY RECORD

RUSH

JN: 31384

DATE 05/16/2008 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2 / Wolfskill
PROJECT MANAGER: Tom Villeneuve
TC #: 19893-02 / 22289-0201
SAMPLERS (Signatures)

LINE ITEM	SAMPLE NO.	DATE	TIME	VOCs (SW8260B)	TPH C6-C40 (8015M)	CAM17 metals (6010B/7471A)	Perchlorate (314.0)	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	LTB-051608	05/16/2008	0800	X				Un	W	G	2	HCl	
2.	IDW1-051608	↓	0900	X	X	X	X	↓	W	G/P	6	See bottle	Wolfskill Water
3.	IDW2-051608		0920	X	X	X	X		S	G	5		Wolfskill Soil
4.	IDW3-051608		1030	X	X	X	X		S	G	5		Site 2 Soil
5.	IDW4-051608		1045	X	X	X	X	↓	W	G/P	6	↓	Site 2 water
6.													
7.													
8.													
9.													
10.													

PARAMETERS

TURN-AROUND TIME: 2-Day RUSH

OBSERVATIONS/COMMENTS: please email to david.bertolacci@tetratech.com

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SS - Stainless Steel Sleeve; SB - Brass Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NaOH; NR (None required); H_2SO_4

RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 24
David Bertolacci		TETRA TECH, INC.	05/16/2008	1200	
RECEIVED BY: JEN INIGUEZ	SIGNATURE	COMPANY: Microbac - Centrum Div.	DATE: 5-16-08	TIME: 1200	METHOD OF SHIPMENT/SHIPMENT NO.: drop-off
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements: from field + intact (G/ST)
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	

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APPENDIX C – LABORATORY ANALYTICAL DATA PACKAGES

Environmental
Geotechnology
Laboratory, Inc.

June 9, 2008

Tetra Tech, Inc
348 W. Hospitality Ln. #100
San Bernardino, CA 92408

Attn: Mr. David Bertolacci

RE: LABORATORY TEST RESULTS/REPORT
Project Name: LMC Beaumont Site 2 Biobarrier Columns & Microcosms
Project No.: 22289-0201
EGL Job No.: 08-004-001

Dear Mr. Bertolacci:

We have completed the testing program conducted on samples from the above project. The tests were performed in accordance with testing procedures as follows:

TEST	METHOD
Sieve & Hydrometer	ASTM D422
Total Porosity	ASTM D5084
Triaxial Permeability	ASTM D5084

Enclosed are Summaries of Laboratory Test Results.

We appreciate the opportunity to provide testing services to Tetra Tech, Inc. Should you have any questions, please call the undersigned.

Sincerely yours,
Environmental Geotechnology Laboratory, Inc.

Hank Jong, PE, GE
President

Enclosure

11819 Goldring Road, Suite A, Arcadia, CA 91006 • Tel.: (626) 263-3588, Fax: (626) 263-3599
E-MAIL: MAIL@EGLAB.COM

SUMMARY OF PERMEABILITY TEST RESULTS

PROJECT NAME: LMC Beaumont Site 2
Biobarrier Columns and Microcosms

EGL JOB NO.: 08-004-001

PROJECT NO.: 22289-0201

CLIENT: Tetra Tech, Inc.

DATE: 06-03-08

SUMMARIZED BY: VW

Boring No	SAMPLE NO	DEPTH (ft)	MOISTURE CONTENT ASTM D2216 (%)	DRY DENSITY ASTM D2937 (pcf)	EFFECTIVE CONFINED PRESSURE (psi)	SATURATED HYDRAULIC CONDUCTIVITY ASTM D5084 (cm/sec)
N/A	15B-20-21	20-21	9.6	107.0	11.1	1.9E-005
N/A	15B-70-71	70-71	16.9	113.0	43.1	1.5E-007
N/A	SB2-7-15-16.5	15-16.5	12.4	121.4	9.9	6.2E-006
N/A	SB2-7-29.5-30.5	29.5-30.5	9.0	115.3	17.5	2.5E-005

SUMMARY OF LABORATORY TEST RESULTS

PROJECT NAME: LMC Beaumont Site 2
Biobarrier Columns & Microcosms
PROJECT NO.: 22289-0201

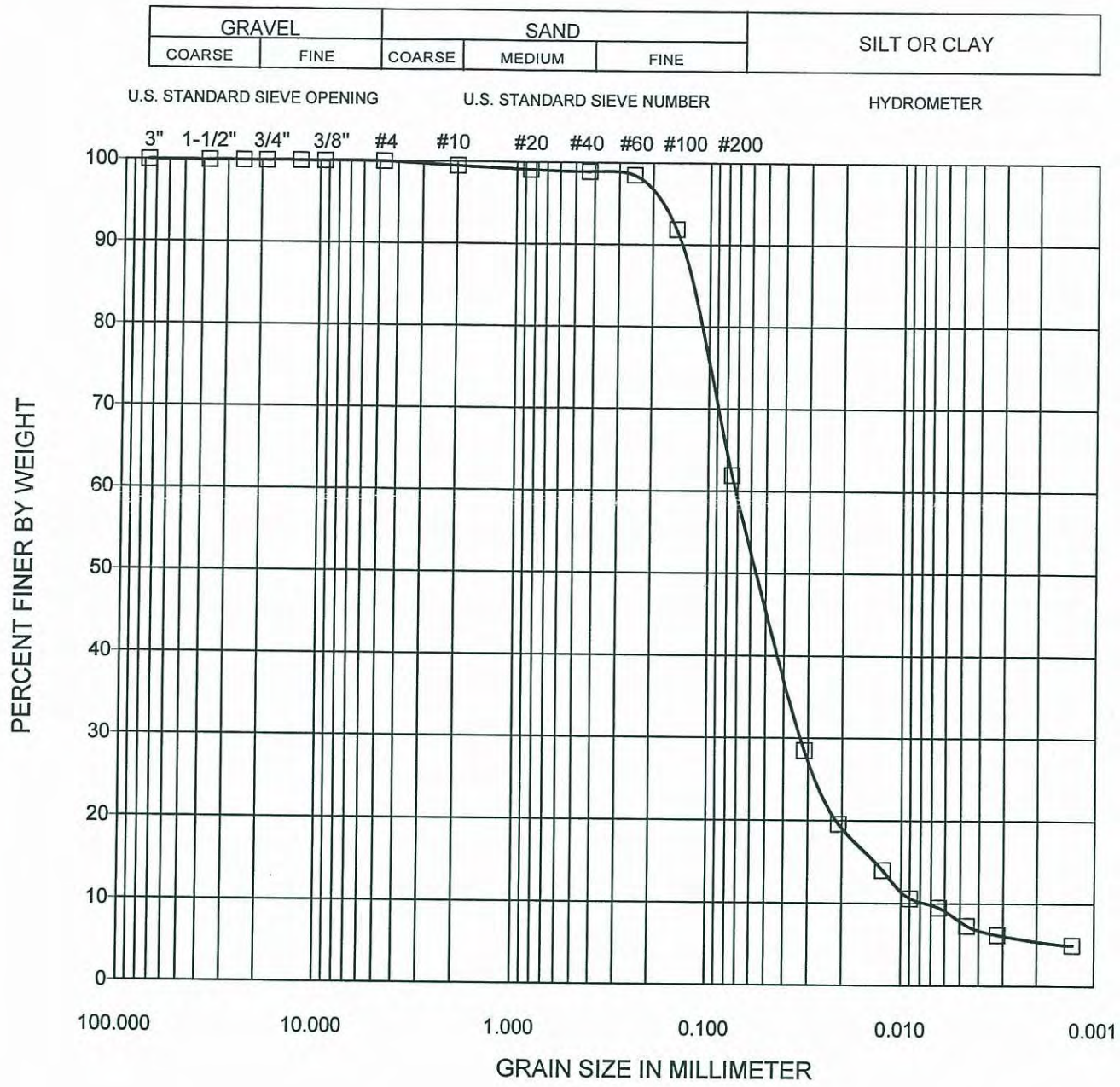
EGL JOB NO.: 08-004-001

CLIENT: Tetra Tech Inc.

DATE: 06-03-08

SUMMARIZED BY: VW

BORING NO	SAMPLE NO	DEPTH (ft)	MOISTURE CONTENT ASTM D 2216 (%)	DRY DENSITY ASTM D 2937 (pcf)	SPECIFIC GRAVITY ASTM D854	TOTAL POROSITY (%)
N/A	15B-20-21	20-21	9.6	107.0	2.749	37.62
N/A	15B-70-71	70-71	16.9	113.0	2.761	34.41
N/A	SB2-7-15-16.5	15-16.5	12.4	121.4	2.677	27.32
N/A	SB2-7-29.5-30.5	29.5-30.5	9.0	115.3	2.681	31.08



SYMBOL	BORING NO	SAMPLE ID	DEPTH (ft)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	N/A	15B-20-21	20-21	TUBE	ML	N/A	N/A

ENVIRONMENTAL GEOTECHNOLOGY LABORATORY

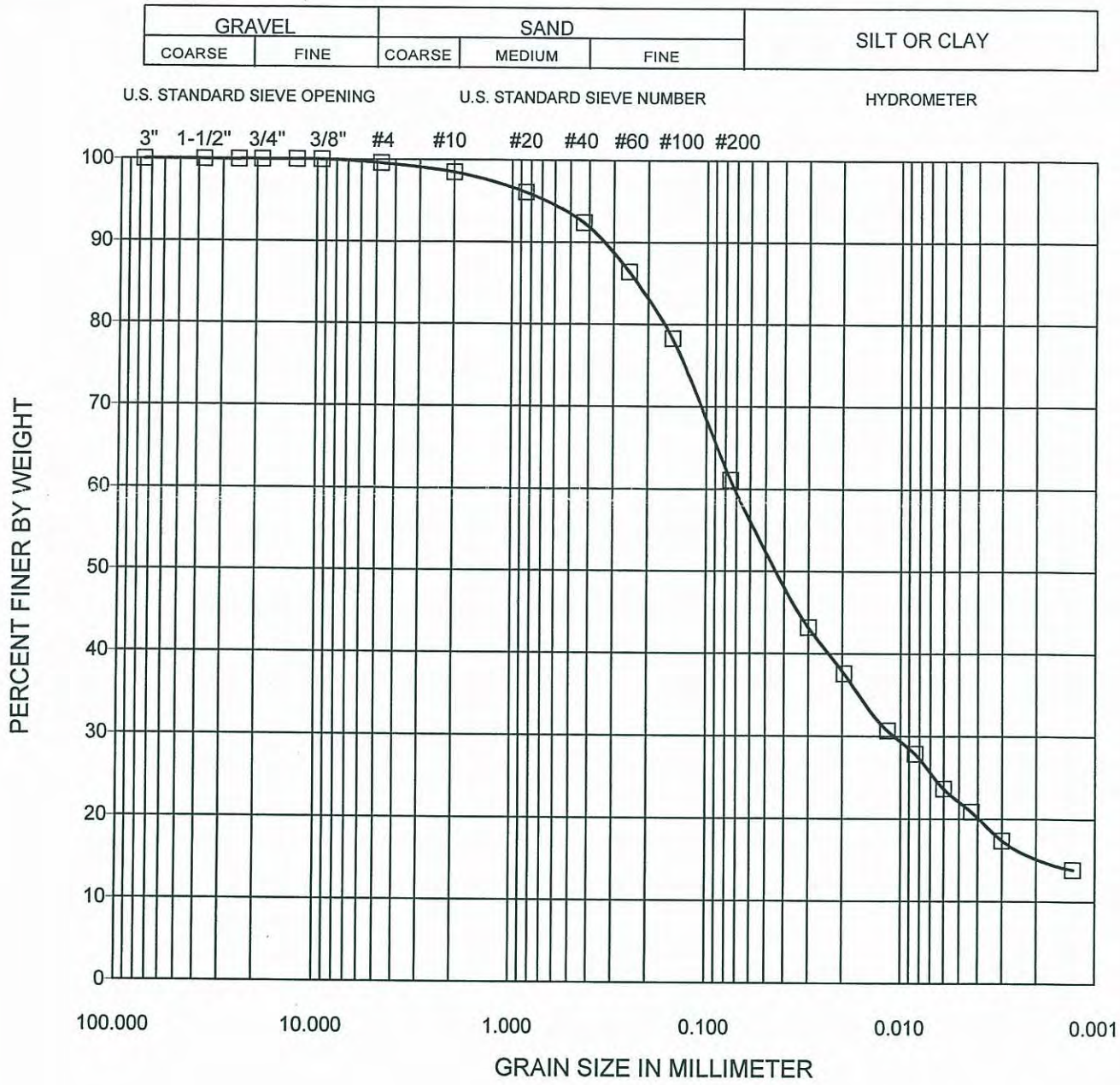
Project Name: LMC Beaumont Site 2, Biobarrier Columns & Microcosms
Client: Tetra Tech Inc.
Job No.: 22289-0201
EGL Project No.: 08-004-001

GRAIN SIZE DISTRIBUTION CURVE

(ASTM D422)

06/08

FIGURE



SYMBOL	BORING NO.	SAMPLE ID	DEPTH (ft)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	N/A	15B-70-71	70-71	TUBE	CL	N/A	N/A

ENVIRONMENTAL GEOTECHNOLOGY LABORATORY

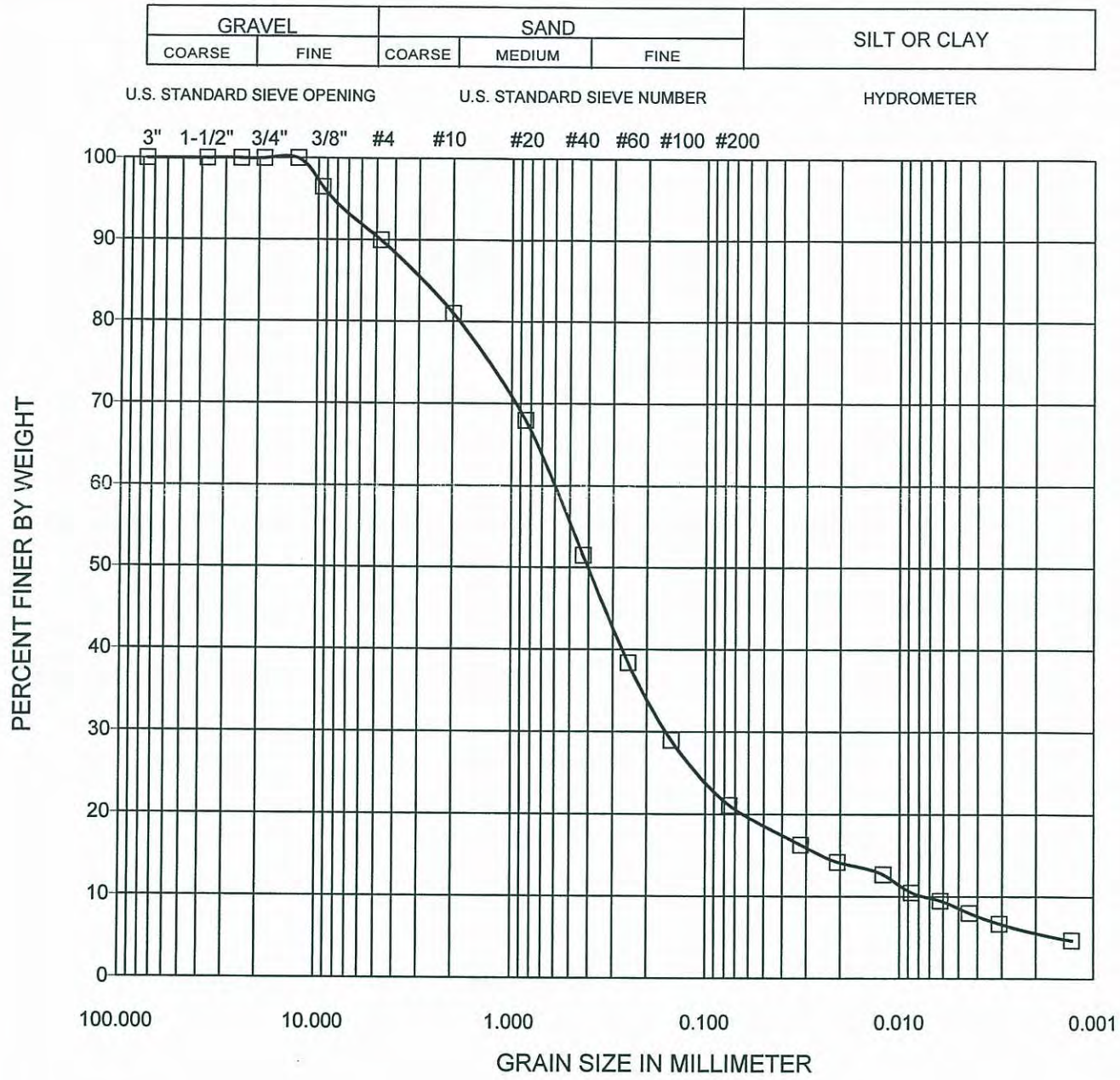
Project Name: LMC Beaumont Site 2, Biobarrier Columns & Microcosms
Client: Tetra Tech Inc.
Job No.: 22289-0201
EGL Project No.: 08-004-001

GRAIN SIZE DISTRIBUTION CURVE

(ASTM D422)

06/08

FIGURE



SYMBOL	BORING NO	SAMPLE ID	DEPTH (ft)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	N/A	SB2-7-15-16.5	15-16.5	TUBE	SM	N/A	N/A

ENVIRONMENTAL GEOTECHNOLOGY LABORATORY

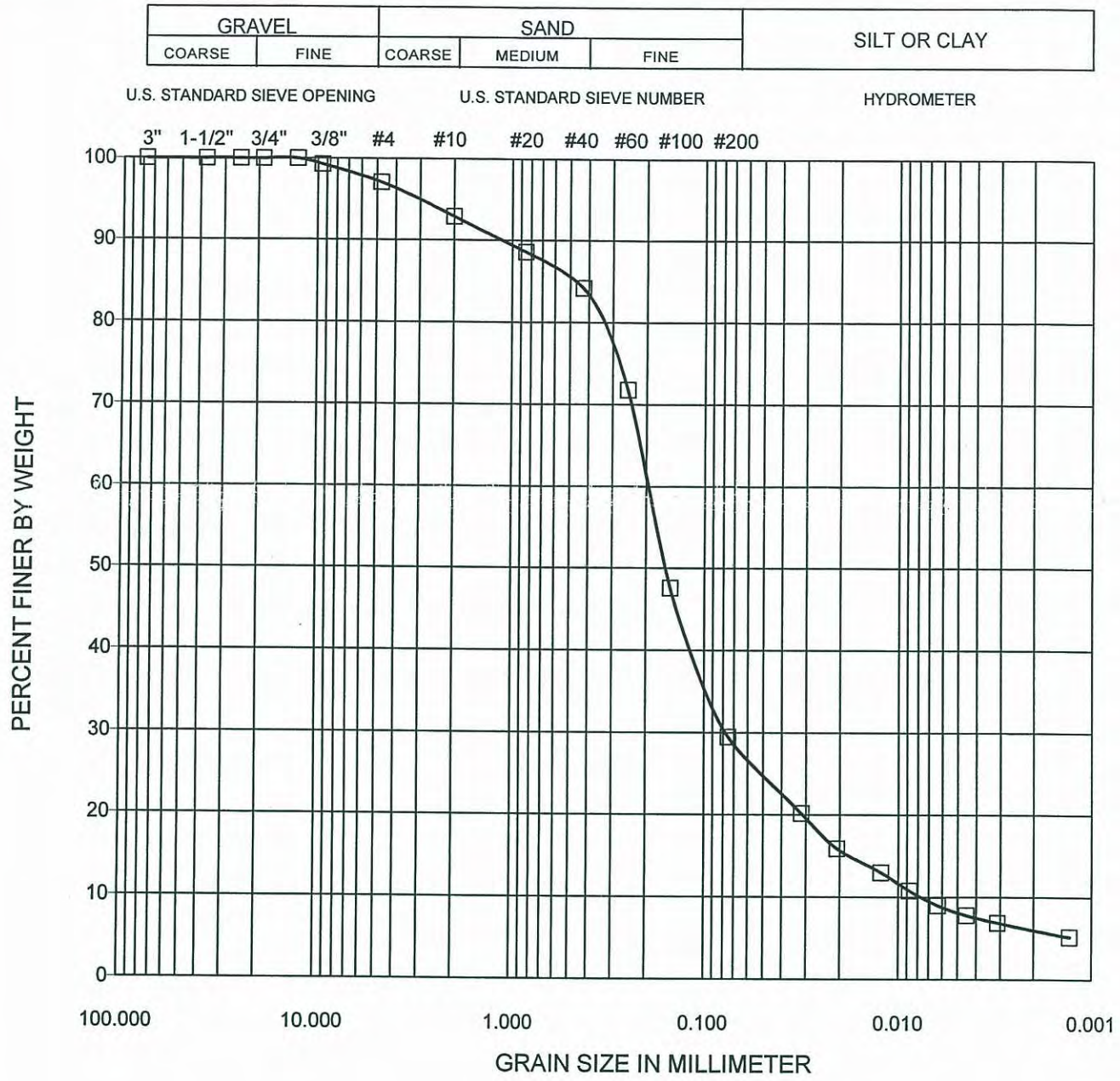
Project Name: LMC Beaumont Site 2, Biobarrier Columns & Microcosms
Client: Tetra Tech Inc.
Job No.: 22289-0201
EGL Project No.: 08-004-001

GRAIN SIZE DISTRIBUTION CURVE

(ASTM D422)

06/08

FIGURE



SYMBOL	BORING NO	SAMPLE ID	DEPTH (ft)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	N/A	SB2-7-29.5-30.5	29.5-30.5	TUBE	SM	N/A	N/A

ENVIRONMENTAL GEOTECHNOLOGY LABORATORY

Project Name: LMC Beaumont Site 2, Biobarrier Columns & Microcosms
Client: Tetra Tech Inc.
Job No.: 22289-0201
EGL Project No.: 08-004-001

GRAIN SIZE DISTRIBUTION CURVE

(ASTM D422)

06/08

FIGURE

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CLIENT: **TETRA TECH, INC.**

PROJECT: **LMC BEAUMONT SITE 2**

SDG: **08D206**

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GC/MS-SVOA	**	3000 –
GC-VOA	**	4000 –
GC-SVOA	**	5000 –
HPLC	**	6000 –
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WET	METHOD 160.1	8000 – 8007
	METHOD 300.0	8008 – 8038
	METHOD 314.0	8039 – 8060
	METHOD 350.2	8061 – 8068
	METHOD 351.3	8069 – 8083
	METHOD 365.2 (TOTAL PHOSPHORUS)	8084 – 8096
	METHOD 365.2 (ORTHO-PHOSPHATE)	8097 – 8110
	METHOD 376.1	8111 – 8117
	METHOD 415.1	8118 – 8135
	METHOD 9045C	8136 – 8141
	METHOD 2320B	8142 – 8149
OTHERS	SULFUR, TOTAL	

** - Not Requested

EMAX
LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889
Fax: (310) 618-0818

Date: 05-13-2008
EMAX Batch No.: 08D206

Attn: Michael Wilson

Tetra Tech, Inc.
348 W Hospitality Lane, Ste 100
San Bernardino CA 92408

Subject: Laboratory Report
Project: LMC Beaumont Site 2

Enclosed is the Laboratory report for samples received on 04/18/08.
The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
TT-MW2-7	D206-01	04/18/08	WATER	PERCHLORATE BY IC
				ANIONS BY IC
				ALKALINITY
				SOLIDS TOTAL DISSOLVED
				PHOSPHORUS, TOTAL
				TKN
				AMMONIA-N
				ORTHOPHOSPHATE-P
				TOTAL ORGANIC CARBON
				METALS BY ICP
				SULFUR, TOTAL
TT-MW2-7-DUP	D206-02	04/18/08	WATER	PERCHLORATE BY IC
				ANIONS BY IC
				ALKALINITY
				SOLIDS TOTAL DISSOLVED
				PHOSPHORUS, TOTAL
				TKN
				AMMONIA-N
				ORTHOPHOSPHATE-P

Sample ID	Control #	Col Date	Matrix	Analysis
				TOTAL ORGANIC CARBON
				METALS BY ICP
				SULFUR, TOTAL
SB2-7-15	D206-03	04/17/08	SOIL	PERCHLORATE BY IC
				PH
				METALS BY ICP
				ANIONS BY IC
				SULFIDE
				TKN
				TOTAL ORGANIC CARBON
				PHOSPHORUS, TOTAL
				ORTHOPHOSPHATE-P
SB2-7-15-DUP	D206-04	04/17/08	SOIL	PERCHLORATE BY IC
				PH
				METALS BY ICP
				ANIONS BY IC
				SULFIDE
				TKN
				TOTAL ORGANIC CARBON
				PHOSPHORUS, TOTAL
				ORTHOPHOSPHATE-P

Note: Sulfur, Total was subcontracted to Test America.

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Caspar J. Pang
Acting Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that the results included in this report meet all NELAC requirements unless noted in the Case Narrative.

08D206

CHAIN OF CUSTODY RECORD

TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

TE.0610

SHIP TO: EMAX Lab

DATE 04/18/2008 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2 Biobarrier Column & Microcosm
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures)

PARAMETERS

LINE ITEM	SAMPLE NO.	DATE	TIME	Alkalinity	Basic Anions (Cl, SO_4, NO_3)	Perchlorate (314.0)	TDS (160.1)	Soluble P	Basic Cations (Ca, Mg, Na, K)	Fe, Mn, As, S	N (all forms - NH_4 & TKN)	Total P	TOC	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	FT-MW2-7	04/18/2008	0910	X	X	X	X	X	X	X	X	X	X	UF	W	P	3	See Bottle	
2.	FT-MW2-7DUP	04/18/2008	0915	X	X	X	X	X	X	X	X	X	X	UF	W	P	3	See Bottle	Duplicate
3.																			
4.																			
5.																			
6.																			
7.																			
8.																			
9.																			
10.																			

18-April-2008

1 2

TURN-AROUND TIME: Standard

OBSERVATIONS/COMMENTS

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SB - Brass Sleeve; SS - Stainless Steel Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NaOH; NR (None required); H_2SO_4

RELINQUISHED BY: David Bertolacci	SIGNATURE	TETRA TECH, INC.	DATE 04/18/2008	TIME 1300	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 6
RECEIVED BY: Carlos Morales	SIGNATURE	COMPANY: Top Line	DATE 4/18/08	TIME 1500	METHOD OF SHIPMENT/SHIPMENT NO.: Courier
RELINQUISHED BY: Carlos Morales	SIGNATURE	COMPANY: Top Line	DATE 4/18/08	TIME 16:30	Special Shipping/Handling/Storage Requirements: T= 3.2°C
RECEIVED BY: INDRA BATRA	SIGNATURE	COMPANY: EMAX	DATE 4-18-08	TIME 1630	

DISTRIBUTION: White and Pink = Tetra Tech, Inc. Canary = Laboratory

1002

X:\GIS\ATT-MISC\COCR.CDR

08D 206

CHAIN OF CUSTODY RECORD

TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: EMAX

TT-0610-

DATE 4/17/08 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumt Site 2
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0301
SAMPLERS (Signature)

PARAMETERS

LINE ITEM	SAMPLE NO.	DATE	TIME	Arsenic	Iron	Manganese	Phosphorus (P)	Perchlorate (314.0)	pH	Sulfate / Sulfide	Total Kjeldahl Nitrogen TKN	Total Organic Carbon TOC	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
3 1.	SB2-7-15	4/17/08	1330	X	X	X	X	X	X	X	X	X	U	S	G	2	NR
4 2.	SB2-7-15-Dup	4/17/08	1330	X	X	X	X	X	X	X	X	X	U	S	G	2	NR
3.																	
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

TURN-AROUND TIME
Standard

OBSERVATIONS/COMMENTS

FILTERING:
☐ FILTERED ☐ UNFILTERED

MATRIX TYPE:
S - Soil
M - Sediment
W - Water

CONTAINER TYPE:
G - Glass Bottle/Jar
SS - Stainless Steel Sleeve
SB - Brass Sleeve
P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only)
HCL
NaOH
NR (None required)
H_2SO_4

RELINQUISHED BY: Christopher Tom	SIGNATURE	TETRA TECH, INC.	DATE 4/17/08	TIME 1800	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 4
RECEIVED BY: Carlos Morales	SIGNATURE	COMPANY Top Line	DATE 4/18/08	TIME 15:00	METHOD OF SHIPMENT/SHIPMENT NO. Courier
RELINQUISHED BY: Carlos Morales	SIGNATURE	COMPANY Top Line	DATE 4/18/08	TIME 16:30	Special Shipping/Handling/Storage Requirements: T=3.2 C
RECEIVED BY: INDRA PATEL	SIGNATURE	COMPANY EMAX	DATE 4-18-08	TIME 1630	

DISTRIBUTION: White and Pink = Tetra Tech, Inc. Canary = Laboratory

X:\GIS\ATT-MISC\COCR.CDR

1003

EMAX LABORATORIES, INC.

SAMPLE RECEIPT FORM 1

Type of Delivery	Delivered By/Airbill	
☐ EMAX Courier		ECN 08D206
☐ Client Delivery		Recepient I PATEL
☑ Third Party Top Line Courier		Date 4-18-08
		Time 1630

COC Inspection

☑ Client Name	☑ Client PM/FC	☑ Sampler Name	☑ Sampling Date/Time/Location	☑ Sample ID	☑ Matrix
☐ Address	☑ Tel # / Fax #	☐ Courier Signature	☑ Analysis Required	☑ Preservative (if any)	☑ TAT

Safety Issues

☑ None ☐ High concentrations expected ☐ Superfund Site samples ☐ Rad screening required

Comments:

Packaging Inspection

Container	☑ Cooler	☐ Box	☐ Other		
Condition	☐ Custody Seal	☑ Intact	☐ Damaged		
Packaging	☐ Bubble Pack	☐ Styrofoam	☐ Popcorn	☑ Sufficient	plastic bag
Temperatures	☑ Cooler 1 3.2 °C	☐ Cooler 2 ____ °C	☐ Cooler 3 ____ °C	☐ Cooler 4 ____ °C	☐ Cooler 5 ____ °C
	☐ Cooler 6 ____ °C	☐ Cooler 7 ____ °C	☐ Cooler 8 ____ °C	☐ Cooler 9 ____ °C	☐ Cooler 10 ____ °C

Comments: ☐ PM was informed on non-compliant coolers imediately.

DISCREPANCIES

LSID	LSCID	Sample Label ID/COC ID	Discrepancy Code	Corrective Action Code
01 TO 04			A2	R2

REVIEWS

Sample Labeling [signature] Date 4-18-08

SRF [signature] Date 4/18/08

PM PK for YP. Date 4/21/08.

LEGEND:

Code	Description- Sample Management
A1	Analysis is not indicated in COC
A2	Analysis is not indicated in label
A3	Analysis is inconsistent in COC vis-à-vis label
B1	Sample ID is not indicated in COC
B2	Sample ID is not indicated in label
B3	Sample ID is inconsistent in COC vis-à-vis label
C1	Wrong container
C2	Broken container
C3	Leaking container
D1	Date and/or time is not indicated in COC
D2	Date and/or time is not indicated in label
D3	Date and/or time is inconsistent in COC vis-à-vis label

Code	Description-Sample Management
E1	Preservative needed; sample has no preservative
E2	Preservative not needed but sample is preserved
F1	Not enough quantity of samples
F2	Bubble is> 6mm
G1	Temperature is out of range (4 +_ 2°C)
G2	Out of Holding Time
G3	>20 % solid particle
H1	
H2	

Code	Description-Project Management
R1	Hold sample(s); wait for further instructions
R2	Proceed as indicated in COC
R3	Refer to attached instruction
R4	Cancel the analysis
R5	
R6	

Linh Pham

From: Ye Myint
Sent: Wednesday, April 16, 2008 11:33 AM
To: Lucita Arzadon; Mary J Mendoza
Cc: Tu Nisamaneepong; Linh Pham; Marina Lyudmirskaya
Subject: FW: Special Sampling Event at Beaumont

Please be informed that samples (below) will be coming in on Friday, 4/18/08, around 12-1 p.m. from Tetra Tech Inc. Samples will be collected on Thursday tomorrow.

Anions: by 300.0 (chloride, sulfate and nitrate)
Total and o-phosphate by 365.2.
Please call me with any questions. Thanks.

-----Original Message-----
From: Wilson, Michael [mailto:MICHAEL.WILSON@tetratech.com]
Sent: Friday, April 11, 2008 4:17 PM
To: Ye Myint
Subject: Special Sampling Event at Beaumont

Ye,

There is a small (four samples) research study event at Beaumont on Thursday April 17, 2008.

The soil samples need the following parameters analyzed.

- As, Fe, Mn
- Phosphorous
- pH
- Perchlorate
- Sulfate
- Sulfide
- TKN
- TOC

The water samples need the following parameters analyzed.

- Alkalinity
- Fe, Mn, As, S, Ca, Mg, Na, K
- Chloride
- Sulfate
- Nitrate
- Nitrogen (all forms)

- Perchlorate
- Total and Soluble Phosphorous
- TDS
- TOC

Please send containers (for four samples) consistent with the above sampling request in a cooler with bubble wrap by Wednesday April 16, 2008.

Please call with any questions.

Please advise

Thanks

Mike

Michael Wilson | Senior QA/QC Chemist
[illegible] | Mobile 909.381.1674 | Fax 909.889.1021
[illegible]

[illegible] | Suite 100 | San Bernardino, CA 92408 | www.tetratech.com

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Ye Myint

From: Sellers, Karen [Karen.Sellers@testamericainc.com]
Sent: Friday, April 25, 2008 2:17 PM
To: Ye Myint
Subject: TestAmerica Sample Receipt Acknowledgement for 08D206/G8D240286

Ye,
Attached is the sample log-in detail and COC for the samples received yesterday in good condition at 1 degree C. The samples were preserved according to 6010B requirements per your request. Please review and let me know if you have any questions or concerns.
Thanks,

KAREN SELLERS
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

880 Riverside Parkway
West Sacramento, CA 95605
Tel 916.374.4442 I Fax 916.372.1059
www.testamericainc.com

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Pick-up + Delivery: 310-235-2190
Fax: 310-235-2197
New Accounts: 310-235-2190

top line courier

08D206

Date	4/18/08
Ref. No.	
Invoice No.	31979
Order No. 1	
Order No. 2	

Ref. No: G 260200682

DUPLITEXT PRINTING & GRAPHICS (310) 559-9944

Serving Southern California

CHARGE TO:	ADDRESS:	ACCOUNT NO.

PICK-UP FROM: tetra tech	DELIVER TO NO. 1: Emax
ADDRESS: 348 W. Hospitality	ADDRESS: 1835 205th St
CITY: San Bernardino 92408	CITY: Torrance Zip:
SENDER'S NAME: EXT. NO./DEPT.	RECEIVER'S NAME: TEL. NO. /DEPT.

30 MIN.: (30 MIN.) ☐	SUPER RUSH: (1 HOUR) ☐	RUSH (2 HOURS) ☐	REGULAR: (4 HOURS) ☐	DELIVER TO NO. 2:
RETURN: ☐	WAIT TIME: ☐	NEXT DAY: ☐ 8:30 ☐ 10:00 ☐ 12:00		ADDRESS:
FILING: ☐	DEPT.: ☐	WINDOW: ☐		CITY: ZIP:
DRIVER #	SERVING: ☐	RECORDING: ☐	BANK DEPOSIT: ☐	RECEIVER'S NAME: TEL. NO. /DEPT.

NO. PKG.	DESCRIPTION AND SPECIAL INSTRUCTIONS
	35 UBS

SIGNATURE ON RETURN X 4-8-08	DEL. TIME	print name	RELEASE SIGNATURE: *Sign to authorize delivery without obtaining signature*
SIGNATURE ON DELIVERY X [signature] 1835	DEL. TIME	print name	By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

1008

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TETRA TECH, INC.

LMC BEAUMONT SITE 2

METHOD 3010A/3050B/6010B
METALS BY TRACE

SDG#: 08D206

7000

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08D206

METHOD 3010A/3050B/6010B
METALS BY TRACE ICP

Two (2) water samples and two (2) soil samples were received on 04/18/08 for Metals analysis by Method 3010A/3050B/6010B in accordance with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW846, 3rd edition.

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blanks were free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Serial Dilution/Post-Analytical Spike**

   Samples D206-01 and -03 were analyzed for serial dilution and post-analytical spike. All QC requirements were met.

5. **Matrix Spike/Matrix Spike Duplicate**

   No MS/MSD sample was designated in this SDG.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

LAB CHRONICLE
METALS BY TRACE ICP

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2

SDG NO. : 08D206
Instrument ID : T-ID8

SOIL

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1S	IPD047SB	1	NA	04/25/0818:09	04/24/0813:00	ID8D025066	ID8D025064	IPD047S	Method Blank
LCS1S	IPD047SL	1	NA	04/25/0818:15	04/24/0813:00	ID8D025067	ID8D025064	IPD047S	Lab Control Sample (LCS)
LCD1S	IPD047SC	1	NA	04/25/0818:20	04/24/0813:00	ID8D025068	ID8D025064	IPD047S	LCS Duplicate
SB2-7-15AS	D206-03A	1	6.7	04/25/0818:25	04/24/0813:00	ID8D025069	ID8D025064	IPD047S	Analytical Spike Sample
SB2-7-15	D206-03	1	6.7	04/25/0818:31	04/24/0813:00	ID8D025070	ID8D025064	IPD047S	Field Sample
SB2-7-15DL	D206-03J	5	6.7	04/25/0818:36	04/24/0813:00	ID8D025071	ID8D025064	IPD047S	Diluted Sample
SB2-7-15-DUP	D206-04	1	6.8	04/25/0818:42	04/24/0813:00	ID8D025072	ID8D025064	IPD047S	Field Sample

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	IPD044WB	1	NA	04/28/0815:55	04/23/0814:00	ID8D026013	ID8D026011	IPD044W	Method Blank
LCS1W	IPD044WL	1	NA	04/28/0816:00	04/23/0814:00	ID8D026014	ID8D026011	IPD044W	Lab Control Sample (LCS)
LCD1W	IPD044WC	1	NA	04/28/0816:06	04/23/0814:00	ID8D026015	ID8D026011	IPD044W	LCS Duplicate
TT-MW2-7AS	D206-01A	1	NA	04/28/0816:11	04/23/0814:00	ID8D026016	ID8D026011	IPD044W	Analytical Spike Sample
TT-MW2-7	D206-01	1	NA	04/28/0816:16	04/23/0814:00	ID8D026017	ID8D026011	IPD044W	Field Sample
TT-MW2-7DL	D206-01J	5	NA	04/28/0816:22	04/23/0814:00	ID8D026018	ID8D026011	IPD044W	Diluted Sample
TT-MW2-7-DUP	D206-02	1	NA	04/28/0816:28	04/23/0814:00	ID8D026019	ID8D026011	IPD044W	Field Sample

FN - Filename
% Moist - Percent Moisture

METHOD 3010A/6010B
METALS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	04/18/08 09:10
Project	: LMC BEAUMONT SITE 2	Date Received:	04/18/08
SDG NO.	: 08D206	Date Extracted:	04/23/08 14:00
Sample ID:	TT-MW2-7	Date Analyzed:	04/28/08 16:16
Lab Samp ID:	D206-01	Dilution Factor:	1
Lab File ID:	ID8D026017	Matrix :	WATER
Ext Btch ID:	IPD044W	% Moisture :	NA
Calib. Ref.:	ID8D026011	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Arsenic	ND	0.100	0.0400
Iron	ND	0.200	0.0400
Manganese	ND	0.0100	0.00300

METHOD 3010A/6010B
METALS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	04/18/08 09:15
Project	: LMC BEAUMONT SITE 2	Date Received:	04/18/08
SDG NO.	: 08D206	Date Extracted:	04/23/08 14:00
Sample ID:	TT-MW2-7-DUP	Date Analyzed:	04/28/08 16:28
Lab Samp ID:	D206-02	Dilution Factor:	1
Lab File ID:	ID8D026019	Matrix :	WATER
Ext Btch ID:	IPD044W	% Moisture :	NA
Calib. Ref.:	ID8D026011	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Arsenic	ND	0.100	0.0400
Iron	ND	0.200	0.0400
Manganese	ND	0.0100	0.00300

METHOD 3050B/6010B
METALS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	04/17/08 13:30
Project	: LMC BEAUMONT SITE 2	Date Received:	04/18/08
SDG NO.	: 08D206	Date Extracted:	04/24/08 13:00
Sample ID:	SB2-7-15	Date Analyzed:	04/25/08 18:31
Lab Samp ID:	D206-03	Dilution Factor:	1
Lab File ID:	ID8D025070	Matrix :	SOIL
Ext Btch ID:	IPD047S	% Moisture :	6.7
Calib. Ref.:	ID8D025064	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	ND	10.7	4.29
Iron	13900	21.4	5.36
Manganese	231	1.07	0.214

METHOD 3050B/6010B
METALS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	04/17/08 13:30
Project	: LMC BEAUMONT SITE 2	Date Received:	04/18/08
SDG NO.	: 08D206	Date Extracted:	04/24/08 13:00
Sample ID:	SB2-7-15-DUP	Date Analyzed:	04/25/08 18:42
Lab Samp ID:	D206-04	Dilution Factor:	1
Lab File ID:	ID8D025072	Matrix :	SOIL
Ext Btch ID:	IPD047S	% Moisture :	6.8
Calib. Ref.:	ID8D025064	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	ND	10.7	4.29
Iron	14600	21.5	5.36
Manganese	240	1.07	0.215

METHOD 3010A/6010B
METALS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	NA
Project	: LMC BEAUMONT SITE 2	Date Received:	04/23/08
SDG NO.	: 08D206	Date Extracted:	04/23/08 14:00
Sample ID:	MBLK1W	Date Analyzed:	04/28/08 15:55
Lab Samp ID:	IPD044WB	Dilution Factor:	1
Lab File ID:	ID8D026013	Matrix :	WATER
Ext Btch ID:	IPD044W	% Moisture :	NA
Calib. Ref.:	ID8D026011	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Arsenic	ND	0.100	0.0400
Iron	ND	0.200	0.0400
Manganese	ND	0.0100	0.00300

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
SDG NO.: 08D206
METHOD: METHOD 3010A/6010B

MATRIX:	WATER			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1W				
CONTROL NO.:	IPD044WB	IPD044WL	IPD044WC		
LAB FILE ID:	ID8D026013	ID8D026014	ID8D026015		
DATIME EXTRCTD:	04/23/0814:00	04/23/0814:00	04/23/0814:00	DATE COLLECTED:	NA
DATIME ANALYZD:	04/28/0815:55	04/28/0816:00	04/28/0816:06	DATE RECEIVED:	04/23/08
PREP. BATCH:	IPD044W	IPD044W	IPD044W		
CALIB. REF:	ID8D026011	ID8D026011	ID8D026011		

ACCESSION:

PARAMETER	BLNK RSLT mg/L	SPIKE AMT mg/L	BS RSLT mg/L	BS % REC	SPIKE AMT mg/L	BSD RSLT mg/L	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Arsenic	ND	1	.994	99	1	1.01	101	1	80-120	20
Iron	ND	10	10.3	103	10	10.2	102	1	80-120	20
Manganese	ND	1	1.05	105	1	1.03	103	3	80-120	20

METHOD 3050B/6010B
METALS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	NA
Project	: LMC BEAUMONT SITE 2	Date Received:	04/24/08
SDG NO.	: 08D206	Date Extracted:	04/24/08 13:00
Sample ID:	MBLK1S	Date Analyzed:	04/25/08 18:09
Lab Samp ID:	IPD047SB	Dilution Factor:	1
Lab File ID:	ID8D025066	Matrix :	SOIL
Ext Btch ID:	IPD047S	% Moisture :	NA
Calib. Ref.:	ID8D025064	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	ND	10.0	4.00
Iron	ND	20.0	5.00
Manganese	ND	1.00	0.200

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
SDG NO.: 08D206
METHOD: METHOD 3050B/6010B

MATRIX:	SOIL			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1S				
CONTROL NO.:	IPD047SB	IPD047SL	IPD047SC		
LAB FILE ID:	ID8D025066	ID8D025067	ID8D025068		
DATIME EXTRCTD:	04/24/0813:00	04/24/0813:00	04/24/0813:00	DATE COLLECTED:	NA
DATIME ANALYZD:	04/25/0818:09	04/25/0818:15	04/25/0818:20	DATE RECEIVED:	04/24/08
PREP. BATCH:	IPD047S	IPD047S	IPD047S		
CALIB. REF:	ID8D025064	ID8D025064	ID8D025064		

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Arsenic	ND	100	107	107	100	107	107	0	80-120	20
Iron	ND	1000	1000	100	1000	1000	100	0	80-120	20
Manganese	ND	100	100	100	100	99.8	100	0	80-120	20

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 3010A/6010B

MATRIX:	WATER		% MOISTURE:	NA
DILUTION FACTOR:	1	5		
SAMPLE ID:	TT-MW2-7	TT-MW2-7DL		
EMAX SAMP ID:	D206-01	D206-01J		
LAB FILE ID:	ID8D026017	ID8D026018		
DATE EXTRACTED:	04/23/0814:00	04/23/0814:00	DATE COLLECTED:	04/18/08 09:10
DATE ANALYZED:	04/28/0816:16	04/28/0816:22	DATE RECEIVED:	04/18/08
PREP. BATCH:	IPD044W	IPD044W		
CALIB. REF:	ID8D026011	ID8D026011		

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SERIAL DIL RSLT (mg/L)	DIF RSLT %	QC LIMIT (%)
Arsenic	ND	ND	0	10
Iron	ND	ND	0	10
Manganese	ND	ND	0	10

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 3050B/6010B

MATRIX:	SOIL		% MOISTURE:	6.7
DILUTION FACTOR:	1	5		
SAMPLE ID:	SB2-7-15	SB2-7-15DL		
EMAX SAMP ID:	D206-03	D206-03J		
LAB FILE ID:	ID8D025070	ID8D025071		
DATE EXTRACTED:	04/24/0813:00	04/24/0813:00	DATE COLLECTED:	04/17/08 13:30
DATE ANALYZED:	04/25/0818:31	04/25/0818:36	DATE RECEIVED:	04/18/08
PREP. BATCH:	IPD047S	IPD047S		
CALIB. REF:	ID8D025064	ID8D025064		

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SERIAL DIL RSLT (mg/kg)	DIF RSLT %	QC LIMIT (%)
Arsenic	ND	ND	0	10
Iron	13900	14600	5	10
Manganese	231	240	4	10

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
SDG NO.: 08D206
METHOD: METHOD 3010A/6010B

MATRIX:	WATER		% MOISTURE:	NA
DILTN FACTR:	1	1		
SAMPLE ID:	TT-MW2-7			
CONTROL NO.:	D206-01	D206-01A		
LAB FILE ID:	ID8D026017	ID8D026016		
DATIME EXTRCTD:	04/23/0814:00	04/23/0814:00	DATE COLLECTED:	04/18/08 09:10
DATIME ANALYZD:	04/28/0816:16	04/28/0816:11	DATE RECEIVED:	04/18/08
PREP. BATCH:	IPD044W	IPD044W		
CALIB. REF:	ID8D026011	ID8D026011		

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	AS RSLT (mg/L)	AS % REC	QC LIMIT (%)
Arsenic	ND	1	1.07	107	75-125
Iron	ND	10	10.1	101	75-125
Manganese	ND	1	1.01	101	75-125

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
SDG NO.: 08D206
METHOD: METHOD 3050B/6010B

MATRIX: SOIL % MOISTURE: 6.7
DILTN FACTR: 1 1
SAMPLE ID: SB2-7-15
CONTROL NO.: D206-03 D206-03A
LAB FILE ID: ID8D025070 ID8D025069
DATIME EXTRCTD: 04/24/0813:00 04/24/0813:00 DATE COLLECTED: 04/17/08 13:30
DATIME ANALYZD: 04/25/0818:31 04/25/0818:25 DATE RECEIVED: 04/18/08
PREP. BATCH: IPD047S IPD047S
CALIB. REF: ID8D025064 ID8D025064

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	AS RSLT (mg/kg)	AS % REC	QC LIMIT (%)
Arsenic	ND	107	113	105	75-125
Iron	13900	1070	14400	47*	75-125
Manganese	231	107	324	86	75-125

LAB CHRONICLE
CATIONS BY TRACE ICP

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2

SDG NO. : 08D206
Instrument ID : T-ID8

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	IPD044WB	1	NA	04/28/0815:55	04/23/0814:00	ID8D026013	ID8D026011	IPD044W	Method Blank
LCS1W	IPD044WL	1	NA	04/28/0816:00	04/23/0814:00	ID8D026014	ID8D026011	IPD044W	Lab Control Sample (LCS)
LCD1W	IPD044WC	1	NA	04/28/0816:06	04/23/0814:00	ID8D026015	ID8D026011	IPD044W	LCS Duplicate
TT-MW2-7AS	D206-01A	1	NA	04/28/0816:11	04/23/0814:00	ID8D026016	ID8D026011	IPD044W	Analytical Spike Sample
TT-MW2-7	D206-01	1	NA	04/28/0816:16	04/23/0814:00	ID8D026017	ID8D026011	IPD044W	Field Sample
TT-MW2-7DL	D206-01J	5	NA	04/28/0816:22	04/23/0814:00	ID8D026018	ID8D026011	IPD044W	Diluted Sample
TT-MW2-7-DUP	D206-02	1	NA	04/28/0816:28	04/23/0814:00	ID8D026019	ID8D026011	IPD044W	Field Sample

FN - Filename
% Moist - Percent Moisture

METHOD 3010A/6010B
CATIONS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	04/18/08 09:10
Project	: LMC BEAUMONT SITE 2	Date Received:	04/18/08
SDG NO.	: 08D206	Date Extracted:	04/23/08 14:00
Sample ID:	TT-MW2-7	Date Analyzed:	04/28/08 16:16
Lab Samp ID:	D206-01	Dilution Factor:	1
Lab File ID:	ID8D026017	Matrix :	WATER
Ext Btch ID:	IPD044W	% Moisture :	NA
Calib. Ref.:	ID8D026011	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Calcium	81.0	1.00	0.100
Magnesium	9.64	1.00	0.100
Potassium	0.733J	2.00	0.100
Sodium	240	1.00	0.100

METHOD 3010A/6010B
CATIONS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	04/18/08 09:15
Project	: LMC BEAUMONT SITE 2	Date Received:	04/18/08
SDG NO.	: 08D206	Date Extracted:	04/23/08 14:00
Sample ID:	TT-MW2-7-DUP	Date Analyzed:	04/28/08 16:28
Lab Samp ID:	D206-02	Dilution Factor:	1
Lab File ID:	ID8D026019	Matrix :	WATER
Ext Btch ID:	IPD044W	% Moisture :	NA
Calib. Ref.:	ID8D026011	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Calcium	81.1	1.00	0.100
Magnesium	9.74	1.00	0.100
Potassium	0.700J	2.00	0.100
Sodium	237	1.00	0.100

METHOD 3010A/6010B
CATIONS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	NA
Project	: LMC BEAUMONT SITE 2	Date Received:	04/23/08
SDG NO.	: 08D206	Date Extracted:	04/23/08 14:00
Sample ID:	MBLK1W	Date Analyzed:	04/28/08 15:55
Lab Samp ID:	IPD044WB	Dilution Factor:	1
Lab File ID:	ID8D026013	Matrix :	WATER
Ext Btch ID:	IPD044W	% Moisture :	NA
Calib. Ref.:	ID8D026011	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Calcium	ND	1.00	0.100
Magnesium	ND	1.00	0.100
Potassium	ND	2.00	0.100
Sodium	ND	1.00	0.100

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
SDG NO.: 08D206
METHOD: METHOD 3010A/6010B

MATRIX:	WATER			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1W				
CONTROL NO.:	IPD044WB	IPD044WL	IPD044WC		
LAB FILE ID:	ID8D026013	ID8D026014	ID8D026015		
DATIME EXTRCTD:	04/23/0814:00	04/23/0814:00	04/23/0814:00	DATE COLLECTED:	NA
DATIME ANALYZD:	04/28/0815:55	04/28/0816:00	04/28/0816:06	DATE RECEIVED:	04/23/08
PREP. BATCH:	IPD044W	IPD044W	IPD044W		
CALIB. REF:	ID8D026011	ID8D026011	ID8D026011		

ACCESSION:

PARAMETER	BLNK RSLT mg/L	SPIKE AMT mg/L	BS RSLT mg/L	BS % REC	SPIKE AMT mg/L	BSD RSLT mg/L	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Calcium	ND	50	52.3	105	50	51.9	104	1	80-120	20
Magnesium	ND	50	52	104	50	51.3	103	1	80-120	20
Potassium	ND	50	52.6	105	50	51.1	102	3	80-120	20
Sodium	ND	50	50.3	101	50	50.1	100	0	80-120	20

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 3010A/6010B

MATRIX:	WATER		% MOISTURE:	NA
DILUTION FACTOR:	1	5		
SAMPLE ID:	TT-MW2-7	TT-MW2-7DL		
EMAX SAMP ID:	D206-01	D206-01J		
LAB FILE ID:	ID8D026017	ID8D026018		
DATE EXTRACTED:	04/23/0814:00	04/23/0814:00	DATE COLLECTED:	04/18/08 09:10
DATE ANALYZED:	04/28/0816:16	04/28/0816:22	DATE RECEIVED:	04/18/08
PREP. BATCH:	IPD044W	IPD044W		
CALIB. REF:	ID8D026011	ID8D026011		

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SERIAL DIL RSLT (mg/L)	DIF RSLT %	QC LIMIT (%)
Calcium	81.0	83.1	2	10
Magnesium	9.64	9.94	3	10
Potassium	0.733J	0.950J	NA	10
Sodium	240	243	2	10

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
SDG NO.: 08D206
METHOD: METHOD 3010A/6010B

MATRIX:	WATER		% MOISTURE:	NA
DILTN FACTR:	1	1		
SAMPLE ID:	TT-MW2-7			
CONTROL NO.:	D206-01	D206-01A		
LAB FILE ID:	ID8D026017	ID8D026016		
DATIME EXTRCTD:	04/23/0814:00	04/23/0814:00	DATE COLLECTED:	04/18/08 09:10
DATIME ANALYZD:	04/28/0816:16	04/28/0816:11	DATE RECEIVED:	04/18/08
PREP. BATCH:	IPD044W	IPD044W		
CALIB. REF:	ID8D026011	ID8D026011		

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	AS RSLT (mg/L)	AS % REC	QC LIMIT (%)
Calcium	81	50	130	98	75-125
Magnesium	9.64	50	60.6	102	75-125
Potassium	.733J	50	53.5	106	75-125
Sodium	240	50	281	83	75-125

TRACE-LOW ICP QC CHECK TABLE

QC	ICV HIGH	ICV	CCV	ICSAB	ICSA
Limit%	95-105	90-110	90-110	80-120	80-120
Comp	mg/L	mg/L	mg/L	mg/L	mg/L
Al	10	5	5	500	500
Sb	1	0.5	0.5	1	0
As	1	0.5	0.5	1	0
Ba	1	0.5	0.5	0.5	0
Be	1	0.5	0.5	0.5	0
B	1	0.5	0.5	0.5	0
Cd	1	0.5	0.5	1	0
Ca	100	50	50	500	500
Cr	1	0.5	0.5	0.5	0
Co	1	0.5	0.5	0.5	0
Cu	1	0.5	0.5	0.5	0
Fe	10	5	5	200	200
Pb	1	0.5	0.5	1	0
Li	1	0.5	0.5	0.5	0
Mg	100	50	50	500	500
Mn	1	0.5	0.5	0.5	0
Mo	1	0.5	0.5	1	0
Ni	1	0.5	0.5	1	0
K	100	50	50	75	0
Se	1	0.5	0.5	1	0
Si	1	0.5	0.5	1	0
Ag	1	0.5	0.5	1	0
Na	100	50	50	75	0
Sr	1	0.5	0.5	0.5	0
Tl	1	0.5	0.5	1	0
Sn	1	0.5	0.5	1	0
Ti	1	0.5	0.5	1	0
U	10	5	5	1	0
V	1	0.5	0.5	0.5	0
Zn	1	0.5	0.5	1	0

ANALYSIS RUN LOG
for
ICP

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Start Date: 4/25/08 12:10

End Date: 4/26/08 0200

Comments:

IPD043 WB Zn 0.15
CCV 8 V↑
CCV 10 B↑
CCB 10 B↑
CCV 11 B↑
CCB 11 B↑
CCV 14 K↑ Na↑
CCV 15 Na↑ ~~K↑~~ K↑ Jc 4/28/08
CCB 15 Na 0.23

Book #: AD8-005

Instrument No.: D8

Analytical Batch: ID8 D025

Analytical Sequence: S_080600D(V48)

Method File: 080600D(~~HH~~ V48) Jc 4/28/08

SOP #	Rev. #
☑ EMAX-6010	5
☐ EMAX-200.7	0
☐ EMAX-	

STANDARDS ID	
S0	SmIB11.22.06
S1	NA
S2	SmIB11.19.05
S3	NA
S4	NA
S5	SmIB11.19.06
S6	NA
S7	NA
S8	SmIB11.18.04
S9	NA
S_{11}	SmIB11.18.05
S_{12}	↓ .18.06
ICV	SmIB11.~~18.05~~ 20.06 Jc 4/28/08
CCV	SmIB11.24.03
ICSA	SmIB11.19.01
ICSAB	↓ .18.01
CRI/MRL MRL1A Bumplow	SmIB11.25.01
MRL1B CAm3	SmIB11.08.06

Analyzed By: Jc [illegible]

Date: 4/28/08

SEQUENCE FILE : ID8D025

4-18	19-33	34-43	44-53	54-63
LFID	LSID	TIME	DATE	DF
ID8D025001	Blank	12:10	04/25/08	1.000
ID8D025002	S2	12:15	04/25/08	1.000
ID8D025003	S5	12:21	04/25/08	1.000
ID8D025004	S8	12:26	04/25/08	1.000
ID8D025005	S11	12:32	04/25/08	1.000
ID8D025006	S17	12:37	04/25/08	1.000
ID8D025007	ICV	12:43	04/25/08	1.000
ID8D025008	ICB	12:48	04/25/08	1.000
ID8D025009	MRL1A	12:54	04/25/08	1.000
ID8D025010	MRL1B	12:59	04/25/08	1.000
ID8D025011	ICSA1	13:05	04/25/08	1.000
ID8D025012	ICSAB1	13:11	04/25/08	1.000
ID8D025013	CCV1	13:16	04/25/08	1.000
ID8D025014	CCB1	13:21	04/25/08	1.000
ID8D025015	D494-01A	13:27	04/25/08	5.000
ID8D025016	D494-01	13:33	04/25/08	5.000
ID8D025017	D494-01J	13:38	04/25/08	25.000
ID8D025018	D494-02	13:44	04/25/08	5.000
ID8D025019	D501-01	13:49	04/25/08	10.000
ID8D025020	D164-04	13:55	04/25/08	10.000
ID8D025021	BLANK	14:00	04/25/08	1.000
ID8D025022	BLANK	14:06	04/25/08	1.000
ID8D025023	CCV2	14:12	04/25/08	1.000
ID8D025024	CCB2	14:17	04/25/08	1.000
ID8D025025	IPD043WB	14:22	04/25/08	1.000
ID8D025026	IPD043WL	14:28	04/25/08	1.000
ID8D025027	IPD043WC	14:33	04/25/08	1.000
ID8D025028	BLANK	14:39	04/25/08	1.000
ID8D025029	CCV3	14:44	04/25/08	1.000
ID8D025030	CCB3	14:50	04/25/08	1.000
ID8D025031	D230-02A	14:55	04/25/08	1.000
ID8D025032	D230-02	15:00	04/25/08	1.000
ID8D025033	D230-02J	15:06	04/25/08	5.000
ID8D025034	D230-03	15:12	04/25/08	1.000
ID8D025035	D230-04	15:17	04/25/08	1.000
ID8D025036	D215-02	15:23	04/25/08	1.000
ID8D025037	BLANK	15:28	04/25/08	1.000
ID8D025038	CCV4	15:34	04/25/08	1.000
ID8D025039	CCB4	15:39	04/25/08	1.000
ID8D025040	IPD048WB	15:45	04/25/08	1.000
ID8D025041	IPD048WL	15:50	04/25/08	1.000
ID8D025042	IPD048WC	15:56	04/25/08	1.000
ID8D025043	ICSA2	16:01	04/25/08	1.000
ID8D025044	ICSAB2	16:07	04/25/08	1.000
ID8D025045	BLANK	16:12	04/25/08	1.000
ID8D025046	CCV5	16:18	04/25/08	1.000
ID8D025047	CCB5	16:23	04/25/08	1.000
ID8D025048	TXD005SB	16:29	04/25/08	1.000
ID8D025049	D223-05M	16:35	04/25/08	1.000
ID8D025050	D223-05S	16:40	04/25/08	1.000
ID8D025051	D223-05A	16:45	04/25/08	1.000
ID8D025052	D223-05	16:51	04/25/08	1.000
ID8D025053	D223-05J	16:57	04/25/08	5.000

7021

ID8D025054	BLANK	17:02	04/25/08	1.000
ID8D025055	BLANK	17:08	04/25/08	1.000
ID8D025056	CCV6	17:13	04/25/08	1.000
ID8D025057	CCB6	17:18	04/25/08	1.000
ID8D025058	D223-01	17:24	04/25/08	1.000
ID8D025059	D223-02	17:30	04/25/08	1.000
ID8D025060	D223-03	17:35	04/25/08	1.000
ID8D025061	D223-04	17:41	04/25/08	1.000
ID8D025062	BLANK	17:47	04/25/08	1.000
ID8D025063	BLANK	17:52	04/25/08	1.000
ID8D025064	CCV7	17:58	04/25/08	1.000
ID8D025065	CCB7	18:03	04/25/08	1.000
ID8D025066	IPD047SB	18:09	04/25/08	1.000
ID8D025067	IPD047SL	18:15	04/25/08	1.000
ID8D025068	IPD047SC	18:20	04/25/08	1.000
ID8D025069	D206-03A	18:25	04/25/08	1.000
ID8D025070	D206-03	18:31	04/25/08	1.000
ID8D025071	D206-03J	18:36	04/25/08	5.000
ID8D025072	D206-04	18:42	04/25/08	1.000
ID8D025073	D496-04	18:47	04/25/08	1.000
ID8D025074	D496-05	18:53	04/25/08	1.000
ID8D025075	BLANK	18:58	04/25/08	1.000
ID8D025076	CCV8	19:04	04/25/08	1.000
ID8D025077	CCB8	19:09	04/25/08	1.000
ID8D025078	B238-01	19:15	04/25/08	1.000
ID8D025079	B238-02	19:20	04/25/08	1.000
ID8D025080	B238-03	19:25	04/25/08	1.000
ID8D025081	B238-04	19:31	04/25/08	1.000
ID8D025082	B238-05	19:36	04/25/08	1.000
ID8D025083	B238-06	19:42	04/25/08	1.000
ID8D025084	BLANK	19:47	04/25/08	1.000
ID8D025085	ICSA3	19:53	04/25/08	1.000
ID8D025086	ICSAB3	19:59	04/25/08	1.000
ID8D025087	BLANK	20:04	04/25/08	1.000
ID8D025088	CCV9	20:10	04/25/08	1.000
ID8D025089	CCB9	20:15	04/25/08	1.000
ID8D025090	IPD044WB	20:21	04/25/08	1.000
ID8D025091	IPD044WL	20:26	04/25/08	1.000
ID8D025092	IPD044WC	20:31	04/25/08	1.000
ID8D025093	D508-01A	20:37	04/25/08	1.000
ID8D025094	D508-01	20:42	04/25/08	1.000
ID8D025095	D508-01J	20:48	04/25/08	5.000
ID8D025096	BLANK	20:54	04/25/08	1.000
ID8D025097	CCV10	20:59	04/25/08	1.000
ID8D025098	CCB10	21:05	04/25/08	1.000
ID8D025099	D211-02	21:10	04/25/08	1.000
ID8D025100	D211-05	21:16	04/25/08	1.000
ID8D025101	D211-07	21:21	04/25/08	1.000
ID8D025102	D211-03	21:27	04/25/08	1.000
ID8D025103	D211-07	21:32	04/25/08	1.000
ID8D025104	D194-03	21:38	04/25/08	1.000
ID8D025105	D194-06	21:43	04/25/08	1.000
ID8D025106	BLANK	21:49	04/25/08	1.000
ID8D025107	BLANK	21:54	04/25/08	1.000
ID8D025108	BLANK	22:00	04/25/08	1.000
ID8D025109	CCV11	22:06	04/25/08	1.000

CSOL

ID8D025110	CCB11	22:11	04/25/08	1.000
ID8D025111	ICSA4	22:17	04/25/08	1.000
ID8D025112	ICSAB4	22:22	04/25/08	1.000
ID8D025113	BLANK	22:28	04/25/08	1.000
ID8D025114	CCV12	22:34	04/25/08	1.000
ID8D025115	CCB12	22:39	04/25/08	1.000
ID8D025116	WTD007SB	22:44	04/25/08	1.000
ID8D025117	D131-01M	22:50	04/25/08	1.000
ID8D025118	D131-01S	22:56	04/25/08	1.000
ID8D025119	BLANK	23:01	04/25/08	1.000
ID8D025120	BLANK	23:07	04/25/08	1.000
ID8D025121	BLANK	23:12	04/25/08	1.000
ID8D025122	BLANK	23:18	04/25/08	1.000
ID8D025123	BLANK	23:24	04/25/08	1.000
ID8D025124	BLANK	23:29	04/25/08	1.000
ID8D025125	BLANK	23:35	04/25/08	1.000
ID8D025126	CCV13	23:40	04/25/08	1.000
ID8D025127	CCB13	23:46	04/25/08	1.000
ID8D025128	D131-01A	23:51	04/25/08	1.000
ID8D025129	D131-01	23:57	04/25/08	1.000
ID8D025130	D131-01J	00:02	04/26/08	5.000
ID8D025131	D166-01	00:08	04/26/08	1.000
ID8D025132	BLANK	00:14	04/26/08	1.000
ID8D025133	BLANK	00:19	04/26/08	1.000
ID8D025134	BLANK	00:25	04/26/08	1.000
ID8D025135	BLANK	00:31	04/26/08	1.000
ID8D025136	BLANK	00:36	04/26/08	1.000
ID8D025137	BLANK	00:42	04/26/08	1.000
ID8D025138	CCV14	00:47	04/26/08	1.000
ID8D025139	CCB14	00:53	04/26/08	1.000
ID8D025140	ZZZZZ	00:58	04/26/08	1.000
ID8D025141	ZZZZZ	01:04	04/26/08	1.000
ID8D025142	ZZZZZ	01:10	04/26/08	5.000
ID8D025143	D164-03A	01:15	04/26/08	5.000
ID8D025144	D164-03	01:21	04/26/08	5.000
ID8D025145	D164-03J	01:27	04/26/08	25.000
ID8D025146	ZZZZZ	01:32	04/26/08	5.000
ID8D025147	BLANK	01:38	04/26/08	1.000
ID8D025148	BLANK	01:43	04/26/08	1.000
ID8D025149	BLANK	01:49	04/26/08	1.000
ID8D025150	CCV15	01:54	04/26/08	1.000
ID8D025151	CCB15	02:00	04/26/08	1.000

SDG : 080206 UNIT : % SUMMARY of ICV and CCV : ID8D025 DATE : 04/25/08 I

ANALYTE	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	Tl	V	Zn
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICV	105	98	100	95	97	105	93	99	95	94	96	97	95	98	94	96	94	98	98	97	99	96	96	95
ICB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MRL1A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MRL1B	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA1	106	----	----	----	----	----	----	94	----	----	----	91	----	102	----	----	----	----	----	----	----	----	----	----
ICSAB1	105	87	104	107	98	108	97	93	95	97	109	89	97	101	93	105	96	108	103	110	108	96	101	96
CCV1	108	100	104	99	100	105	96	99	99	97	102	97	95	99	96	100	96	101	104	102	102	97	105	96
CCB1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D494-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D494-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D494-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D494-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D501-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV2	107	100	104	99	99	105	96	99	100	96	101	97	95	99	96	99	96	101	104	102	102	96	105	96
CCB2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD043WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD043WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD043WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV3	107	99	104	100	100	106	96	99	101	97	103	97	95	100	98	98	96	102	104	104	103	95	107	95
CCB3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D230-02A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D230-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D230-02J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D230-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D230-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D215-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV4	109	100	106	100	101	106	96	98	103	97	106	97	95	100	98	98	96	103	107	105	104	95	110	95
CCB4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD048WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD048WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD048WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA2	107	----	----	----	----	----	----	93	----	----	----	91	----	102	----	----	----	----	----	----	----	----	----	----
ICSAB2	106	87	106	108	98	108	97	93	98	97	111	89	96	101	93	103	96	109	105	112	109	94	105	96
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV5	107	98	105	98	99	104	95	96	101	96	104	95	93	97	96	97	95	102	105	103	103	94	108	93
CCB5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TXD005SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-05M	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-05S	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-05A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-05J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

7027

BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV6	107	99	104	100	100	105	96	98	101	97	102	96	95	99	96	98	96	103	104	103	103	95	106	95	
CCB6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV7	108	100	106	99	100	106	96	98	101	97	104	97	95	98	96	99	96	103	106	103	104	96	108	95	
CCB7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-03A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-03J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D496-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D496-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV8	109	100	108	100	100	106	97	98	104	97	106	98	95	99	96	98	97	104	109	105	105	95	111*	96	
CCB8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA3	107	----	----	----	----	----	----	93	----	----	----	91	----	99	----	----	----	----	----	----	----	----	----	----	----
ICSAB3	105	87	106	109	97	108	97	90	98	97	110	89	95	98	90	101	95	112	105	112	112	93	105	95	
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV9	108	100	107	101	99	105	97	97	102	97	104	97	95	97	94	98	96	105	108	104	106	96	109	96	
CCB9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D508-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D508-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D508-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV10	106	100	105	101	98	196*	97	97	100	96	101	97	95	95	91	99	96	105	105	101	105	96	105	96	
CCB10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D211-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D211-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D211-07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D211-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D211-07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D194-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D194-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV11	106	100	104	101	98	112*	97	97	100	96	101	97	95	94	90	99	96	105	105	101	105	96	105	96	

CCB11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA4	105	----	----	----	----	----	----	92	----	----	----	90	----	97	----	----	----	----	----	----	----	----	----	----	----
ICSAB4	105	87	104	107	95	110	96	90	95	96	109	88	95	94	87	103	95	112	104	109	112	94	102	95	
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV12	106	100	104	101	97	108	97	97	99	96	101	97	95	94	90	99	96	105	105	101	106	96	104	96	
CCB12	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
WTD007SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01M	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01S	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV13	105	100	104	104	97	106	96	96	100	97	101	96	95	94	91	99	96	109	104	102	109	96	105	95	
CCB13	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D166-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV14	105	100	104	104	97	105	97	96	99	96	99	96	95	94	91	99	96	112*	105	100	111*	96	103	96	
CCB14	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV15	103	100	103	105	97	104	97	96	97	96	98	95	96	94	92	99	96	114*	103	100	112*	97	101	96	
CCB15	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

QC limit of each parameter are listed in a table attached next to all the ICP check forms
* : Out of QC Limit

J029

SDG : 080206 UNIT : UG/L SUMMARY of CALIBRATION BLANKS : ID8D025 (SOIL) DATE : 04/25/08 I

ANALYTE	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	Tl	V	Zn
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICV	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICB	7.43	-1.78	-.600	.310	.040	1.48	.040	-25.1	.080	-.020	.330	-4.84	-.020	-2.26	-.100	.010	.150	-24.9	.900	.160	-32.1	.180	.070	-.830
MRL1A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MRL1B	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA1	----	-5.47	-3.92	.320	-.260	-14.7	1.19	----	.100	-1.07	2.74	----	1.35	----	-.480	-2.85	.830	-11.3	-.310	.770	87.8	5.48	-.230	3.61
ICSAB1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB1	23.8	-2.05	-.520	.250	.020	1.67	.070	-2.21	.010	.080	.100	.520	.190	.520	.030	.050	.000	-27.6	1.77	.150	-36.1	.640	-.160	-.190
D494-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D494-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D494-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D494-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D501-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB2	12.0	-.260	.560	.360	.010	-2.29	.040	57.2	-.090	-.020	.050	-3.54	-.310	7.57	-.150	.190	-.140	-37.3	.960	.150	-42.4	-.650	-.080	3.10
IPD043WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD043WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD043WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB3	18.8	-1.15	-.090	.180	.020	-1.67	.040	23.5	-.060	.020	-.210	-6.27	-.630	6.19	-.070	.130	-.050	-48.3	1.48	.060	-50.8	.400	-.210	1.07
D230-02A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D230-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D230-02J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D230-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D230-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D215-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB4	18.5	-1.63	-.490	.310	.020	-2.29	.040	1.13	.090	.040	-.210	-6.46	.010	-2.16	-.110	-.040	-.230	-15.9	.680	.150	-46.7	-.880	-.040	-.350
IPD048WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD048WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD048WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA2	----	-1.37	-1.60	.370	-.210	-18.3	-.520	----	.580	-.930	2.67	----	-1.44	----	.010	-2.98	.850	5.78	2.81	.830	64.9	3.53	-.070	6.38
ICSAB2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB5	20.2	-1.26	-.690	.260	-.020	-2.02	.010	1.37	.200	.060	-.170	-5.55	-.010	-10.2	.110	.140	.000	-20.8	1.80	.130	-51.2	-1.01	.190	.160
TXD005SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-05M	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-05S	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-05A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-05J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

0504

BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB6	21.7	-.180	-1.34	.260	.040	-1.72	.030	22.5	-.050	.120	-.120	-2.11	-.070	-4.58	-.100	.140	-.090	-41.1	.810	.610	-34.2	-1.23	-.190	.840	
D223-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D223-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB7	21.1	-.850	-.440	.430	.030	-2.00	-.020	12.6	.050	.020	-.130	-1.66	-.350	4.45	-.260	.060	-.110	-28.9	1.89	.140	-18.3	-.700	.120	.240	
IPD047SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-03A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-03J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D496-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D496-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB8	22.0	-.420	-.990	.560	.000	-2.03	.010	52.2	-.090	.080	-.270	-5.92	-.290	.670	.050	.060	-.070	-20.3	1.22	.070	-58.2	-1.13	-.290	2.42	
B238-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA3	----	-3.26	2.12	.340	-.220	-19.3	-.570	----	.740	-.800	2.74	----	-2.11	----	-.190	-2.75	1.01	-29.1	-.890	.510	29.2	3.56	-.280	8.40	
ICSAB3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB9	18.5	-.630	-1.93	.020	.030	-1.80	.020	41.1	.130	.120	-.300	.980	.210	7.60	.020	.050	-.120	-40.8	2.19	.010	-55.4	-.430	-.130	1.36	
IPD044WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D508-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D508-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D508-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB10	11.3	-.040	-.790	.000	-.020	297	.050	-9.73	-.130	.000	.070	-2.87	.120	.590	-.080	.090	-.140	74.7	.780	.040	27.1	.080	-.090	-1.06	
D211-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D211-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D211-07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D211-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D211-07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D194-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D194-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
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BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

CCB11	7.60	-1.80	.500	.090	-.060	35.1	.060	9.83	-.040	-.030	.150	-3.44	-.690	-4.68	.110	.100	-.010	8.86	-.620	.180	-44.8	-.830	-.080	-.720
ICSA4	----	-2.79	-3.86	.820	-.280	13.3	.760	----	.220	-1.07	2.82	----	.550	----	-.540	-3.02	1.06	-19.7	-2.92	.580	58.4	4.88	-.210	4.98
ICSAB4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV12	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB12	8.12	-2.11	.760	.180	.010	16.2	.030	-2.02	-.110	.050	-.020	-7.38	.250	-.160	.410	.180	-.060	-44.0	.370	.110	-54.9	-.550	-.130	-.990
WTD007SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01M	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01S	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
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BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV13	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB13	6.95	-1.40	.380	.230	.000	6.39	.060	3.76	.060	.090	-.180	-3.80	-.970	14.3	.110	-.300	-.220	-20.7	1.30	.090	47.5	-.680	-.130	.580
D131-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D166-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
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BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV14	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB14	2.32	-.590	-.190	-.150	.000	3.29	.040	-4.74	-.030	.050	-.060	-1.86	-.320	4.40	-.020	.030	.040	-37.5	.450	.040	93.8	.300	-.060	-.010
D164-03A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D164-03A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV15	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB15	8.92	-1.14	-2.00	-.010	.030	1.15	.050	-35.5	-.030	-.030	-.100	-2.55	-.220	19.0	-.040	.100	.000	-16.3	.460	-.100	237	-.970	.050	-1.96

QC limit of each parameter are listed in a table attached next to all the ICP check forms
* : Out of QC Limit

2901

	Pos ID	Type	Samplename	Comment	Data File	Type*	Dilln Factor	CorrFact	Check		Fail Action
1	0	Unk	S0		ID8D025001			1	☐		Continue
2	0	Unk	S2		ID8D025002			1	☐		Continue
3	0	Unk	S5		ID8D025003			1	☐		Continue
4	0	Unk	S8		ID8D025004			1	☐		Continue
5	0	Unk	S11		ID8D025005			1	☐		Continue
6	0	Unk	S17		ID8D025006			1	☐		Continue
7	1	QC	ICV		ID8D025007			1	☒	ICV	Continue
8	2	QC	ICB		ID8D025008			1	☒	CCB1	Continue
9	3	Unk	MRL1A		ID8D025009			1	☐		Continue
10	4	Unk	MRL1B		ID8D025010			1	☐		Continue
11	5	QC	ICSA1		ID8D025011			1	☒	ICSA	Continue
12	6	QC	ICSAB1		ID8D025012			1	☒	ICSAB	Continue
13	7	QC	CCV1		ID8D025013			1	☒	CCV	Continue
14	8	QC	CCB1		ID8D025014			1	☒	CCB1	Continue
15	9	Unk	D494-01A	5X Cu	ID8D025015			1	☐		Continue
16	10	Unk	D494-01	5X Cu	ID8D025016			1	☐		Continue
17	11	Unk	D494-01J	25X Cu	ID8D025017			1	☐		Continue
18	12	Unk	D494-02	5X Cu	ID8D025018			1	☐		Continue
19	13	Unk	D501-01	10X Zn	ID8D025019			1	☐		Continue
20	14	Unk	D164-04	10X Fe	ID8D025020			1	☐		Continue
21	15	Unk	BLANK		ID8D025021			1	☐		Continue
22	16	Unk	BLANK		ID8D025022			1	☐		Continue
23	17	QC	CCV2		ID8D025023			1	☒	CCV	Continue
24	18	QC	CCB2		ID8D025024			1	☒	CCB1	Continue
25	19	QC	IPD043WB	2.015	ID8D025025			1	☒	CCB1	Continue
26	20	QC	IPD043WL		ID8D025026			1	☒	LCS	Continue
27	21	QC	IPD043WC		ID8D025027			1	☒	LCS	Continue
28	22	Unk	BLANK		ID8D025028			1	☐		Continue
29	23	QC	CCV3		ID8D025029			1	☒	CCV	Continue
30	24	QC	CCB3		ID8D025030			1	☒	CCB1	Continue
31	25	Unk	D230-02A		ID8D025031			1	☐		Continue
32	26	Unk	D230-02		ID8D025032			1	☐		Continue
33	27	Unk	D230-02J		ID8D025033			1	☐		Continue
34	28	Unk	D230-03		ID8D025034			1	☐		Continue
35	29	Unk	D230-04		ID8D025035			1	☐		Continue
36	30	Unk	D215-02		ID8D025036			1	☐		Continue
37	31	Unk	BLANK		ID8D025037			1	☐		Continue
38	35	QC	CCV4	V1107	ID8D025038			1	☒	CCV	Continue
39	36	QC	CCB4		ID8D025039			1	☒	CCB1	Continue
40	129	QC	IPD048WB		ID8D025040			1	☒	CCB1	Continue
41	130	QC	IPD048WL		ID8D025041			1	☒	LCS	Continue
42	131	QC	IPD048WC		ID8D025042			1	☒	LCS	Continue
43	32	QC	ICSA2		ID8D025043			1	☒	ICSA	Continue
44	33	QC	ICSAB2		ID8D025044			1	☒	ICSAB	Continue
45	34	Unk	BLANK		ID8D025045			1	☐		Continue
46	132	QC	CCV5		ID8D025046			1	☒	CCV	Continue

TO3

	Pos ID	Type	Samplename	Comment	Data File	Type*	Diln Factor	CorrFact	Check	Check Table	Fail Action
47	133	QC	CCB5		ID8D025047			1	☒	CCB1	Continue
48	37	Unk	TXD005SB	TCLP	ID8D025048			1	☐		Continue
49	38	Unk	D223-05M	TCLP	ID8D025049			1	☐		Continue
50	39	Unk	D223-05S	TCLP	ID8D025050			1	☐		Continue
51	40	Unk	D223-05A	TCLP	ID8D025051			1	☐		Continue
52	41	Unk	D223-05	TCLP	ID8D025052			1	☐		Continue
53	42	Unk	D223-05J	TCLP	ID8D025053			1	☐		Continue
54	43	Unk	BLANK		ID8D025054			1	☐		Continue
55	44	Unk	BLANK		ID8D025055			1	☐		Continue
56	45	QC	CCV6		ID8D025056			1	☒	CCV	Continue
57	46	QC	CCB6		ID8D025057			1	☒	CCB1	Continue
58	47	Unk	D223-01	TCLP	ID8D025058			1	☐		Continue
59	48	Unk	D223-02	TCLP	ID8D025059			1	☐		Continue
60	49	Unk	D223-03	TCLP	ID8D025060			1	☐		Continue
61	50	Unk	D223-04	TCLP	ID8D025061			1	☐		Continue
62	51	Unk	BLANK		ID8D025062			1	☐		Continue
63	52	Unk	BLANK		ID8D025063			1	☐		Continue
64	53	QC	CCV7		ID8D025064			1	☒	CCV	Continue
65	54	QC	CCB7		ID8D025065			1	☒	CCB1	Continue
66	55	QC	IPD047SB		ID8D025066			1	☒	CCB1	Continue
67	56	QC	IPD047SL		ID8D025067			1	☒	LCS	Continue
68	57	QC	IPD047SC		ID8D025068			1	☒	LCS	Continue
69	58	Unk	D206-03A		ID8D025069			1	☐		Continue
70	59	Unk	D206-03		ID8D025070			1	☐		Continue
71	60	Unk	D206-03J		ID8D025071			1	☐		Continue
72	61	Unk	D206-04		ID8D025072			1	☐		Continue
73	62	Unk	D496-04		ID8D025073			1	☐		Continue
74	63	Unk	D496-05		ID8D025074			1	☐		Continue
75	64	Unk	BLANK		ID8D025075			1	☐		Continue
76	65	QC	CCV8		ID8D025076			1	☒	CCV	Continue
77	66	QC	CCB8		ID8D025077			1	☒	CCB1	Continue
78	67	Unk	B238-01		ID8D025078			1	☐		Continue
79	68	Unk	B238-02		ID8D025079			1	☐		Continue
80	69	Unk	B238-03		ID8D025080			1	☐		Continue
81	70	Unk	B238-04		ID8D025081			1	☐		Continue
82	71	Unk	B238-05		ID8D025082			1	☐		Continue
83	72	Unk	B238-06		ID8D025083			1	☐		Continue
84	73	Unk	BLANK		ID8D025084			1	☐		Continue
85	74	QC	ICSA3		ID8D025085			1	☒	ICSA	Continue
86	75	QC	ICSAB3		ID8D025086			1	☒	ICSAB	Continue
87	76	Unk	BLANK		ID8D025087			1	☐		Continue
88	77	QC	CCV9		ID8D025088			1	☒	CCV	Continue
89	78	QC	CCB9		ID8D025089			1	☒	CCB1	Continue
90	79	QC	IPD044WB		ID8D025090			1	☒	CCB1	Continue
91	80	QC	IPD044WL		ID8D025091			1	☒	LCS	Continue
92	81	QC	IPD044WC		ID8D025092			1	☒	LCS	Continue

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04/28/08 09:05:32

	Pos ID	Type	Samplename	Comment	Data File	Type*	Dilln Factor	CorrFact	Check	Check Table	Fail Action
93	82	Unk	D508-01A		ID8D025093			1	☐		Continue
94	83	Unk	D508-01		ID8D025094			1	☐		Continue
95	84	Unk	D508-01J		ID8D025095			1	☐		Continue
96	85	Unk	BLANK		ID8D025096			1	☐		Continue
97	86	QC	CCV10	B1	ID8D025097			1	☒	CCV	Continue
98	87	QC	CCB10	80.29	ID8D025098			1	☒	CCB1	Continue
99	88	Unk	D211-02	TOT	ID8D025099			1	☐		Continue
100	89	Unk	D211-05	TOT	ID8D025100			1	☐		Continue
101	90	Unk	D211-07	TOT	ID8D025101			1	☐		Continue
102	91	Unk	D211-03	DISS	ID8D025102			1	☐		Continue
103	92	Unk	D211-07	DISS	ID8D025103			1	☐		Continue
104	93	Unk	D194-03	TOT	ID8D025104			1	☐		Continue
105	94	Unk	D194-06	TOT	ID8D025105			1	☐		Continue
106	95	Unk	BLANK		ID8D025106			1	☐		Continue
107	96	Unk	BLANK		ID8D025107			1	☐		Continue
108	97	Unk	BLANK		ID8D025108			1	☐		Continue
109	98	QC	CCV11	B1	ID8D025109			1	☒	CCV	Continue
110	99	QC	CCB11	80.835	ID8D025110			1	☒	CCB1	Continue
111	100	QC	ICSA4		ID8D025111			1	☒	ICSA	Continue
112	101	QC	ICSAB4		ID8D025112			1	☒	ICSAB	Continue
113	102	Unk	BLANK		ID8D025113			1	☐		Continue
114	103	QC	CCV12		ID8D025114			1	☒	CCV	Continue
115	104	QC	CCB12		ID8D025115			1	☒	CCB1	Continue
116	105	Unk	WTD007SB	STLC	ID8D025116			1	☐		Continue
117	106	Unk	D131-01M	STLC	ID8D025117			1	☐		Continue
118	107	Unk	D131-01S	STLC	ID8D025118			1	☐		Continue
119	108	Unk	BLANK		ID8D025119			1	☐		Continue
120	109	Unk	BLANK		ID8D025120			1	☐		Continue
121	110	Unk	BLANK		ID8D025121			1	☐		Continue
122	111	Unk	BLANK		ID8D025122			1	☐		Continue
123	112	Unk	BLANK		ID8D025123			1	☐		Continue
124	113	Unk	BLANK		ID8D025124			1	☐		Continue
125	114	Unk	BLANK		ID8D025125			1	☐		Continue
126	115	QC	CCV13		ID8D025126			1	☒	CCV	Continue
127	116	QC	CCB13		ID8D025127			1	☒	CCB1	Continue
128	117	Unk	D131-01A	STLC	ID8D025128			1	☐		Continue
129	118	Unk	D131-01	STLC	ID8D025129			1	☐		Continue
130	119	Unk	D131-01J	STLC	ID8D025130			1	☐		Continue
131	120	Unk	D166-01	STLC	ID8D025131			1	☐		Continue
132	121	Unk	BLANK		ID8D025132			1	☐		Continue
133	122	Unk	BLANK		ID8D025133			1	☐		Continue
134	123	Unk	BLANK		ID8D025134			1	☐		Continue
135	124	Unk	BLANK		ID8D025135			1	☐		Continue
136	125	Unk	BLANK		ID8D025136			1	☐		Continue
137	126	Unk	BLANK		ID8D025137			1	☐		Continue
138	127	QC	CCV14	[illegible]	ID8D025138			1	☒	CCV	Continue

	Pos ID	Type	Samplename	Comment	Data File	Type*	Dilu Factor	CorrFact	Check	Check Table	Fail Action
139	128	QC	CCB14		ID8D025139			1	☒	CCB1	Continue
140	134	Unk	D164-03A	STLC	ID8D025140			1	☐		Continue
141	135	Unk	D164-03	STLC	ID8D025141			1	☐		Continue
142	136	Unk	D164-03J	STLC	ID8D025142			1	☐		Continue
143	137	Unk	D164-03A	5X STLC	ID8D025143			1	☐		Continue
144	138	Unk	D164-03	5X STLC	ID8D025144			1	☐		Continue
145	139	Unk	D164-03J	25X STLC	ID8D025145			1	☐		Continue
146	140	Unk	D164-03A	5X 2ppm spike	ID8D025146			1	☐		Continue
147	141	Unk	BLANK		ID8D025147			1	☐		Continue
148	142	Unk	BLANK		ID8D025148			1	☐		Continue
149	143	Unk	BLANK		ID8D025149			1	☐		Continue
150	144	QC	CCV15	[illegible]	ID8D025150			1	☒	CCV	Continue
151	145	QC	CCB15	[illegible]	ID8D025151			1	☒	CCB1	Continue

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ANALYSIS RUN LOG
for
ICP

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Start Date: 4/28/08 14:49

End Date: 4/28/08 19:26

Comments:

ICV, ICSAB1, ICSAB2 BT

ICB Zn 0.05

CCV2 Al↑ Ba↑ B↑

CCB4 Zn↑

Book #: AD8-005

Instrument No.: D8

Analytical Batch: 1D8D026

Analytical Sequence: S_086010D (v49)

Method File: 0860100 (M9)

SOP #	Rev. #
☑ EMAX-6010	5
☐ EMAX-200.7	0
☐ EMAX-	

STANDARDS ID	
S0	SM1B11.27.02
S1	NA
S2	SM1B11.19.05
S3	NA
S4	NA
S5	SM1B11.19.06
S6	NA
S7	NA
S8	SM1B11.28.02
S9	NA
S11	SM1B11.18.05
S17	SM1B11.18.06
ICV	SM1B11.20.06
CCV	SM1B11.28.01
ICSA	SM1B11.27.01
ICSAB	SM1B11.18.07
CRI/MRL MRL1A 36MP Low	SM1B11.25.01
MRL1B CAM3	SM1B11.08.06

Analyzed By: TH /JC

Date: 4/29/08

SEQUENCE FILE : ID8D026

4-18	19-33	34-43	44-53	54-63
LFID	LSID	TIME	DATE	DF
ID8D026001	Blank	14:49	04/28/08	1.000
ID8D026002	S2	14:54	04/28/08	1.000
ID8D026003	S5	14:59	04/28/08	1.000
ID8D026004	S8	15:05	04/28/08	1.000
ID8D026005	S11	15:11	04/28/08	1.000
ID8D026006	S17	15:16	04/28/08	1.000
ID8D026007	ICV	15:22	04/28/08	1.000
ID8D026008	ICB	15:27	04/28/08	1.000
ID8D026009	ICSA1	15:33	04/28/08	1.000
ID8D026010	ICSAB1	15:38	04/28/08	1.000
ID8D026011	CCV1	15:44	04/28/08	1.000
ID8D026012	CCB1	15:49	04/28/08	1.000
ID8D026013	IPD044WB	15:55	04/28/08	1.000
ID8D026014	IPD044WL	16:00	04/28/08	1.000
ID8D026015	IPD044WC	16:06	04/28/08	1.000
ID8D026016	D206-01A	16:11	04/28/08	1.000
ID8D026017	D206-01	16:16	04/28/08	1.000
ID8D026018	D206-01J	16:22	04/28/08	5.000
ID8D026019	D206-02	16:28	04/28/08	1.000
ID8D026020	BLANK	16:33	04/28/08	1.000
ID8D026021	CCV2	16:39	04/28/08	1.000
ID8D026022	CCB2	16:47	04/28/08	1.000
ID8D026023	IPD047SB	16:52	04/28/08	1.000
ID8D026024	IPD047SL	16:58	04/28/08	1.000
ID8D026025	IPD047SC	17:03	04/28/08	1.000
ID8D026026	B238-01A	17:08	04/28/08	1.000
ID8D026027	B238-01	17:14	04/28/08	1.000
ID8D026028	B238-01J	17:19	04/28/08	5.000
ID8D026029	B238-02	17:25	04/28/08	1.000
ID8D026030	B238-03	17:30	04/28/08	1.000
ID8D026031	B238-04	17:35	04/28/08	1.000
ID8D026032	BLANK	17:41	04/28/08	1.000
ID8D026033	CCV3	17:46	04/28/08	1.000
ID8D026034	CCB3	17:52	04/28/08	1.000
ID8D026035	B238-05	17:57	04/28/08	1.000
ID8D026036	B238-06	18:03	04/28/08	1.000
ID8D026037	BLANK	18:08	04/28/08	1.000
ID8D026038	ICSA2	18:14	04/28/08	1.000
ID8D026039	ICSAB2	18:19	04/28/08	1.000
ID8D026040	BLANK	18:25	04/28/08	1.000
ID8D026041	CCV4	18:31	04/28/08	1.000
ID8D026042	CCB4	18:36	04/28/08	1.000
ID8D026043	D131-01A	18:42	04/28/08	10.000
ID8D026044	D131-01	18:47	04/28/08	10.000
ID8D026045	D131-01J	18:53	04/28/08	50.000
ID8D026046	D166-01	18:58	04/28/08	10.000
ID8D026047	BLANK	19:04	04/28/08	1.000
ID8D026048	BLANK	19:09	04/28/08	1.000
ID8D026049	BLANK	19:15	04/28/08	1.000
ID8D026050	CCV5	19:20	04/28/08	1.000
ID8D026051	CCB5	19:26	04/28/08	1.000

8 C C 7 L

SDG : 08D206 UNIT : % SUMMARY of ICV and CCV : ID8D026 DATE : 04/28/08 I

ANALYTE	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	Tl	V	Zn
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICV	110	100	99	100	101	113*	93	101	97	94	100	100	94	100	98	94	93	101	97	99	99	98	100	95
ICB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA1	107	----	----	----	----	----	----	94	----	----	----	92	----	103	----	----	----	----	----	----	----	----	----	----
ICSAB1	104	85	100	106	97	202*	95	92	93	95	108	89	94	99	92	102	94	105	99	107	104	96	99	94
CCV1	108	101	100	101	102	109	96	102	99	96	101	98	95	101	99	98	95	101	100	101	100	99	103	95
CCB1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV2	117*	105	103	111*	109	117*	97	107	102	96	106	105	95	109	108	98	96	110	103	104	103	104	110	95
CCB2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV3	107	101	100	102	102	109	96	102	98	96	100	98	95	101	99	98	95	103	100	100	101	100	103	95
CCB3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA2	108	----	----	----	----	----	----	96	----	----	----	94	----	104	----	----	----	----	----	----	----	----	----	----
ICSAB2	111	90	103	113	103	206*	96	97	96	96	112	95	94	105	98	102	95	112	102	111	107	100	104	94
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV4	106	100	100	101	101	108	96	101	99	95	100	98	95	100	97	98	95	100	101	100	100	99	103	95
CCB4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D166-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV5	103	98	98	99	99	106	94	99	97	94	98	95	94	98	95	96	93	100	99	98	99	97	100	95
CCB5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

QC limit of each parameter are listed in a table attached next to all the ICP check forms

SDG : 080206 UNIT : UG/L SUMMARY of CALIBRATION BLANKS : ID8D026 (WATER) DATE : 04/28/08 I

ANALYTE	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	Tl	V	Zn
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICV	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICB	-2.53	-.210	.600	-.040	.050	.360	.040	5.48	-.040	-.080	-.030	-1.27	-.420	.080	-1.02	-.020	.220	9.14	.050	.080	-11.5	-.040	-.040	53.6
ICSA1	----	-6.62	-.930	.350	-.230	462	-1.74	----	.020	-1.09	2.47	----	-6.07	----	-2.39	-3.04	1.36	55.5	-1.16	.540	92.8	4.10	.580	7.51
ICSAB1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB1	.170	-.710	.240	.250	.000	-.340	.080	-14.5	.200	-.240	-.110	.370	-.290	2.26	-1.43	.030	.230	27.3	1.78	-.050	2.51	-.300	-.030	-1.32
IPD044WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB2	6.20	-.950	-.900	.230	-.030	-.550	.040	11.0	.220	-.190	-.260	-4.59	-.100	-3.06	-.920	-.040	.250	58.7	1.94	.060	1.96	-.100	.050	-.970
IPD047SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB3	-2.09	.770	1.45	.020	.020	.210	.070	3.65	.180	-.180	-.170	-3.03	.100	.470	-1.38	.010	.210	20.7	1.03	-.020	-27.4	-.110	.070	-1.50
B238-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA2	----	-5.77	-1.05	.560	-.280	459	-2.52	----	.140	-1.19	2.58	----	-7.18	----	-2.41	-3.01	1.33	62.6	-2.07	.270	81.9	5.98	.580	5.80
ICSAB2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB4	.700	.380	.360	-.220	.090	.220	.070	-11.5	.250	-.150	-.150	-.060	-.380	6.68	-1.28	-.010	.150	26.3	.620	.120	6.90	.110	-.070	58.8
D131-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D166-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB5	-4.20	-.670	-.200	-.130	.010	.480	.070	-20.0	.190	-.100	-.400	-2.68	.270	-8.90	-1.24	.030	.170	39.0	1.74	-.060	-23.4	-.010	.020	-2.06

QC limit of each parameter are listed in a table attached next to all the ICP check forms

SDG : 080206 UNIT : UG/L SUMMARY of CALIBRATION BLANKS : ID8D026 (SOIL) DATE : 04/28/08 I

ANALYTE	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	Tl	V	Zn
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICV	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICB	-2.53	-.210	.600	-.040	.050	.360	.040	5.48	-.040	-.080	-.030	-1.27	-.420	.080	-1.02	-.020	.220	9.14	.050	.080	-11.5	-.040	-.040	53.6
ICSA1	----	-6.62	-.930	.350	-.230	462	-1.74	----	.020	-1.09	2.47	----	-6.07	----	-2.39	-3.04	1.36	55.5	-1.16	.540	92.8	4.10	.580	7.51
ICSAB1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB1	.170	-.710	.240	.250	.000	-.340	.080	-14.5	.200	-.240	-.110	.370	-.290	2.26	-1.43	.030	.230	27.3	1.78	-.050	2.51	-.300	-.030	-1.32
IPD044WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD044WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D206-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB2	6.20	-.950	-.900	.230	-.030	-.550	.040	11.0	.220	-.190	-.260	-4.59	-.100	-3.06	-.920	-.040	.250	58.7	1.94	.060	1.96	-.100	.050	-.970
IPD047SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPD047SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB3	-2.09	.770	1.45	.020	.020	.210	.070	3.65	.180	-.180	-.170	-3.03	.100	.470	-1.38	.010	.210	20.7	1.03	-.020	-27.4	-.110	.070	-1.50
B238-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
B238-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA2	----	-5.77	-1.05	.560	-.280	459	-2.52	----	.140	-1.19	2.58	----	-7.18	----	-2.41	-3.01	1.33	62.6	-2.07	.270	81.9	5.98	.580	5.80
ICSAB2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB4	.700	.380	.360	-.220	.090	.220	.070	-11.5	.250	-.150	-.150	-.060	-.380	6.68	-1.28	-.010	.150	26.3	.620	.120	6.90	.110	-.070	58.8
D131-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D131-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
D166-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB5	-4.20	-.670	-.200	-.130	.010	.480	.070	-20.0	.190	-.100	-.400	-2.68	.270	-8.90	-1.24	.030	.170	39.0	1.74	-.060	-23.4	-.010	.020	-2.06

Page 1 of 1

QC limit of each parameter are listed in a table attached next to all the ICP check forms

	Pos ID	Type	Samplename	Comment	Data File	Type*	Dilu Factor	CorrFact	Check	Check Table	Fail Action
1	0	Unk	S0		ID8D026001			1	☐		Continue
2	0	Unk	S2		ID8D026002			1	☐		Continue
3	0	Unk	S5		ID8D026003			1	☐		Continue
4	0	Unk	S8		ID8D026004			1	☐		Continue
5	0	Unk	S11		ID8D026005			1	☐		Continue
6	0	Unk	S17		ID8D026006			1	☐		Continue
7	1	QC	ICV	BI	ID8D026007			1	☒	ICV	Continue
8	2	QC	ICB	Bn 0.05	ID8D026008			1	☒	CCB1	Continue
9	3	QC	ICSA1		ID8D026009			1	☒	ICSA	Continue
10	4	QC	ICSAB1	BI	ID8D026010			1	☒	ICSAB	Continue
11	5	QC	CCV1		ID8D026011			1	☒	CCV	Continue
12	6	QC	CCB1		ID8D026012			1	☒	CCB1	Continue
13	7	QC	IPD044WB		ID8D026013			1	☒	CCB1	Continue
14	8	QC	IPD044WL		ID8D026014			1	☒	LCS	Continue
15	9	QC	IPD044WC		ID8D026015			1	☒	LCS	Continue
16	10	Unk	D206-01A		ID8D026016			1	☐		Continue
17	11	Unk	D206-01		ID8D026017			1	☐		Continue
18	12	Unk	D206-01J		ID8D026018			1	☐		Continue
19	13	Unk	D206-02		ID8D026019			1	☐		Continue
20	14	Unk	BLANK		ID8D026020			1	☐		Continue
21	15	QC	CCV2	MI Bn BI Vial	ID8D026021			1	☒	CCV	Continue
22	16	QC	CCB2		ID8D026022			1	☒	CCB1	Continue
23	17	QC	IPD047SB		ID8D026023			1	☒	CCB1	Continue
24	18	QC	IPD047SL		ID8D026024			1	☒	LCS	Continue
25	19	QC	IPD047SC		ID8D026025			1	☒	LCS	Continue
26	20	Unk	B238-01A		ID8D026026			1	☐		Continue
27	21	Unk	B238-01		ID8D026027			1	☐		Continue
28	22	Unk	B238-01J		ID8D026028			1	☐		Continue
29	23	Unk	B238-02		ID8D026029			1	☐		Continue
30	24	Unk	B238-03		ID8D026030			1	☐		Continue
31	25	Unk	B238-04		ID8D026031			1	☐		Continue
32	26	Unk	BLANK		ID8D026032			1	☐		Continue
33	27	QC	CCV3		ID8D026033			1	☒	CCV	Continue
34	28	QC	CCB3		ID8D026034			1	☒	CCB1	Continue
35	29	Unk	B238-05		ID8D026035			1	☐		Continue
36	30	Unk	B238-06		ID8D026036			1	☐		Continue
37	31	Unk	BLANK		ID8D026037			1	☐		Continue
38	32	QC	ICSA2		ID8D026038			1	☒	ICSA	Continue
39	33	QC	ICSAB2	BI	ID8D026039			1	☒	ICSAB	Continue
40	34	Unk	BLANK		ID8D026040			1	☐		Continue
41	35	QC	CCV4		ID8D026041			1	☒	CCV	Continue
42	36	QC	CCB4	Bn 0.05	ID8D026042			1	☒	CCB1	Continue
43	37	Unk	D131-01A	10X Fe STLC	ID8D026043			1	☐		Continue
44	38	Unk	D131-01	10X Fe STLC	ID8D026044			1	☐		Continue
45	39	Unk	D131-01J	50X Fe STLC	ID8D026045			1	☐		Continue
46	40	Unk	D166-01	10X Fe STLC	ID8D026046			1	☐		Continue

:15:38

7042

	Pos ID	Type	Samplename	Comment	Data File	Type*	Dilu Factor	CorrFact	Check	Check Table	Fail Action
47	41	Unk	BLANK		ID8D026047			1	☐		Continue
48	42	Unk	BLANK		ID8D026048			1	☐		Continue
49	43	Unk	BLANK		ID8D026049			1	☐		Continue
50	44	QC	CCV5		ID8D026050			1	☒	CCV	Continue
51	45	QC	CCB5		ID8D026051			1	☒	CCB1	Continue

:15:38

DIGESTION LOG FOR ICP METALS

SOP ☐ EMAX-3005 Rev. No. 4 ☑ EMAX-3010 Rev. No. 3 ☐ EMAX-3050 Rev. No. 3 ☐ EMAX-CLP-TAL ☐ Book # EIP-067

Matrix: WATER Start Date: 4-23-08 Time: 14:00 Temp: 90 °C Ending Date: 4-23-08 Time: 18:00 Temp.: 90 °C

BATCH: IPD044-W

Sample Prep ID	Lab Sample ID	Matrix Description: Color	Matrix Description: Texture / Clarity	Matrix Description: Artifacts	Turbidity <1 NTU	Sample Amount (g | ml)	pH	Extract Volume (ml)	Digestate Description: Color	Digestate Description: Clarity
01	IPD044-WB					50	–	50		
02	-WL					50	–	50		
03	-WC					50	–	50		
04	D211-02 TOTAL	#010				50	<2	50		
05	-05	#026				50		50		
06	-07	#039				50		50		
07	D194-03 TOTAL	#014				50		50		
08	-06	#029				50		50		
09	D211-03 DISS	#015				50		50		
10	-07	#038				50		50		
11	D508-01					50		50		
12	TXD004-SB TCLP					10		50		
13	D131-01					10		50		
14	-01M					10		50		
15	-01S					10		50		
16	D166-01					10		50		
17	WTD005-SB STLC					10		50		
18	D164-01					10		50		
19	-02					10		50		
20	-03					10		50		
21	-03M					10		50		
22	-03S					10		50		
23	-04					10		50		
24	D132-01					10		50		
25	D206-01					50		50		
26	-02					50	✓	50		
27										

4-23-08

Standards	ID	Amount Added (ml)
LCS -1	SM/A - 11 - 11	0.5
LCS -2	SM/A - 11 - 12	0.5
LCS -3	SM/A - 11 - 13	0.5
MS		
Reagent	**Lot# / ID**	**Amount Added (ml)**
HNO_3	SW/A - 03 - 721	1.5+1.5
HCl	SW/A - 03 - 671	2.5
H_2O_2	N/A	
HNO3 (1:1)	N/A	

Digestate Location	ICP
Extract Location	

Legend:

Texture	Cs = Coarse	Md = Medium	Fn = Fine
Clarity	Cr = Clear	Cy = Cloudy	Td = Turbid
Artifacts	Rk = rocks	Sl = Shale	Vg=Vegetation
Color	Bu = blue	Bk = Black	Bn = Brown
	Gn = Green	Og = Orange	Rd = Red
	Yw = Yellow	Cl = Colorless	

Comments: Samples for Methods 200.7 or 200.8 Analyses

If turbidity ≤ 1 NTU no digestion is required unless otherwise required by the project

Prepared By: MC Standard Added By: MC

Witnessed By: TH Extracts Rcvd. By: TH 4/23/08

Checked By: TH

Date Disposed: Disposed by:

7044

DIGESTION LOG FOR ICP METALS

SOP ☐ EMAX-3005 Rev. No.4 ☐ EMAX-3010 Rev. No. 3 ☑ EMAX-3050 Rev. No. 3 ☐ EMAX-CLP-TAL ☐

Book # EIP-067

Matrix: SOIL Start Date: 4-24-08 Time: 13:00 Temp: 90°C Ending Date: 4-24-08 Time: 17:00 Temp.: 90 °C

BATCH: IPD047-S

Sample Prep ID	Lab Sample ID	Matrix Description: Color	Matrix Description: Texture / Clarity	Matrix Description: Artifacts	Turbidity <1 NTU	Sample Amount (g)	pH	Extract Volume (ml)	Digestate Description: Color	Digestate Description: Clarity
01	IPD047-SB					—	N/A	100		
02	-SL					—		100		
03	-SC					—		100		
04	D206-03					1.002		100		
05	-04					1.003		100		
06	B238-01					1.000		100		
07	-02					1.001		100		
08	-03					1.002		100		
09	-04					1.003		100		
10	-05					1.000		100		
11	-06					1.001		100		
12	D496-04					1 wipe		100		
13	-05					1 wipe		100		
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										

4-24-08 mC

Standards	ID	Amount Added (ml)
LCS -1	SM1A - 11 - 20	1.0
LCS -2	SM1A - 11 - 21	1.0
LCS -3	SM1A - 11 - 22	1.0
MS		
Reagent	**Lot# / ID**	**Amount Added (ml)**
HNO_3	SW1A -03 - 721	10.0
HCl	SW1A - 03 - 724	10.0
H_2O_2	SW1A - 03 - 622	10.0
HNO3 (1:1)	SM5B - 02 - 80	10.0
Digestate Location	ICP	
Extract Location		

Legend:

Texture	Cs = Coarse	Md = Medium	Fn = Fine
Clarity	Cr = Clear	Cy = Cloudy	Td = Turbid
Artifacts	Rk = rocks	Sl = Shale	Vg=Vegetation
Color	Bu = blue	Bk = Black	Bn = Brown
	Gn = Green	Og = Orange	Rd = Red
	Yw = Yellow	Cl = Colorless	

Comments: Samples for Methods 200.7 or 200.8 Analyses

If turbidity ≤ 1 NTU no digestion is required unless otherwise required by the project

Prepared By: mC Standard Added By: mC

Witnessed By: TH Extracts Rcvd. By: TH 4/29/08

Checked By: TH

Date Disposed: Disposed by:

5th Ed.

LABORATORY REPORT FOR

TETRA TECH, INC.

LMC BEAUMONT SITE 2

WET CHEMICAL ANALYSES

SDG#: 08D206

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08D206

METHOD 160.1
TOTAL DISSOLVED SOLIDS

Two (2) water samples were received on 04/18/08 for Total Dissolved Solids analysis by Method 160.1 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Sample D206-02 was analyzed for duplicate. %RPD was out of QC limit.

5. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met with the aforementioned exception.

METHOD 160.1
TOTAL DISSOLVED SOLIDS

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I40706360

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	TDD012WB	ND	1	NA	10.0	5.00	04/23/0815:39	04/22/0816:10	TDD01201	NA	TDD012W	NA	04/22/08
LCS1W	TDD012WL	335	1	NA	10.0	5.00	04/23/0815:39	04/22/0816:10	TDD01202	NA	TDD012W	NA	04/22/08
LCD1W	TDD012WC	330	1	NA	10.0	5.00	04/23/0815:39	04/22/0816:10	TDD01203	NA	TDD012W	NA	04/22/08
TT-MW2-7	D206-01	990	1	NA	10.0	5.00	04/23/0815:40	04/22/0816:10	TDD01207	NA	TDD012W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	1070	1	NA	10.0	5.00	04/23/0815:41	04/22/0816:10	TDD01208	NA	TDD012W	04/18/0809:15	04/18/08
TT-MW2-7-DUPDUP	D206-02D	990	1	NA	10.0	5.00	04/23/0815:41	04/22/0816:10	TDD01209	NA	TDD012W	04/18/0809:15	04/18/08

9502

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 160.1
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: TDD012WL/C

DATE RECEIVED: 04/22/08
DATE EXTRACTED: 04/22/08 16:10
DATE ANALYZED: 04/23/08 15:39/15:39

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
TDS	ND	332	335	101	332	330	99	2	80-120	20

8550

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 160.1
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206 DATE RECEIVED: 04/18/08
SAMPLE ID: TT-MW2-7-DUPDUP DATE EXTRACTED: 04/22/08 16:10
CONTROL NO.: D206-02D DATE ANALYZED: 04/23/08 15:41

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
TDS	1070	990	8*	5

9601

ANALYSIS RUN LOG
for
GRAVIMETRIC

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Book #: AGV-030

Balance ID: 40706360

Analytical Batch: 7DD012

SOP #	Rev. #
☑ EMAX-160.1	3
☐ EMAX-160.2	2
☐ EMAX-160.3	1
☐ EMAX-2540C	1
☐ EMAX-2540D	0
☐ EMAX-2540B	0

STANDARDS ID	CONC. (mg/L)
LCS 8W1-01-069	332

Analyzed By: SDL

Date: 04/23/08

EMAX LABORATORIES, INC.

GRAVIMETRIC ANALYSES
RAW DATA

Analytical Batch: TDD012 Instrument ID: 40706360 Oven Temp IN (℃): 180 Oven Temp OUT (℃): 180 SOP: EMAX160.1 Rev. 3

DATA FILE ID	Sample ID	Sample Amount (ml)	Dish #	Dish (g)	Date	Time	1st Dry Weight + Dish (g)	Date	Time	2nd Dry Weight + Dish (g)	Date	Time	3rd Dry Weight + Dish (g)	Date	Time	Difference 1st & 2nd Dry Wt. Rdg.	Difference 2nd & 3rd Dry Wt. Rdg. (<0.5mg)
TDD012 01	TDD012WB	100	B	72.0140	04/22/08	16:10	72.0154	04/23/08	11:44	72.014	04/23/08	15:39	72.014	04/23/08	15:39	-0.0014	0.0
TDD012 02	TDD012WL	20	1	13.1073	04/22/08	16:10	13.114	04/23/08	11:44	13.114	04/23/08	15:39	13.114	04/23/08	15:39	0	0.0
TDD012 03	TDD012WC	20	2	12.9936	04/22/08	16:10	13.0002	04/23/08	11:45	13.0002	04/23/08	15:39	13.0002	04/23/08	15:39	0	0.0
TDD012 04	D192-08	20	3	13.1147	04/22/08	16:11	13.1285	04/23/08	11:45	13.1285	04/23/08	15:39	13.1285	04/23/08	15:40	0	0.0
TDD012 05	D194-03	20	4	13.0611	04/22/08	16:11	13.0728	04/23/08	11:45	13.0731	04/23/08	15:40	13.0731	04/23/08	15:40	0.0003	0.0
TDD012 06	D194-06	20	5	13.1948	04/22/08	16:11	13.2063	04/23/08	11:45	13.2064	04/23/08	15:40	13.2064	04/23/08	15:40	1E-04	0.0
TDD012 07	D206-01	20	6	13.0987	04/22/08	16:11	13.1185	04/23/08	11:46	13.1185	04/23/08	15:40	13.1185	04/23/08	15:40	0	0.0
TDD012 08	D206-02	20	7	13.0909	04/22/08	16:11	13.1119	04/23/08	11:46	13.1122	04/23/08	15:41	13.1122	04/23/08	15:41	0.0003	0.0
TDD012 09	D206-02D	20	8	13.1166	04/22/08	16:12	13.1361	04/23/08	11:46	13.1364	04/23/08	15:41	13.1364	04/23/08	15:41	0.0003	0.0
TDD012 10	D211-02	20	9	12.9571	04/22/08	16:12	12.9752	04/23/08	11:46	12.9752	04/23/08	15:41	12.9752	04/23/08	15:41	0	0.0
TDD012 11	D211-05	20	10	13.0007	04/22/08	16:12	13.0143	04/23/08	11:46	13.0146	04/23/08	15:42	13.0145	04/23/08	15:42	0.0003	0.1
TDD012 12	D211-07	20	11	12.9700	04/22/08	16:12	12.9841	04/23/08	11:47	12.9839	04/23/08	15:42	12.9839	04/23/08	15:42	-0.0002	0.0
TDD012 13	D211-07D	20	12	13.0743	04/22/08	16:13	13.089	04/23/08	11:47	13.0887	04/23/08	15:42	13.0887	04/23/08	15:42	-0.0003	0.0

SE 4/24/08

LCS Conc: 332 mg/L MDL : 5 mg/L RL: 10 mg/L

Initial Reading by: SER

Final Reading by: SER

Reviewed by: _____

COMMENTS:

QSO

EMAX LABORATORIES, INC.

GRAVIMETRIC CALCULATION

Analytical Batch: TDD012 | Start Date/Time: 04/22/08 16:10 | Temp IN(°C): 180

Balance ID: 40706360 | End Date/Time: 04/23/08 15:42 | Temp Out(°C): 180

DATA FILE ID	Sample ID	Sample Amount (ml)	Dish (g)	Dry Weight + Dish (g)	SOLIDS (mg)	RESULT (mg/L)	NOTES
TDD012 01	TDD012WB	100	72.014	72.014		ND	
TDD012 02	TDD012WL	20	13.1073	13.114	6.7000	335	101
TDD012 03	TDD012WC	20	12.9936	13.0002	6.6000	330	99
TDD012 04	D192-08	20	13.1147	13.1285	13.8000	690	
TDD012 05	D194-03	20	13.0611	13.0731	12.0000	600	
TDD012 06	D194-06	20	13.1948	13.2064	11.6000	580	
TDD012 07	D206-01	20	13.0987	13.1185	19.8000	990	
TDD012 08	D206-02	20	13.0909	13.1122	21.3000	1070	
TDD012 09	D206-02D	20	13.1166	13.1364	19.8000	990	
TDD012 10	D211-02	20	12.9571	12.9752	18.1000	905	
TDD012 11	D211-05	20	13.0007	13.0145	13.8000	690	
TDD012 12	D211-07	20	12.97	12.9839	13.9000	695	
TDD012 13	D211-07D	20	13.0743	13.0887	14.4000	720	

04/22/08

LCS Concentration: 332 mg/L | MDL(mg/L): 5 | Initial Reading by: SER

SOP: EMAX160.1 Rev. 3 | RL (mg/L): 10 | Final Reading by: SER

COMMENTS:

Reviewed by: _____

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08D206

METHOD 300.0
ANIONS

Two (2) water and two (2) soil sample were received on 04/18/08 for Anions analyses by method 300.0 in accordance with "Method for Determination of Inorganic Anions by Ion Chromatography", EPA 600/84-017.

1. **Holding Time**

   Analyses met holding time criteria.

2. **Method Blank**

   Method blanks were free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limits.

4. **Duplicate**

   Duplicate sample was not designated in this SDG.

5. **Matrix Spike**

   MS sample was not designated in this SDG.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

SAMPLE RESULTS

METHOD 300.0
CHLORIDE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I100

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ICD067WB	ND	1	NA	0.200	0.100	04/21/0812:14	NA	AD33-03	AD33-01	ICD067W	NA	NA
LCS1W	ICD067WL	1.96	1	NA	0.200	0.100	04/21/0812:29	NA	AD33-04	AD33-01	ICD067W	NA	NA
LCD1W	ICD067WC	1.98	1	NA	0.200	0.100	04/21/0812:45	NA	AD33-05	AD33-01	ICD067W	NA	NA
TT-MW2-7	D206-01	186	10	NA	2.00	1.00	04/21/0814:01	NA	AD33-10	AD33-01	ICD067W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	186	10	NA	2.00	1.00	04/21/0814:16	NA	AD33-11	AD33-01	ICD067W	04/18/0809:15	04/18/08

METHOD 300.0
NITRATE-N

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I100

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ICD057WB	ND	1	NA	0.100	0.0500	04/18/0811:10	NA	AD31-03	AD31-01	ICD057W	NA	NA
LCS1W	ICD057WL	1.90	1	NA	0.100	0.0500	04/18/0811:41	NA	AD31-04	AD31-01	ICD057W	NA	NA
LCD1W	ICD057WC	1.91	1	NA	0.100	0.0500	04/18/0811:57	NA	AD31-05	AD31-01	ICD057W	NA	NA
TT-MW2-7	D206-01	8.20	1	NA	0.100	0.0500	04/18/0817:31	NA	AD31-27	AD31-25	ICD057W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	8.17	1	NA	0.100	0.0500	04/18/0817:47	NA	AD31-28	AD31-25	ICD057W	04/18/0809:15	04/18/08

METHOD 300.0
SULFATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I100

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ICD067WB	ND	1	NA	0.500	0.250	04/21/0812:14	NA	AD33-03	AD33-01	ICD067W	NA	NA
LCS1W	ICD067WL	4.89	1	NA	0.500	0.250	04/21/0812:29	NA	AD33-04	AD33-01	ICD067W	NA	NA
LCD1W	ICD067WC	4.91	1	NA	0.500	0.250	04/21/0812:45	NA	AD33-05	AD33-01	ICD067W	NA	NA
TT-MW2-7	D206-01	176	10	NA	5.00	2.50	04/21/0814:01	NA	AD33-10	AD33-01	ICD067W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	175	10	NA	5.00	2.50	04/21/0814:16	NA	AD33-11	AD33-01	ICD067W	04/18/0809:15	04/18/08

METHOD 300.0
SULFATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : SOIL
Instrument ID : I100

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	ICD069SB	ND	1	NA	5.00	2.50	04/21/0821:36	04/21/0813:00	AD33-40	AD33-38	ICD069S	NA	04/21/08
LCS1S	ICD069SL	49.0	1	NA	5.00	2.50	04/21/0821:51	04/21/0813:00	AD33-41	AD33-38	ICD069S	NA	04/21/08
LCD1S	ICD069SC	49.8	1	NA	5.00	2.50	04/21/0822:06	04/21/0813:00	AD33-42	AD33-38	ICD069S	NA	04/21/08
SB2-7-15	D206-03	40.6	1	6.7	5.36	2.68	04/21/0822:22	04/21/0813:00	AD33-43	AD33-38	ICD069S	04/17/0813:30	04/18/08
SB2-7-15-DUP	D206-04	32.1	1	6.8	5.36	2.68	04/21/0822:37	04/21/0813:00	AD33-44	AD33-38	ICD069S	04/17/0813:30	04/18/08

QC SUMMARIES

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	ICD067WB	ICD067WL	ICD067WC		
LAB FILE ID:	AD33-03	AD33-04	AD33-05		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	04/21/0812:14	04/21/0812:29	04/21/0812:45	DATE RECEIVED:	NA
PREP. BATCH:	ICD067W	ICD067W	ICD067W		
CALIB. REF:	AD33-01	AD33-01	AD33-01		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Chloride-Cl	ND	2.00	1.96	98	2.00	1.98	99	1	90-110	20

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EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	ICD057WB	ICD057WL	ICD057WC		
LAB FILE ID:	AD31-03	AD31-04	AD31-05		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	04/18/0811:10	04/18/0811:41	04/18/0811:57	DATE RECEIVED:	NA
PREP. BATCH:	ICD057W	ICD057W	ICD057W		
CALIB. REF:	AD31-01	AD31-01	AD31-01		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Nitrate-N	ND	2.00	1.90	95	2.00	1.91	96	0	90-110	20

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	ICD067WB	ICD067WL	ICD067WC		
LAB FILE ID:	AD33-03	AD33-04	AD33-05		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	04/21/0812:14	04/21/0812:29	04/21/0812:45	DATE RECEIVED:	NA
PREP. BATCH:	ICD067W	ICD067W	ICD067W		
CALIB. REF:	AD33-01	AD33-01	AD33-01		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Sulfate	ND	5.00	4.89	98	5.00	4.91	98	0	90-110	20

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 300.0

MATRIX:	SOIL			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1S				
LAB SAMP ID:	ICD069SB	ICD069SL	ICD069SC		
LAB FILE ID:	AD33-40	AD33-41	AD33-42		
DATE EXTRACTED:	04/21/0813:00	04/21/0813:00	04/21/0813:00	DATE COLLECTED:	NA
DATE ANALYZED:	04/21/0821:36	04/21/0821:51	04/21/0822:06	DATE RECEIVED:	04/21/08
PREP. BATCH:	ICD069S	ICD069S	ICD069S		
CALIB. REF:	AD33-38	AD33-38	AD33-38		

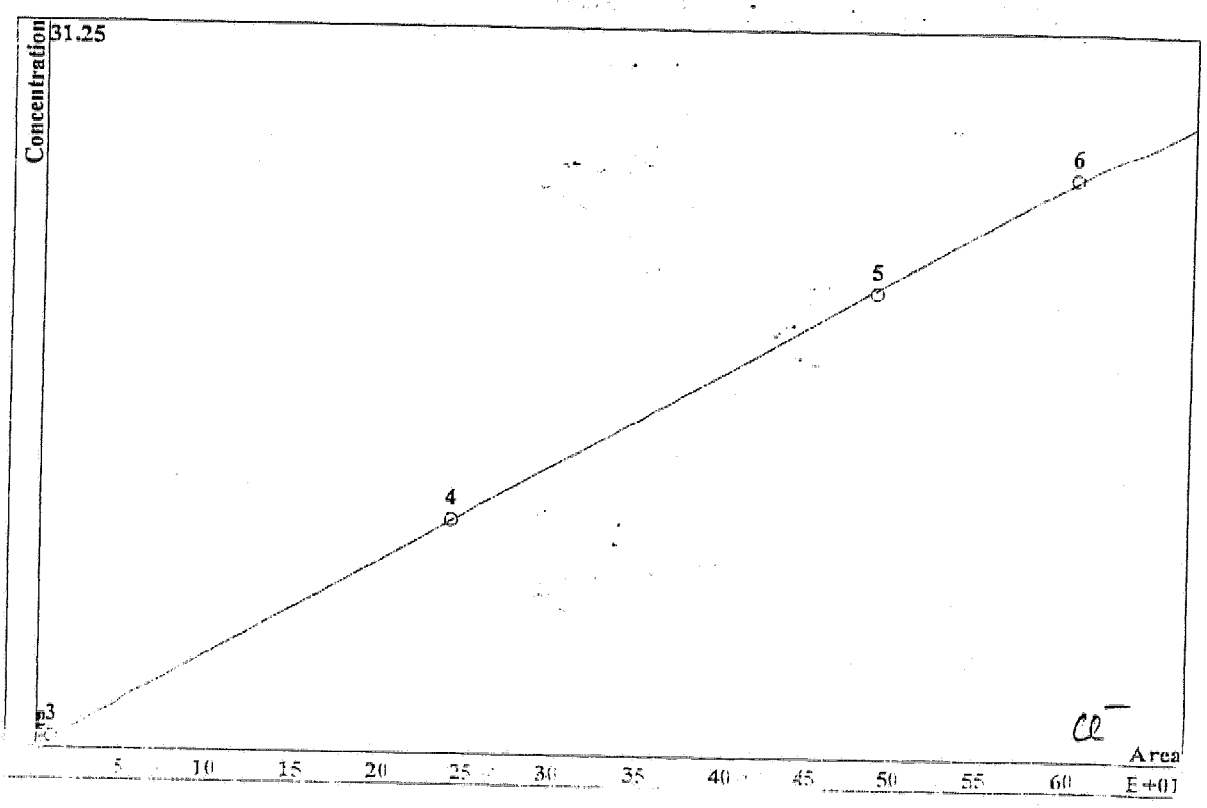
ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Sulfate	ND	50.0	49.0	98	50.0	49.8	100	2	90-110	20

INITIAL CALIBRATION

CALIBRATION OF COMPONENT chloride

Method: IC100-C17.mtw
Equation: Q = 0.0411191·A + 0.0610755
RSD: 1.078 %
Correlation coefficient: 0.999967

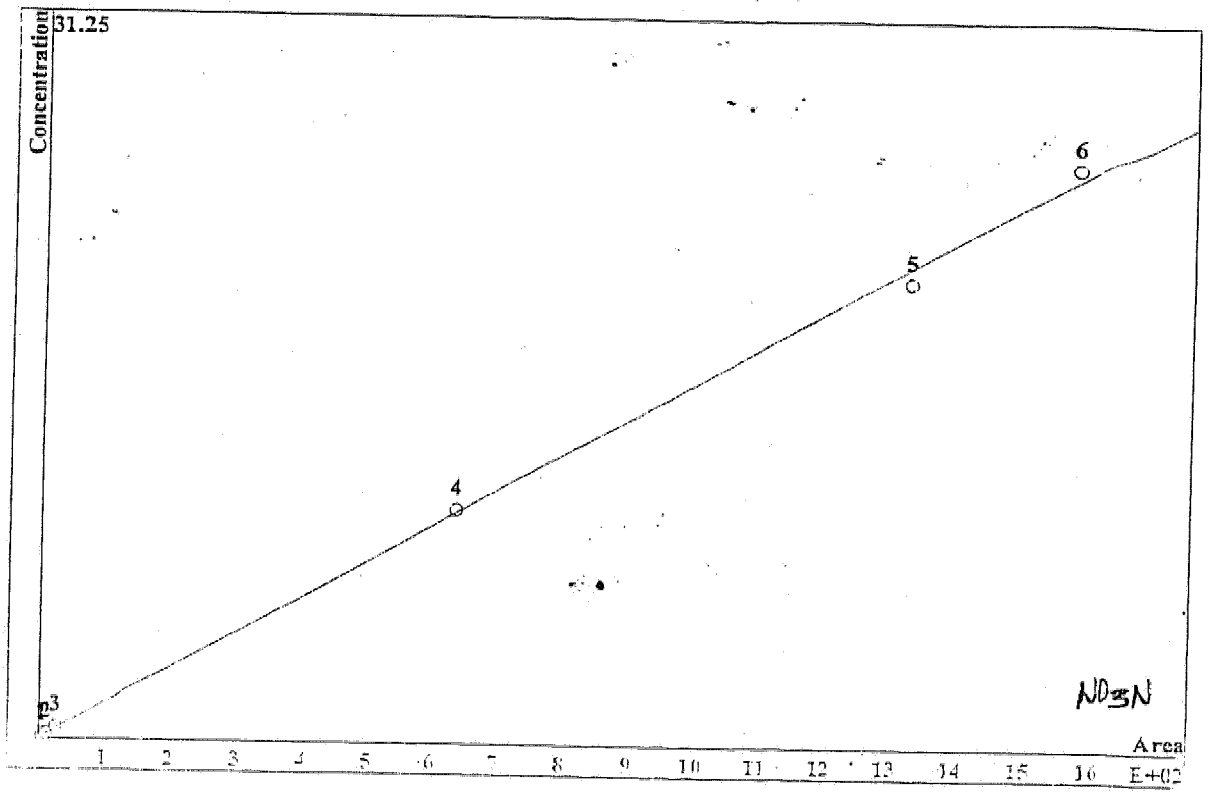


Base: Area
Ref.channel: Cond
ISTD:
Formula: Linear
Weight: 1

Level	Height	Area	Conc.	Vol/Dil	Retention	Used	File
1	0.1778	1.769	0.1	1	4.238	Yes	s3181631.chw
2	0.359	3.592	0.2	1	4.238	Yes	s3181652.chw
3	0.961	9.427	0.5	1	4.238	Yes	s3181713.chw
4	24.94	240.9	10	1	4.238	Yes	s3181734.chw
5	50.03	488.6	20	1	4.238	Yes	s3181755.chw
6	61.53	603.9	25	1	4.238	Yes	s3181816.chw

CALIBRATION OF COMPONENT nitrate

Method: IC100-C17.mtw
Equation: Q = 0.015488·A + 0.0487305
RSD: 4.487 %
Correlation coefficient: 0.999426



Base: Area
Ref.channel: Cond
ISTD:
Formula: Linear
Weight: 1

Level	Height	Area	Conc.	Vol/Dil	Retention	Used	File
1	0.3208	4.945	0.1	1	6.855	Yes	s3181631.chw
2	0.6459	9.637	0.2	1	6.855	Yes	s3181652.chw
3	1.73	25.22	0.5	1	6.855	Yes	s3181713.chw
4	42.44	635.4	10	1	6.855	Yes	s3181734.chw
5	83.64	1330	20	1	6.855	Yes	s3181755.chw
6	99.95	1578	25	1	6.855	Yes	s3181816.chw

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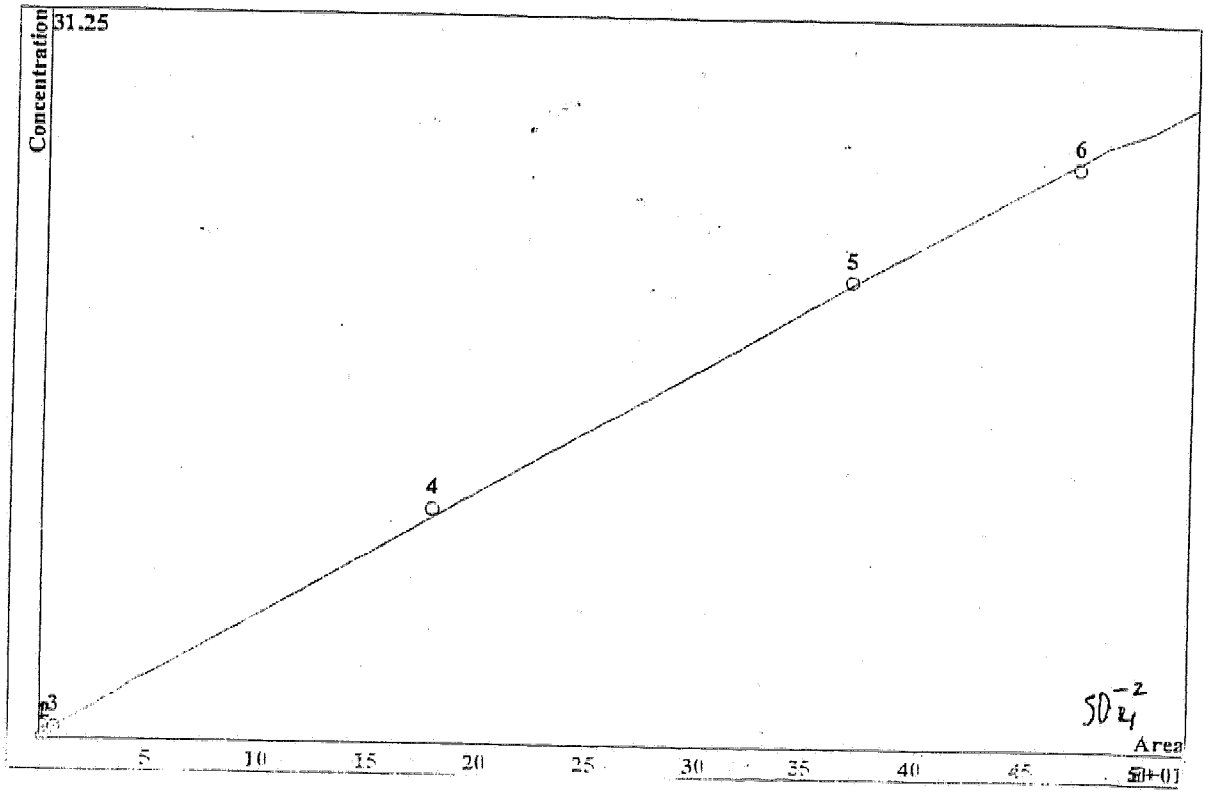
CALIBRATION OF COMPONENT sulfate

Method: IC100-C17.mtw
Equation: Q = 0.053201·A + 0.144597
RSD: 2.618 %
Correlation coefficient: 0.999804



Base: Area
Ref.channel: Cond
ISTD:
Formula: Linear
Weight: 1

Level	Height	Area	Conc.	Vol/Dil	Retention	Used	File
1	0.07627	1.727	0.1	1	11.02	Yes	s3181631.chw
2	0.1362	3.01	0.2	1	11.02	Yes	s3181652.chw
3	0.3235	6.92	0.5	1	11.02	Yes	s3181713.chw
4	8.418	178.5	10	1	11.02	Yes	s3181734.chw
5	17.21	370.6	20	1	11.02	Yes	s3181755.chw
6	21.29	471.8	25	1	11.02	Yes	s3181816.chw

SECOND SOURCE

IC Result Check FormVersion : 8C5/AC17

LFID	LSID	Selection	bromide	nitrite	phosphate	fluoride	chloride	nitrate	sulfate	iodide	RawNetID
AC17-09	ICV	BIPFCNSO	92.4%	108.9%	101.9%	107.7%	92.2%	93.3%	93.1%	96%	s3181837
AC17-10	ICB	BIPFCNSO	0	0	0	0	0	0	0	0	s3181859

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DAILY CALIBRATION

IC Result Check FormVersion : 8C5/AC17

LFID	LSID	Selection	phosphate	chloride	nitrite	iodide	nitrate	fluoride	bromide	sulfate	RawNetID	DF
AD31-01	CCV337	PCIONFBS	96.3%	97.8%	107.3%	0%*	95.8%	106.3%	98.9%	95.7%	s4181037	1
AD31-02	CCB337	PCIONFBS	0	0	0	0	0	0	0	0	s4181055	1
AD31-13	CCV339	PCIONFBS	100.8%	97.1%	107.4%	0%*	95.7%	106.5%	98.3%	95.8%	s4181359	1
AD31-14	CCB339	PCIONFBS	0	0	0	0	0	0	0	0	s4181414	1
AD31-25	CCV341	PCIONFBS	97.1%	97.4%	107.4%	0%*	95.9%	106.7%	98.6%	95.9%	s4181701	1
AD31-26	CCB341	PCIONFBS	0	0	0	0	0	0	0	0	s4181716	1
AD31-38	CCV343	PCIONFBS	96%	97%	107%	0%*	95.7%	106.9%	98%	95.8%	s4182020	1
AD31-39	CCB343	PCIONFBS	0	0	0	0	0	0	0	0	s4182035	1
AD31-50	CCV345	PCIONFBS	91.8%	97%	107.1%	0%*	95.7%	106.8%	98.1%	96.1%	s4182322	1
AD31-51	CCB345	PCIONFBS	0	0	0	0	0	0	0	0	s4182337	1
AD31-62	CCV347	PCIONFBS	91.7%	97.5%	107.3%	0%*	95.8%	109%	98.2%	95.3%	s4190224	1
AD31-63	CCB347	PCIONFBS	0	0	0	0	0	0	0	0	s4190239	1
AD31-74	CCV349	PCIONFBS	99.3%	97.5%	107.5%	0%*	97%	107.9%	98.5%	96.4%	s4190526	1
AD31-75	CCB349	PCIONFBS	0	0	0	0	0	0	0	0	s4190541	1
AD31-85	CCV351	PCIONFBS	94.9%	99%	107.9%	0%*	96.8%	108.5%	96.4%	93.7%	s4190813	1
AD31-86	CCB351	PCIONFBS	0	0	0	0	0	0	0	0	s4190828	1
AD31-97	CCV353	PCIONFBS	94.6%	99%	110.3%*	0%*	97.5%	111.7%*	98.2%	94.3%	s4191115	1
AD31-98	CCB353	PCIONFBS	0	0	0	0	0	0	0	0	s4191130	1
AD31-109	CCV355	PCIONFBS	96%	99.8%	108.3%	0%*	98.2%	109.7%	97.9%	93.6%	s4191425	1
AD31-110	CCB355	PCIONFBS	0	0	0	0	0	0	0	0	s4191441	1
AD31-121	CCV357	PCIONFBS	93.5%	99.2%	108%	0%*	98.3%	109.4%	97.8%	93.6%	s4191727	1
AD31-122	CCB357	PCIONFBS	0	0	0	0	0	0	0	0	s4191743	1
AD31-133	CCV359	PCIONFBS	99%	99.9%	108.2%	0%*	98.4%	108.8%	98.2%	93.7%	s4192029	1
AD31-134	CCB359	PCIONFBS	0	0	0	0	0	0	0	0	s4192045	1
AD31-145	CCV361	PCIONFBS	96.7%	102.8%	110.3%*	0%*	100.5%	111.4%*	101.2%	97.1%	s4192331	1
AD31-146	CCB361	PCIONFBS	0	0	0	0	0	0	0	0	s4192347	1
AD31-157	CCV363	PCIONFBS	98.3%	102.5%	109.8%	0%*	100.3%	112.3%*	100.2%	97.5%	s4200234	1
AD31-158	CCB363	PCIONFBS	0	0	0	0	0	0	0	0	s4200249	1
AD31-169	CCV365	PCIONFBS	105%	99.8%	108.5%	0%*	97.6%	109.2%	98.2%	94.4%	s4200536	1
AD31-170	CCB365	PCIONFBS	0	0	0	0	0	0	0	0	s4200551	1
AD31-176	CCV367	PCIONFBS	109.2%	101.7%	109.6%	0%*	98.3%	110.4%*	99.7%	94.6%	s4200722	1
AD31-177	CCB367	PCIONFBS	0.0800118	0	0	0	0	0	0	0	s4200737	1

IC Result Check FormVersion : 8C5/AC17

LFID	LSID	Selection	nitrate	chloride	fluoride	iodide	nitrite	bromide	phosphate	sulfate	RawNetID	DF
AD33-01	CCV369	NCFOIBPS	95.5%	98.6%	107.7%	0%*	108.2%	98.4%	89.6%*	96%	s4211137	1
AD33-02	CCB369	NCFOIBPS	0	0	0	0	0	0	0	0	s4211159	1
AD33-13	CCV371	NCFOIBPS	98.1%	99.6%	108.4%	0%*	107.8%	99.9%	89.7%*	98.7%	s4211446	1
AD33-14	CCB371	NCFOIBPS	0	0	0	0	0	0	0	0	s4211501	1
AD33-25	CCV373	NCFOIBPS	102.5%	106%	113%*	0%*	112.9%*	106.1%	94.3%	98.8%	s4211749	1
AD33-26	CCB373	NCFOIBPS	0	0	0	0	0	0	0	0	s4211804	1
AD33-38	CCV375	NCFOIBPS	97.1%	100.3%	109.6%	0%*	108.3%	100.1%	98.2%	96.9%	s4212106	1
AD33-39	CCB375	NCFOIBPS	0	0	0	0	0	0	0	0	s4212121	1
AD33-46	CCV377	NCFOIBPS	96.5%	98.5%	108.3%	0%*	107.3%	98.5%	94.4%	96.2%	s4212307	1
AD33-47	CCB377	NCFOIBPS	0	0	0	0	0	0	0	0	s4212322	1
AD33-58	CCV379	NCFOIBPS	98.3%	100.8%	109.7%	0%*	110%	100.7%	78.6%*	98.2%	s4220209	1
AD33-59	CCB379	NCFOIBPS	0	0.143917	0	0	0	0	0	0	s4220224	1

ANALYTICAL LOG

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

IC Eluent: SW4-01-50 (320mM Na_2CO_3 / 100mM $NaHCO_3$)
SW4-01-53 (100mM $NaHCO_3$)
IC Regenerant: SW4-01-56 (1000mM H_2SO_4)

Book #: A100-014

Instrument No.: 100

Analytical Sequence: AD31

Method File: IC100 - C17. mtw

Analytical Batch: ICD057W, ICD059W, ICD061W, ICD063W, ICD065W

SOP #	Rev. #
☑ EMAX-300.0	4
☑ EMAX-9056	2
☐ EMAX-	

STANDARDS ID	
ICAL	SIB-006-89-3
ICV	SIB-006-90-1
CCV	SIB-09-9-3 / SIB-09-10-2
LCS	SIB-09-F0- / SIB-09-10-3
MS	AccuSpec: Br^-, SO_4^{2-} (5ppm) F^-, Cl^-, NO_2^-, NO_3^-, PO_4^{3-} (2ppm)

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ IC-METROHM	
☐	

Analyzed By: YP / cd

Date: 4/18/08 + 04/19/08

F1

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s4181037.chw	IC100-C17.mtw	AD31-01 CCV337	1	1.0	1.0	1.0	100.0	0		
s4181055.chw	IC100-C17.mtw	AD31-02 CCB337	2	1.0	1.0	1.0	100.0	0		
s4181110.chw	IC100-C17.mtw	AD31-03 ICD057WB	3	1.0	1.0	1.0	100.0	0		
s4181141.chw	IC100-C17.mtw	AD31-04 ICD057WL	4	1.0	1.0	1.0	100.0	0		
s4181157.chw	IC100-C17.mtw	AD31-05 ICD057WC	5	1.0	1.0	1.0	100.0	0		
s4181212.chw	IC100-C17.mtw	AD31-06 D194-06	6	1.0	1.0	1.0	100.0	0		
s4181228.chw	IC100-C17.mtw	AD31-07 D194-03	7	1.0	1.0	1.0	100.0	0		
s4181243.chw	IC100-C17.mtw	AD31-08 D194-03D	8	1.0	1.0	1.0	100.0	0		
s4181258.chw	IC100-C17.mtw	AD31-09 D194-03M	9	1.0	1.0	1.0	100.0	0		
s4181313.chw	IC100-C17.mtw	AD31-10 D194-03S	10	1.0	1.0	1.0	100.0	0		
s4181328.chw	IC100-C17.mtw	AD31-11 D192-08	11	1.0	1.0	1.0	100.0	0		
s4181343.chw	IC100-C17.mtw	AD31-12 RINSE	12	1.0	1.0	1.0	100.0	0		
s4181359.chw	IC100-C17.mtw	AD31-13 CCV339	13	1.0	1.0	1.0	100.0	0		
s4181414.chw	IC100-C17.mtw	AD31-14 CCB339	14	1.0	1.0	1.0	100.0	0		
s4181429.chw	IC100-C17.mtw	AD31-15 D192-08D	15	1.0	1.0	1.0	100.0	0		
s4181444.chw	IC100-C17.mtw	AD31-16 D192-08M	16	1.0	1.0	1.0	100.0	0		
s4181459.chw	IC100-C17.mtw	AD31-17 D192-08S	17	1.0	1.0	1.0	100.0	0		
s4181514.chw	IC100-C17.mtw	AD31-18 D153-02	18	1.0	1.0	1.0	100.0	0		
s4181530.chw	IC100-C17.mtw	AD31-19 D169-01 DF=300	19	1.0	200.0	1.0	100.0	0		
s4181545.chw	IC100-C17.mtw	AD31-20 D169-02 DF=25	20	1.0	25.0	1.0	100.0	0		
s4181600.chw	IC100-C17.mtw	AD31-21 D169-03 DF=200	21	1.0	200.0	1.0	100.0	0		
s4181615.chw	IC100-C17.mtw	AD31-22 D169-01 DF=20	22	1.0	20.0	1.0	100.0	0		
s4181630.chw	IC100-C17.mtw	AD31-23 D169-02 DF=5	23	1.0	5.0	1.0	100.0	0		
s4181645.chw	IC100-C17.mtw	AD31-24 RINSE	24	1.0	1.0	1.0	100.0	0		
s4181701.chw	IC100-C17.mtw	AD31-25 CCV341	25	1.0	1.0	1.0	100.0	0		
s4181716.chw	IC100-C17.mtw	AD31-26 CCB341	26	1.0	1.0	1.0	100.0	0		
s4181731.chw	IC100-C17.mtw	AD31-27 D206-01	27	1.0	1.0	1.0	100.0	0		
s4181747.chw	IC100-C17.mtw	AD31-28 D206-02	28	1.0	1.0	1.0	100.0	0		
s4181802.chw	IC100-C17.mtw	AD31-29 D169-03 DF=25	29	1.0	25.0	1.0	100.0	0		
s4181817.chw	IC100-C17.mtw	AD31-30 D186-01 DF=50	30	1.0	50.0	1.0	100.0	0		
s4181834.chw	IC100-C17.mtw	AD31-31 D186-02 DF=50	31	1.0	50.0	1.0	100.0	0		
s4181849.chw	IC100-C17.mtw	AD31-32 D186-03 DF=200	32	1.0	200.0	1.0	100.0	0		
s4181904.chw	IC100-C17.mtw	AD31-33 D186-04 DF=50	33	1.0	50.0	1.0	100.0	0		
s4181919.chw	IC100-C17.mtw	AD31-34 D186-05 DF=50	34	1.0	50.0	1.0	100.0	0		
s4181934.chw	IC100-C17.mtw	AD31-35 D186-06 DF=80	35	1.0	80.0	1.0	100.0	0		
s4181949.chw	IC100-C17.mtw	AD31-36 RINSE	36	1.0	1.0	1.0	100.0	0		
s4182005.chw	IC100-C17.mtw	AD31-37 RINSE	37	1.0	1.0	1.0	100.0	0		
s4182020.chw	IC100-C17.mtw	AD31-38 CCV343	38	1.0	1.0	1.0	100.0	0		
s4182035.chw	IC100-C17.mtw	AD31-39 CCB343	39	1.0	1.0	1.0	100.0	0		
s4182050.chw	IC100-C17.mtw	AD31-40 ICD059WB	40	1.0	1.0	1.0	100.0	0		
s4182105.chw	IC100-C17.mtw	AD31-41 ICD059WL	41	1.0	1.0	1.0	100.0	0		
s4182120.chw	IC100-C17.mtw	AD31-42 ICD059WC	42	1.0	1.0	1.0	100.0	0		
s4182136.chw	IC100-C17.mtw	AD31-43 D167-04	43	1.0	1.0	1.0	100.0	0		
s4182151.chw	IC100-C17.mtw	AD31-44 D167-05	44	1.0	1.0	1.0	100.0	0		
s4182206.chw	IC100-C17.mtw	AD31-45 D186-07 DF=100	45	1.0	100.0	1.0	100.0	0		
s4182221.chw	IC100-C17.mtw	AD31-46 D167-01 DF=50	46	1.0	50.0	1.0	100.0	0		
s4182236.chw	IC100-C17.mtw	AD31-47 D167-02 DF=50	47	1.0	50.0	1.0	100.0	0		
s4182251.chw	IC100-C17.mtw	AD31-48 D167-03 DF=50	48	1.0	50.0	1.0	100.0	0		
s4182307.chw	IC100-C17.mtw	AD31-49 RINSE	49	1.0	1.0	1.0	100.0	0		
s4182322.chw	IC100-C17.mtw	AD31-50 CCV345	50	1.0	1.0	1.0	100.0	0		
s4182337.chw	IC100-C17.mtw	AD31-51 CCB345	51	1.0	1.0	1.0	100.0	0		
s4182352.chw	IC100-C17.mtw	AD31-52 D167-06 DF=5	52	1.0	5.0	1.0	100.0	0		
s4190007.chw	IC100-C17.mtw	AD31-53 D167-06 DF=20	53	1.0	20.0	1.0	100.0	0		
s4190022.chw	IC100-C17.mtw	AD31-54 D167-07 DF=50	54	1.0	50.0	1.0	100.0	0		
s4190038.chw	IC100-C17.mtw	AD31-55 D159-02 DF=10	55	1.0	10.0	1.0	100.0	0		
s4190053.chw	IC100-C17.mtw	AD31-56 D159-03 DF=10	56	1.0	10.0	1.0	100.0	0		
s4190108.chw	IC100-C17.mtw	AD31-57 D159-04 DF=10	57	1.0	10.0	1.0	100.0	0		
s4190123.chw	IC100-C17.mtw	AD31-58 D159-05 DF=5	58	1.0	5.0	1.0	100.0	0		
s4190138.chw	IC100-C17.mtw	AD31-59 D159-07 DF=5	59	1.0	5.0	1.0	100.0	0		

FINAL

6 6 3 6

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s4190153.chw	IC100-C17.mtw	AD31-60 D159-07D DF=5	60	1.0	5.0	1.0	100.0	0		
s4190209.chw	IC100-C17.mtw	AD31-61 RINSE	61	1.0	1.0	1.0	100.0	0		
s4190224.chw	IC100-C17.mtw	AD31-62 CCV347	62	1.0	1.0	1.0	100.0	0		
s4190239.chw	IC100-C17.mtw	AD31-63 CCB347	63	1.0	1.0	1.0	100.0	0		
s4190254.chw	IC100-C17.mtw	AD31-64 D159-07M DF=5	64	1.0	5.0	1.0	100.0	0		
s4190309.chw	IC100-C17.mtw	AD31-65 D159-07S DF=5	65	1.0	5.0	1.0	100.0	0		
s4190325.chw	IC100-C17.mtw	AD31-66 D159-06 DF=10	66	1.0	10.0	1.0	100.0	0		
s4190340.chw	IC100-C17.mtw	AD31-67 D159-08 DF=5	67	1.0	5.0	1.0	100.0	0		
s4190355.chw	IC100-C17.mtw	AD31-68 D194-03 DF=5	68	1.0	5.0	1.0	100.0	0		
s4190410.chw	IC100-C17.mtw	AD31-69 D194-03D DF=5	69	1.0	5.0	1.0	100.0	0		
s4190425.chw	IC100-C17.mtw	AD31-70 D194-03M DF=5	70	1.0	5.0	1.0	100.0	0		
s4190440.chw	IC100-C17.mtw	AD31-71 D194-03S DF=5	71	1.0	5.0	1.0	100.0	0		
s4190456.chw	IC100-C17.mtw	AD31-72 D194-06 DF=2	72	1.0	2.0	1.0	100.0	0		
s4190511.chw	IC100-C17.mtw	AD31-73 RINSE	73	1.0	1.0	1.0	100.0	0		
s4190526.chw	IC100-C17.mtw	AD31-74 CCV349	74	1.0	1.0	1.0	100.0	0		
s4190541.chw	IC100-C17.mtw	AD31-75 CCB349	75	1.0	1.0	1.0	100.0	0		
s4190556.chw	IC100-C17.mtw	AD31-76 ICD061WB	76	1.0	1.0	1.0	100.0	0		
s4190611.chw	IC100-C17.mtw	AD31-77 ICD061WL	77	1.0	1.0	1.0	100.0	0		
s4190627.chw	IC100-C17.mtw	AD31-78 ICD061WC	78	1.0	1.0	1.0	100.0	0		
s4190642.chw	IC100-C17.mtw	AD31-79 D138-02 DF=10	79	1.0	10.0	1.0	100.0	0		
s4190657.chw	IC100-C17.mtw	AD31-80 D138-03 DF=10	80	1.0	10.0	1.0	100.0	0		
s4190712.chw	IC100-C17.mtw	AD31-81 D138-04 DF=10	81	1.0	10.0	1.0	100.0	0		
s4190727.chw	IC100-C17.mtw	AD31-82 D177-04 DF=2	82	1.0	2.0	1.0	100.0	0		
s4190742.chw	IC100-C17.mtw	AD31-83 D177-04D DF=2	83	1.0	2.0	1.0	100.0	0		
s4190758.chw	IC100-C17.mtw	AD31-84 RINSE	84	1.0	1.0	1.0	100.0	0		
s4190813.chw	IC100-C17.mtw	AD31-85 CCV351	85	1.0	1.0	1.0	100.0	0		
s4190828.chw	IC100-C17.mtw	AD31-86 CCB351	86	1.0	1.0	1.0	100.0	0	FINAL	
s4190843.chw	IC100-C17.mtw	AD31-87 D177-04M DF=2	87	1.0	2.0	1.0	100.0	0		
s4190858.chw	IC100-C17.mtw	AD31-88 D177-04S DF=2	88	1.0	2.0	1.0	100.0	0		
s4190913.chw	IC100-C17.mtw	AD31-89 D177-05 DF=5	89	1.0	5.0	1.0	100.0	0		
s4190929.chw	IC100-C17.mtw	AD31-90 D177-06 DF=5	90	1.0	5.0	1.0	100.0	0		
s4190944.chw	IC100-C17.mtw	AD31-91 D185-02 DF=5	91	1.0	5.0	1.0	100.0	0		
s4190959.chw	IC100-C17.mtw	AD31-92 D185-03 DF=5	92	1.0	5.0	1.0	100.0	0		
s4191014.chw	IC100-C17.mtw	AD31-93 D185-03 DF=20	93	1.0	20.0	1.0	100.0	0		
s4191029.chw	IC100-C17.mtw	AD31-94 D185-04 DF=5	94	1.0	5.0	1.0	100.0	0		
s4191044.chw	IC100-C17.mtw	AD31-95 D185-05 DF=5	95	1.0	5.0	1.0	100.0	0		
s4191100.chw	IC100-C17.mtw	AD31-96 RINSE	96	1.0	1.0	1.0	100.0	0		
s4191115.chw	IC100-C17.mtw	AD31-97 CCV353	97	1.0	1.0	1.0	100.0	0		
s4191130.chw	IC100-C17.mtw	AD31-98 CCB353	98	1.0	1.0	1.0	100.0	0		
s4191145.chw	IC100-C17.mtw	AD31-99 D185-06 DF=5	99	1.0	5.0	1.0	100.0	0		
s4191200.chw	IC100-C17.mtw	AD31-100 D155-03R	100	1.0	1.0	1.0	100.0	0		
s4191224.chw	IC100-C17.mtw	AD31-101 D211-02	101	1.0	1.0	1.0	100.0	0		
s4191239.chw	IC100-C17.mtw	AD31-102 D211-05	102	1.0	1.0	1.0	100.0	0		
s4191254.chw	IC100-C17.mtw	AD31-103 D211-07	103	1.0	1.0	1.0	100.0	0		
s4191310.chw	IC100-C17.mtw	AD31-104 D155-03 DF=2	104	1.0	2.0	1.0	100.0	0		
s4191325.chw	IC100-C17.mtw	AD31-105 D155-03D DF=2	105	1.0	2.0	1.0	100.0	0		
s4191340.chw	IC100-C17.mtw	AD31-106 D155-03M DF=2	106	1.0	2.0	1.0	100.0	0		
s4191355.chw	IC100-C17.mtw	AD31-107 D155-03S DF=2	107	1.0	2.0	1.0	100.0	0		
s4191410.chw	IC100-C17.mtw	AD31-108 RINSE	108	1.0	1.0	1.0	100.0	0		
s4191425.chw	IC100-C17.mtw	AD31-109 CCV355	109	1.0	1.0	1.0	100.0	0		
s4191441.chw	IC100-C17.mtw	AD31-110 CCB355	110	1.0	1.0	1.0	100.0	0		
s4191456.chw	IC100-C17.mtw	AD31-111 D155-04 DF=5	111	1.0	5.0	1.0	100.0	0		
s4191511.chw	IC100-C17.mtw	AD31-112 D204-01 DF=50	112	1.0	50.0	1.0	100.0	0		
s4191526.chw	IC100-C17.mtw	AD31-113 D204-01D DF=50	113	1.0	50.0	1.0	100.0	0		
s4191541.chw	IC100-C17.mtw	AD31-114 D204-01M DF=50	114	1.0	50.0	1.0	100.0	0		
s4191556.chw	IC100-C17.mtw	AD31-115 D204-01S DF=50	115	1.0	50.0	1.0	100.0	0		
s4191612.chw	IC100-C17.mtw	AD31-116 D204-02 DF=50	116	1.0	50.0	1.0	100.0	0		
s4191627.chw	IC100-C17.mtw	AD31-117 D204-03 DF=50	117	1.0	50.0	1.0	100.0	0		
s4191642.chw	IC100-C17.mtw	AD31-118 RINSE	118	1.0	1.0	1.0	100.0	0		

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s4191657.chw	IC100-C17.mtw	AD31-119 RINSE	119	1.0	1.0	1.0	100.0	0		
s4191712.chw	IC100-C17.mtw	AD31-120 RINSE	120	1.0	1.0	1.0	100.0	0		
s4191727.chw	IC100-C17.mtw	AD31-121 CCV357	121	1.0	1.0	1.0	100.0	0		
s4191743.chw	IC100-C17.mtw	AD31-122 CCB357	122	1.0	1.0	1.0	100.0	0		
s4191758.chw	IC100-C17.mtw	AD31-123 ICD063WB	123	1.0	1.0	1.0	100.0	0		
s4191813.chw	IC100-C17.mtw	AD31-124 ICD063WL	124	1.0	1.0	1.0	100.0	0		
s4191828.chw	IC100-C17.mtw	AD31-125 ICD063WC	125	1.0	1.0	1.0	100.0	0		
s4191843.chw	IC100-C17.mtw	AD31-126 D178-04 DF=2	126	1.0	2.0	1.0	100.0	0		
s4191858.chw	IC100-C17.mtw	AD31-127 D178-05 DF=2	127	1.0	2.0	1.0	100.0	0		
s4191914.chw	IC100-C17.mtw	AD31-128 D178-05D DF=2	1	1.0	2.0	1.0	100.0	0		
s4191929.chw	IC100-C17.mtw	AD31-129 D178-05M DF=2	2	1.0	2.0	1.0	100.0	0		
s4191944.chw	IC100-C17.mtw	AD31-130 D178-05S DF=2	3	1.0	2.0	1.0	100.0	0		
s4191959.chw	IC100-C17.mtw	AD31-131 D178-06 DF=2	4	1.0	2.0	1.0	100.0	0		
s4192014.chw	IC100-C17.mtw	AD31-132 RINSE	5	1.0	1.0	1.0	100.0	0		
s4192029.chw	IC100-C17.mtw	AD31-133 CCV359	6	1.0	1.0	1.0	100.0	0		
s4192045.chw	IC100-C17.mtw	AD31-134 CCB359	7	1.0	1.0	1.0	100.0	0		
s4192100.chw	IC100-C17.mtw	AD31-135 D178-07 DF=2	8	1.0	2.0	1.0	100.0	0		
s4192115.chw	IC100-C17.mtw	AD31-136 D174-01 DF=25	9	1.0	25.0	1.0	100.0	0		
s4192130.chw	IC100-C17.mtw	AD31-137 D174-03 DF=10	10	1.0	10.0	1.0	100.0	0		
s4192145.chw	IC100-C17.mtw	AD31-138 D174-04 DF=80	11	1.0	80.0	1.0	100.0	0		
s4192200.chw	IC100-C17.mtw	AD31-139 D174-05 DF=2	12	1.0	2.0	1.0	100.0	0		
s4192216.chw	IC100-C17.mtw	AD31-140 D174-08 DF=2	13	1.0	2.0	1.0	100.0	0		
s4192231.chw	IC100-C17.mtw	AD31-141 D174-09 DF=100	14	1.0	100.0	1.0	100.0	0		
s4192246.chw	IC100-C17.mtw	AD31-142 D174-12 DF=25	15	1.0	25.0	1.0	100.0	0		
s4192301.chw	IC100-C17.mtw	AD31-143 D174-13 DF=100	16	1.0	100.0	1.0	100.0	0		
s4192316.chw	IC100-C17.mtw	AD31-144 RINSE	17	1.0	1.0	1.0	100.0	0		
s4192331.chw	IC100-C17.mtw	AD31-145 CCV361	18	1.0	1.0	1.0	100.0	0		
s4192347.chw	IC100-C17.mtw	AD31-146 CCB361	19	1.0	1.0	1.0	100.0	0		
s4200002.chw	IC100-C17.mtw	AD31-147 D174-15 DF=10	20	1.0	10.0	1.0	100.0	0		
s4200017.chw	IC100-C17.mtw	AD31-148 D174-15D DF=10	21	1.0	10.0	1.0	100.0	0		
s4200032.chw	IC100-C17.mtw	AD31-149 D174-15M DF=10	22	1.0	10.0	1.0	100.0	0		
s4200047.chw	IC100-C17.mtw	AD31-150 D174-15S DF=10	23	1.0	10.0	1.0	100.0	0		
s4200103.chw	IC100-C17.mtw	AD31-151 D174-16 DF=25	24	1.0	25.0	1.0	100.0	0		
s4200118.chw	IC100-C17.mtw	AD31-152 D174-17 DF=25	25	1.0	25.0	1.0	100.0	0		
s4200133.chw	IC100-C17.mtw	AD31-153 D174-18 DF=50	26	1.0	50.0	1.0	100.0	0		
s4200148.chw	IC100-C17.mtw	AD31-154 D174-20 DF=40	27	1.0	40.0	1.0	100.0	0		
s4200203.chw	IC100-C17.mtw	AD31-155 D174-22 DF=50	28	1.0	50.0	1.0	100.0	0		
s4200218.chw	IC100-C17.mtw	AD31-156 D174-23 DF=50	29	1.0	50.0	1.0	100.0	0		
s4200234.chw	IC100-C17.mtw	AD31-157 CCV363	30	1.0	1.0	1.0	100.0	0		
s4200249.chw	IC100-C17.mtw	AD31-158 CCB363	31	1.0	1.0	1.0	100.0	0		
s4200304.chw	IC100-C17.mtw	AD31-159 ICD065WB	32	1.0	1.0	1.0	100.0	0		
s4200319.chw	IC100-C17.mtw	AD31-160 ICD065WL	33	1.0	1.0	1.0	100.0	0		
s4200334.chw	IC100-C17.mtw	AD31-161 ICD065WC	34	1.0	1.0	1.0	100.0	0		
s4200349.chw	IC100-C17.mtw	AD31-162 D174-02	35	1.0	1.0	1.0	100.0	0		
s4200405.chw	IC100-C17.mtw	AD31-163 D174-06	36	1.0	1.0	1.0	100.0	0		
s4200420.chw	IC100-C17.mtw	AD31-164 D174-07	37	1.0	1.0	1.0	100.0	0		
s4200435.chw	IC100-C17.mtw	AD31-165 D174-21	38	1.0	1.0	1.0	100.0	0		
s4200450.chw	IC100-C17.mtw	AD31-166 D155-03R	39	1.0	1.0	1.0	100.0	0		
s4200505.chw	IC100-C17.mtw	AD31-167 D155-03Z	40	1.0	1.0	1.0	100.0	0		
s4200520.chw	IC100-C17.mtw	AD31-168 RINSE	41	1.0	1.0	1.0	100.0	0		
s4200536.chw	IC100-C17.mtw	AD31-169 CCV365	42	1.0	1.0	1.0	100.0	0		
s4200551.chw	IC100-C17.mtw	AD31-170 CCB365	43	1.0	1.0	1.0	100.0	0		
s4200606.chw	IC100-C17.mtw	AD31-171 D155-03G	44	1.0	1.0	1.0	100.0	0		
s4200621.chw	IC100-C17.mtw	AD31-172 D155-03H	45	1.0	1.0	1.0	100.0	0		
s4200636.chw	IC100-C17.mtw	AD31-173 D204-04 DF=50	46	1.0	50.0	1.0	100.0	0		
s4200651.chw	IC100-C17.mtw	AD31-174 D204-05 DF=50	47	1.0	50.0	1.0	100.0	0		
s4200707.chw	IC100-C17.mtw	AD31-175 RINSE	48	1.0	1.0	1.0	100.0	0		
s4200722.chw	IC100-C17.mtw	AD31-176 CCV367	49	1.0	1.0	1.0	100.0	0		
s4200737.chw	IC100-C17.mtw	AD31-177 CCB367	50	1.0	1.0	1.0	100.0	0		

FINAL

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ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

IC Eluent : SW4-01-50 (320mM Na_2CO_3 / 100mM $NaHCO_3$)

SW4-01-53 (100mM $NaHCO_3$)

IC Regenerant : SW4-01-56 (1000mM H_2SO_4)

Book #: A100-014

Instrument No.: 100

Analytical Sequence: AD33

Method File: IC 100 - C17. mtw

Analytical Batch: ICD067W ICD069S ICD071W

SOP #	Rev. #
☑ EMAX-300.0	4
☐ EMAX-9056	2
☐ EMAX-	

STANDARDS ID	
ICAL	SIIB-008-89-3
ICV	SIIB-008-90-1
CCV	SIIB-09-11-1
LCS	SIIB-09-11-2
MS	AccuSPEC: Br^-, SO_4^{2-} (5ppm) F, Cl, NO_2, NO_3, PO_4 (2ppm)

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ IC-METROHM	
☐	

Analyzed By: YP

Date: 4/21/08

F1

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s4211137.chw	IC100-C17.mtw	AD33-01 CCV369	1	1.0	1.0	1.0	100.0	0		
s4211159.chw	IC100-C17.mtw	AD33-02 CCB369	2	1.0	1.0	1.0	100.0	0		
s4211214.chw	IC100-C17.mtw	AD33-03 ICD067WB	3	1.0	1.0	1.0	100.0	0		
s4211229.chw	IC100-C17.mtw	AD33-04 ICD067WL	4	1.0	1.0	1.0	100.0	0		
s4211245.chw	IC100-C17.mtw	AD33-05 ICD067WC	5	1.0	1.0	1.0	100.0	0		
s4211300.chw	IC100-C17.mtw	AD33-06 D167-06 DF=50	6	1.0	50.0	1.0	100.0	0		
s4211315.chw	IC100-C17.mtw	AD33-07 D174-02 DF=10	7	1.0	10.0	1.0	100.0	0		
s4211330.chw	IC100-C17.mtw	AD33-08 D174-05 DF=5	8	1.0	5.0	1.0	100.0	0		
s4211346.chw	IC100-C17.mtw	AD33-09 D174-08 DF=5	9	1.0	5.0	1.0	100.0	0		
s4211401.chw	IC100-C17.mtw	AD33-10 D206-01 DF=10	10	1.0	10.0	1.0	100.0	0		
s4211431.chw	IC100-C17.mtw	AD33-12 RINSE	12	1.0	1.0	1.0	100.0	0		
s4211446.chw	IC100-C17.mtw	AD33-13 CCV371	13	1.0	1.0	1.0	100.0	0		
s4211501.chw	IC100-C17.mtw	AD33-14 CCB371	14	1.0	1.0	1.0	100.0	0		
s4211517.chw	IC100-C17.mtw	AD33-15 D155-03	15	1.0	1.0	1.0	100.0	0		
s4211532.chw	IC100-C17.mtw	AD33-16 D155-03D	16	1.0	1.0	1.0	100.0	0		
s4211547.chw	IC100-C17.mtw	AD33-17 D155-03M	17	1.0	1.0	1.0	100.0	0		
s4211602.chw	IC100-C17.mtw	AD33-18 D155-03S	18	1.0	1.0	1.0	100.0	0		
s4211618.chw	IC100-C17.mtw	AD33-19 D189-03 DF=2	19	1.0	2.0	1.0	100.0	0		
s4211633.chw	IC100-C17.mtw	AD33-20 D189-04 DF=5	20	1.0	5.0	1.0	100.0	0		
s4211648.chw	IC100-C17.mtw	AD33-21 D189-05 DF=5	21	1.0	5.0	1.0	100.0	0		
s4211703.chw	IC100-C17.mtw	AD33-22 D189-08 DF=5	22	1.0	5.0	1.0	100.0	0		
s4211718.chw	IC100-C17.mtw	AD33-23 D189-01	23	1.0	1.0	1.0	100.0	0		
s4211733.chw	IC100-C17.mtw	AD33-24 RINSE	24	1.0	1.0	1.0	100.0	0		
s4211749.chw	IC100-C17.mtw	AD33-25 CCV373	25	1.0	1.0	1.0	100.0	0		
s4211804.chw	IC100-C17.mtw	AD33-26 CCB373	26	1.0	1.0	1.0	100.0	0		
s4211819.chw	IC100-C17.mtw	AD33-27 D189-06	27	1.0	1.0	1.0	100.0	0		
s4211834.chw	IC100-C17.mtw	AD33-28 D189-06D	28	1.0	1.0	1.0	100.0	0		
s4211849.chw	IC100-C17.mtw	AD33-29 D189-06M	29	1.0	1.0	1.0	100.0	0		
s4211904.chw	IC100-C17.mtw	AD33-30 D189-06S	30	1.0	1.0	1.0	100.0	0		
s4211920.chw	IC100-C17.mtw	AD33-31 D189-07 DF=40	31	1.0	40.0	1.0	100.0	0		
s4211935.chw	IC100-C17.mtw	AD33-32 D189-07D DF=40	32	1.0	40.0	1.0	100.0	0		
s4211950.chw	IC100-C17.mtw	AD33-33 D189-07M DF=40	33	1.0	40.0	1.0	100.0	0		
s4212005.chw	IC100-C17.mtw	AD33-34 D189-07S DF=40	34	1.0	40.0	1.0	100.0	0		
s4212020.chw	IC100-C17.mtw	AD33-35 D189-02	35	1.0	1.0	1.0	100.0	0		
s4212035.chw	IC100-C17.mtw	AD33-36 RINSE	36	1.0	1.0	1.0	100.0	0		
s4213051.chw	IC100-C17.mtw	AD33-37 RINSE	37	1.0	1.0	1.0	100.0	0		
s4212106.chw	IC100-C17.mtw	AD33-38 CCV375	38	1.0	1.0	1.0	100.0	0		
s4212121.chw	IC100-C17.mtw	AD33-39 CCB375	39	1.0	1.0	1.0	100.0	0		
s4212136.chw	IC100-C17.mtw	AD33-40 ICD069SB	40	1.0	1.0	1.0	100.0	0		
s4212151.chw	IC100-C17.mtw	AD33-41 ICD069SL	41	1.0	1.0	1.0	100.0	0		
s4212206.chw	IC100-C17.mtw	AD33-42 ICD069SC	42	1.0	1.0	1.0	100.0	0		
s4212222.chw	IC100-C17.mtw	AD33-43 D206-03	43	1.0	1.0	1.0	100.0	0		
s4212237.chw	IC100-C17.mtw	AD33-44 D206-04	44	1.0	1.0	1.0	100.0	0		
s4212252.chw	IC100-C17.mtw	AD33-45 RINSE	45	1.0	1.0	1.0	100.0	0		
s4212307.chw	IC100-C17.mtw	AD33-46 CCV377	46	1.0	1.0	1.0	100.0	0		
s4212322.chw	IC100-C17.mtw	AD33-47 CCB377	47	1.0	1.0	1.0	100.0	0		
s4212338.chw	IC100-C17.mtw	AD33-48 ICD071WB	48	1.0	1.0	1.0	100.0	0		
s4212353.chw	IC100-C17.mtw	AD33-49 ICD071WL	49	1.0	1.0	1.0	100.0	0		
s4220008.chw	IC100-C17.mtw	AD33-50 ICD071WC	50	1.0	1.0	1.0	100.0	0		
s4220023.chw	IC100-C17.mtw	AD33-51 D174-07R	51	1.0	1.0	1.0	100.0	0		
s4220038.chw	IC100-C17.mtw	AD33-52 D174-07A	52	1.0	1.0	1.0	100.0	0		
s4220053.chw	IC100-C17.mtw	AD33-53 RINSE	53	1.0	1.0	1.0	100.0	0		
s4220109.chw	IC100-C17.mtw	AD33-54 D174-21R	54	1.0	1.0	1.0	100.0	0		
s4220124.chw	IC100-C17.mtw	AD33-55 D174-21A	55	1.0	1.0	1.0	100.0	0		
s4220139.chw	IC100-C17.mtw	AD33-56 RINSE	56	1.0	1.0	1.0	100.0	0		
s4220154.chw	IC100-C17.mtw	AD33-57 RINSE	57	1.0	1.0	1.0	100.0	0		
s4220209.chw	IC100-C17.mtw	AD33-58 CCV379	58	1.0	1.0	1.0	100.0	0		
s4220224.chw	IC100-C17.mtw	AD33-59 CCB379	59	1.0	1.0	1.0	100.0	0		

FINAL

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ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Concentration of :

S1 — 0.1 ppm

S2 — 0.2 ppm

S3 — 0.5 ppm

S4 — 10.0 ppm

S5 — 20.0 ppm

S6 — 25.0 ppm

linearity (ppm)

F^- — 10 ✓

Cl^- — 25 ✓

NO_2N — 20 ✓

Br^- — 25 ✓

NO_3N — 25 ✓

PO_4P — 20 ✓

SO_4^{-2} — 25 ✓

I^- — 25 ✓

IC Eluent : SW4-01-50 (320mM Na_2CO_3/100mM $NaHCO_3$)

SW4-01-48 (100mM $NaHCO_3$)

IC Regenerant : SW4-01-51 (1000mM H_2SO_4)

Book #: A100-013

Instrument No.: 100

Analytical Sequence: AC 17

Method File: IC 100 - C17.mtw

Analytical Batch: N/A

SOP #	Rev. #
☑ EMAX-300.0	4
☐ EMAX-9056	2
☐ EMAX-	

STANDARDS ID	
ICAL	SIB-008-89-3
ICV	SIB-008-90-1
CCV	N/A
LCS	↓
MS	↓

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ IC-METROHM	
☐	

Analyzed By: YP

Date: 3/18/08

F1

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s3151542.chw	IC100-C17.mtw	AC17-01 IB	1	1.0	1.0	1.0	100.0	0		
s3181604.chw	IC100-C17.mtw	AC17-02 S0	2	1.0	1.0	1.0	100.0	0		
s3181631.chw	IC100-C17.mtw	AC17-03 S1	3	1.0	1.0	1.0	100.0	1		
s3181652.chw	IC100-C17.mtw	AC17-04 S2	4	1.0	1.0	1.0	100.0	2		
s3181713.chw	IC100-C17.mtw	AC17-05 S3	5	1.0	1.0	1.0	100.0	3		
s3181734.chw	IC100-C17.mtw	AC17-06 S4	6	1.0	1.0	1.0	100.0	4	FINAL	
s3181753.chw	IC100-C17.mtw	AC17-07 S5	7	1.0	1.0	1.0	100.0	5		
s3181816.chw	IC100-C17.mtw	AC17-08 S6	8	1.0	1.0	1.0	100.0	6		
s3181837.chw	IC100-C17.mtw	AC17-09 ICV	9	1.0	1.0	1.0	100.0	0		
s3181859.chw	IC100-C17.mtw	AC17-10 ICB	10	1.0	1.0	1.0	100.0	0		

3-24-06

8936

EXTRACTION LOG

SAMPLE PREPARATION LOG FOR IC/ANIONS

EMAX LABORATORIES, INC.

Book # EIC-003

SOP ☐ EMAX-9056 ☑ EMAX-300.0 End Date 4/21/08 Time 15:45

Matrix Start Date 4/21/08 Time 13:00

PREPARATION BATCH # ICD069S

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Dilution Volume (ml)	Extract Volume (ml)	Notes
*01	ICD069SB	10.0g	100ml	100ml	
*02	ICD069SL	↓	↓	↓	
*03	ICD069SC				
*04	D206-3				
*05	D206-4				
*06				YP 4/21/08	
*07					
*08					
*09					
*10					
*11					
*12					
*13					
*14					
*15					
*16					
*17					
*18					
*19					
*20					
*21					
*22					
*23					
*24					
*25					

Standards	ID	Amount Added (ml)
Chloride	SW3-01-26	0.2
Fluoride	-03	0.2
NO_2	-29	0.2
NO_3-N	-04	0.2
PO_4-P	-05	0.2
SO_4	-16	0.5
Br^-	-28	0.5

Reagent	Lot # / ID
H_2SO_4	N/A
HCl	↓

Legend:

Color	Texture	Clarity	Artifacts
Bu = Blue Bl = Black	Cs = Coarse	Cr = Clear	Rk = Rocks
Bn = Brown Gn = Green	Md = Medium	Cy = Cloudy	Sl = Shale
Og = Orange Rd = Red	Fn = Fine	Td = turbid	Vg= Vegetation
Yw = Yellow			

Comments:

Prepared By: YP

Standard Added By: YP

Checked By:

8033

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08D206

METHOD 314.0
PERCHLORATE

Two (2) water samples and two (2) soil samples were received on 04/18/08 for Perchlorate analysis by Method 314.0 in accordance with "Method for Determination of Perchlorate by Ion Chromatography", EPA 600/98-118.

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control sample results were within QC limits.

4. **Duplicate**

   No Duplicate sample was designated in this SDG.

5. **Matrix Spike**

   No MS sample was designated in this SDG.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

SAMPLE

METHOD 314.0
PERCHLORATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I57

SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/L)	DLF	MOIST	RL (ug/L)	MDL (ug/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	PCE005WB	ND	1	NA	2.00	0.500	05/08/0816:11	NA	JE08002	JE08001	PCE005W	NA	NA
LCS1W	PCE005WL	24.3	1	NA	2.00	0.500	05/08/0816:53	NA	JE08004	JE08001	PCE005W	NA	NA
LCD1W	PCE005WC	23.7	1	NA	2.00	0.500	05/08/0817:14	NA	JE08005	JE08001	PCE005W	NA	NA
TT-MW2-7DL	D206-01I	502	50	NA	100	25.0	05/08/0818:07	NA	JE08007	JE08001	PCE005W	04/18/0809:10	04/18/08
TT-MW2-7-DUPDL	D206-02I	580	50	NA	100	25.0	05/08/0819:10	NA	JE08010	JE08001	PCE005W	04/18/0809:15	04/18/08

8041

METHOD 314.0
PERCHLORATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : SOIL
Instrument ID : I57

SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/kg)	DLF	MOIST	RL (ug/kg)	MDL (ug/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	PCE006SB	ND	1	NA	20.0	10.0	05/08/0820:35	05/07/0817:35	JE08014	JE08013	PCE006S	NA	05/07/08
LCS1S	PCE006SL	243	1	NA	20.0	10.0	05/08/0821:17	05/07/0817:35	JE08016	JE08013	PCE006S	NA	05/07/08
LCD1S	PCE006SC	229	1	NA	20.0	10.0	05/08/0821:38	05/07/0817:35	JE08017	JE08013	PCE006S	NA	05/07/08
SB2-7-15	D206-03	26.4	1	6.7	21.4	10.7	05/08/0822:20	05/07/0817:35	JE08019	JE08013	PCE006S	04/17/0813:30	04/18/08
SB2-7-15-DUP	D206-04	14.2J	1	6.8	21.5	10.7	05/08/0822:41	05/07/0817:35	JE08020	JE08013	PCE006S	04/17/0813:30	04/18/08

QC SUMMARY

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 314.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	PCE005WB	PCE005WL	PCE005WC		
LAB FILE ID:	JE08002	JE08004	JE08005		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	05/08/0816:11	05/08/0816:53	05/08/0817:14	DATE RECEIVED:	NA
PREP. BATCH:	PCE005W	PCE005W	PCE005W		
CALIB. REF:	JE08001	JE08001	JE08001		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Perchlorate	ND	25.0	24.3	97	25.0	23.7	95	2	85-115	20

8D206

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 314.0

MATRIX:	SOIL			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1S				
LAB SAMP ID:	PCE006SB	PCE006SL	PCE006SC		
LAB FILE ID:	JE08014	JE08016	JE08017		
DATE EXTRACTED:	05/07/0817:35	05/07/0817:35	05/07/0817:35	DATE COLLECTED:	NA
DATE ANALYZED:	05/08/0820:35	05/08/0821:17	05/08/0821:38	DATE RECEIVED:	05/07/08
PREP. BATCH:	PCE006S	PCE006S	PCE006S		
CALIB. REF:	JE08013	JE08013	JE08013		

ACCESSION:

PARAMETER	BLNK RSLT (ug/kg)	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Perchlorate	ND	250	243	97	250	229	92	6	85-115	20

INITIAL CALIBRATION

IC SEQ FORM (ESD)

LFID	LSID	SELCOMP	METHOD	DateTime	DF
JA25001	IB	P	IC57A25	01/25/0815:37	1
JA25002	S-0	P	IC57A25	01/25/0815:58	1
JA25003	S-1	P	IC57A25	01/25/0816:19	1
JA25004	S-2	P	IC57A25	01/25/0816:40	1
JA25005	S-3	P	IC57A25	01/25/0817:01	1
JA25006	S-4	P	IC57A25	01/25/0817:22	1
JA25007	S-5	P	IC57A25	01/25/0817:43	1
JA25008	ICV	P	IC57A25	01/25/0818:05	1
JA25009	ICB	P	IC57A25	01/25/0818:26	1

1-30-08

8047

Method : c:\ezchrom\methods\ic57a25.met
Printed : Jan 28, 2008 10:18:46
Channel : A
Peak : PERCHLORATE

* - Replicate Not Used

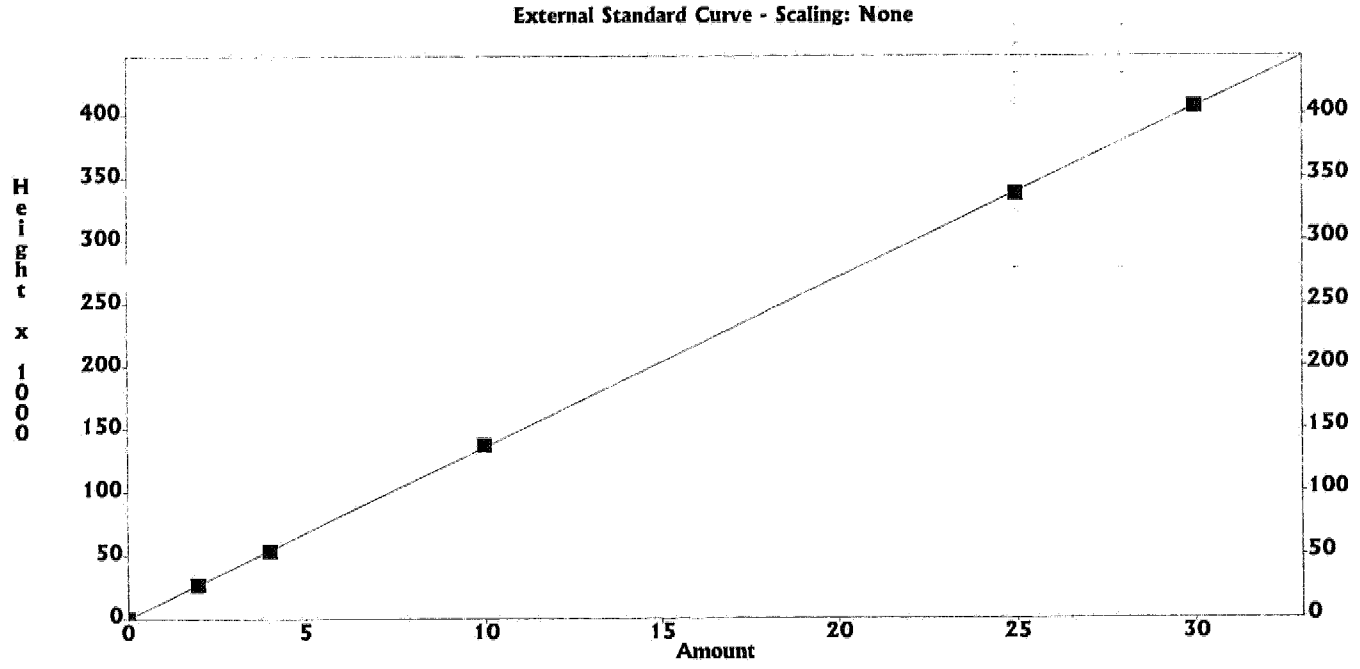
Level	Height	Amount	RF	Rep Hgt 1	Rep Hgt 2	Rep Hgt 3	Rep Hgt 4	Rep Hgt 5	Replic STD	Replic %RSD	Old Height
2	26911	2	13455.50	26911							0
3	53679	4	13419.75	53679							0
4	137051	10	13705.10	137051							0
5	336919	25	13476.76	336919							0
6	406525	30	13550.83	406525							0

Calib Flag: Replace

Average RF: 13521.6
RF StdDev: 113.225
RF %RSD: 0.837

RF Definition: Height / Amount
Weighting Method: None
Fit Through Zero: No

Linear Fit: Amount = 7.3954e-005 x Height - 0.0152094
R^2 = 0.999954



8048

SECOND SOURCE

IC RESULT FORM CalVersion: PCHLO314.A25

LFID	LSID	SELCOMP	PERCHLORATE	DateTime	Df
JA25001	IB	P	.000	01/25/0815:37	1
JA25002	S-0	P	.0000	01/25/0815:58	1
JA25003	S-1	P	2	01/25/0816:19	1
JA25004	S-2	P	4	01/25/0816:40	1
JA25005	S-3	P	10	01/25/0817:01	1
JA25006	S-4	P	25	01/25/0817:22	1
JA25007	S-5	P	30	01/25/0817:43	1
JA25008	ICV	P	104%	01/25/0818:05	1
JA25009	ICB	P	.000	01/25/0818:26	1

1-30-08

DAILY CALIBRATION

IC RESULT FORM CalVersion: PCHLO314.A25

LFID	LSID	SELCOMP	PERCHLORATE	DateTime	Df
JE08001	IPCS	P	80.4%	05/08/0814:40	1
JE08002	PCE005WB	P	.000	05/08/0816:11	1
JE08003	MRL	P	108%	05/08/0816:32	1
JE08004	PCE005WL	P	24.3	05/08/0816:53	1
JE08005	PCE005WC	P	23.7	05/08/0817:14	1
JE08006	MRL	P	113%	05/08/0817:41	1
JE08007	D206-01I	P	502	05/08/0818:07	50
JE08008	RINSE	P	.000	05/08/0818:28	1
JE08009	E040-02	P	.000	05/08/0818:49	1
JE08010	D206-02I	P	580	05/08/0819:10	50
JE08011	RINSE	P	1.99	05/08/0819:31	1
JE08012	CCV173-30	P	98.8%	05/08/0819:52	1
JE08013	IPCS	P	86.6%	05/08/0820:14	1
JE08014	PCE006SB	P	.000	05/08/0820:35	1
JE08015	MRL	P	109%	05/08/0820:56	1
JE08016	PCE006SL	P	24.3	05/08/0821:17	1
JE08017	PCE006SC	P	22.9	05/08/0821:38	1
JE08018	MRL	P	109%	05/08/0821:59	1
JE08019	D206-03	P	2.46	05/08/0822:20	1
JE08020	D206-04	P	1.32	05/08/0822:41	1
JE08021	RINSE	P	.81	05/08/0823:02	1
JE08022	CCV174-15	P	105%	05/08/0823:23	1
JE08023	E041-01	P	.000	05/08/0823:44	1
JE08024	E041-02	P	.000	05/09/0800:05	1
JE08025	E041-03	P	.000	05/09/0800:26	1
JE08026	E041-03D	P	.000	05/09/0800:47	1
JE08027	E041-03M	P	9.99	05/09/0801:08	1
JE08028	E041-04	P	.000	05/09/0801:29	1
JE08029	E041-05	P	.000	05/09/0801:50	1
JE08030	E041-06	P	.000	05/09/0802:11	1
JE08031	E041-07	P	.000	05/09/0802:32	1
JE08032	RINSE	P	1.71	05/09/0802:53	1
JE08033	CCV175-30	P	97.4%	05/09/0803:14	1
JE08034	E041-08	P	.000	05/09/0803:35	1
JE08035	E041-09	P	5.94	05/09/0803:56	1
JE08036	E041-10	P	7.01	05/09/0804:17	1
JE08037	E041-11	P	7.32	05/09/0804:38	1
JE08038	E041-12	P	.000	05/09/0804:59	1
JE08039	E041-13	P	.000	05/09/0805:20	1
JE08040	E041-15	P	.000	05/09/0805:41	1
JE08041	RINSE	P	.000	05/09/0806:02	1
JE08042	CCV176-15	P	99.5%	05/09/0806:23	1

ANALYTICAL LOG

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

NaOH : SW9A-03-013

Book #: A57-016

Instrument No.: 57

Analytical Sequence: 3A25

Method File: IC57A25

Analytical Batch: N/A

SOP #	Rev. #
☐ EMAX-300.0	3
☐ EMAX-300.0M	0
☑ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

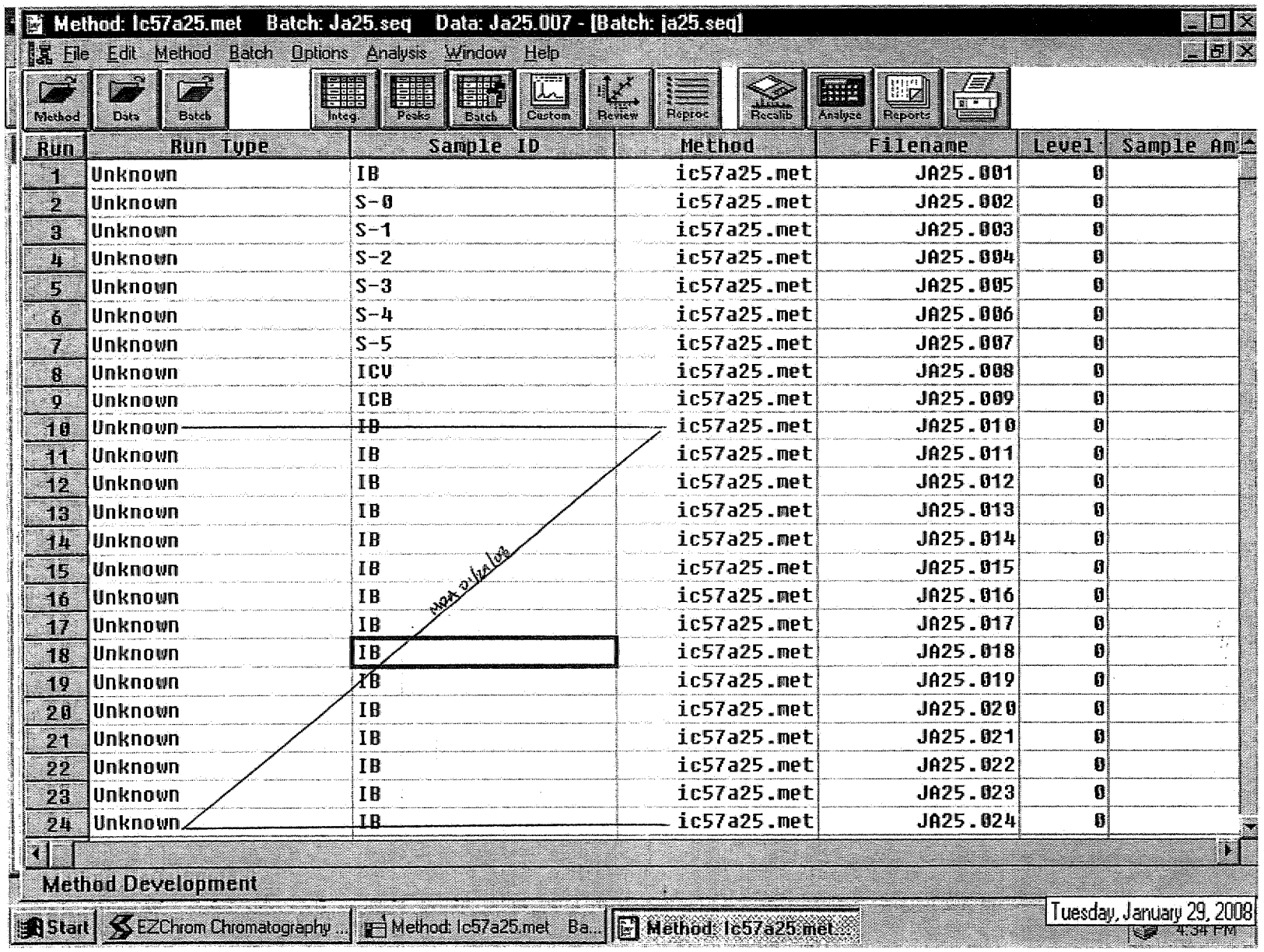
STANDARDS ID	
ICAL	SW8B-02-1063
ICV	↓ -1064
CCV-15	N/A
CCV-30	
LCS	
MS	
IPC	
CMC	
MRL	

CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
	(±) 30	

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ EZ-CHROM	
☐	

Analyzed By: MBA /ad

Date: 01/25/08



MBA 01/29/08

8555

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

NaOH : SW9A - 02-013

Book #:	**A57-016**
Instrument No.:	**57**
Analytical Sequence:	JE08
Method File:	IC57a25
Analytical Batch:	PCE004W & PCE005S

SOP #	Rev. #
☐ EMAX-300.0	3
☐ EMAX-300.0M	0
☑ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

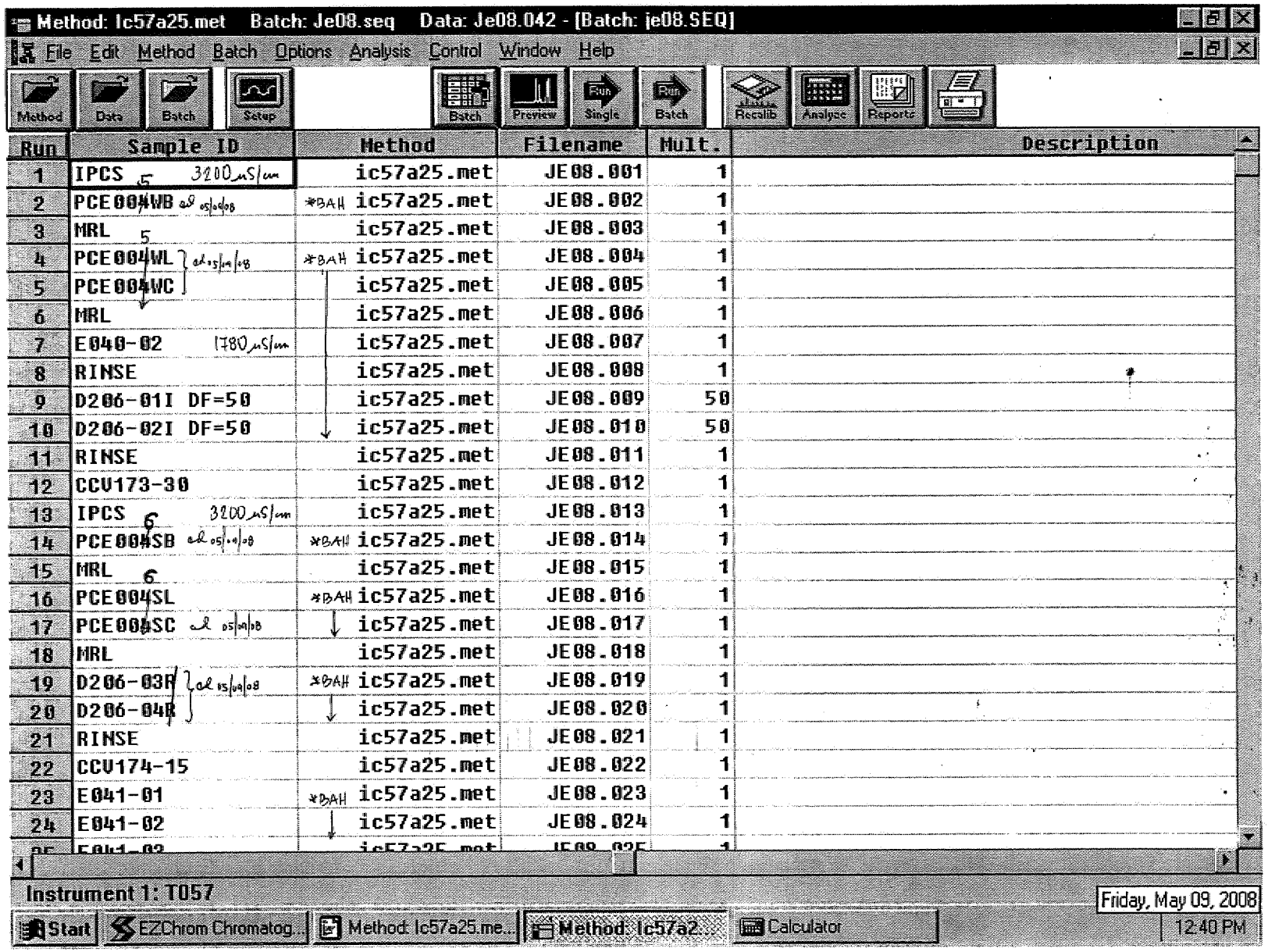
STANDARDS ID	
ICAL	SW8B-02-1063
ICV	1064
CCV-15	1095
CCV-30	1094
LCS	1046
MS	1090
IPC	1097
CMC	SWPI-01-127
MRL	SW8B-02-1091

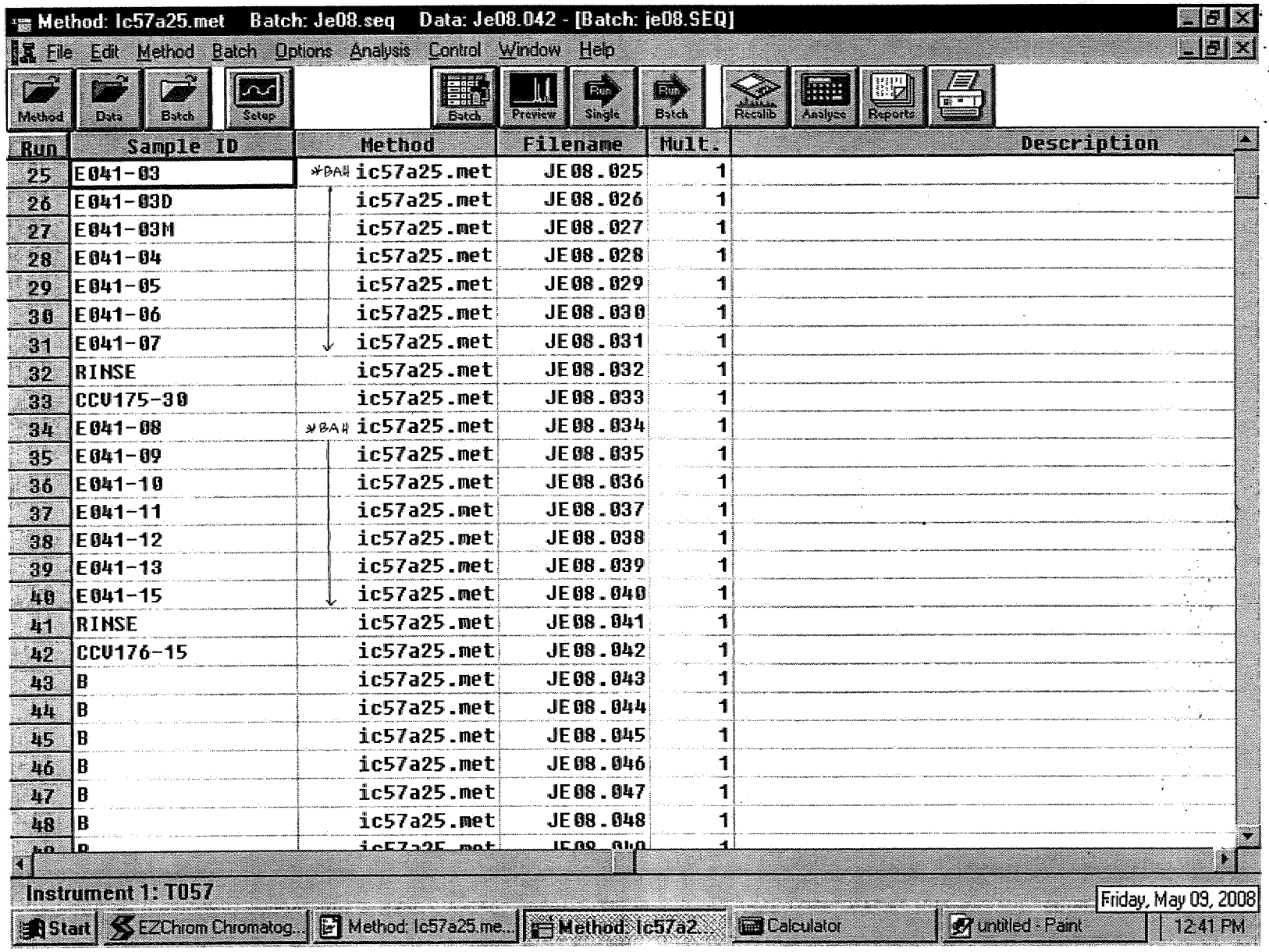
CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
146.1	(±) 30	20°C

ELECTRONIC DATA ARCHIVAL	
Location	Date
☑ EZ-CHROM	
☐	

Analyzed By: ad

Date: 05/08/08


Method: Ic57a25.met Batch: Je08.seq Data: Je08.042 - [Batch: je08.SEQ]
File Edit Method Batch Options Analysis Control Window Help
Method Data Batch Setup Batch Preview Run Single Run Batch Recalib Analyse Reports
Run | Sample ID | Method | Filename | Mult. | Description
1 | IPCS 5 3200 µS/cm | ic57a25.met | JE08.001 | 1
2 | PCE004WB ad 05/08/08 | *BAH ic57a25.met | JE08.002 | 1
3 | MRL 5 | ic57a25.met | JE08.003 | 1
4 | PCE004WL ad 05/08/08 | *BAH ic57a25.met | JE08.004 | 1
5 | PCE004WC | ic57a25.met | JE08.005 | 1
6 | MRL | ic57a25.met | JE08.006 | 1
7 | E040-02 1780 µS/cm | ic57a25.met | JE08.007 | 1
8 | RINSE | ic57a25.met | JE08.008 | 1
9 | D206-01I DF=50 | ic57a25.met | JE08.009 | 50
10 | D206-02I DF=50 | ic57a25.met | JE08.010 | 50
11 | RINSE | ic57a25.met | JE08.011 | 1
12 | CCV173-30 | ic57a25.met | JE08.012 | 1
13 | IPCS 6 3200 µS/cm | ic57a25.met | JE08.013 | 1
14 | PCE004SB ad 05/08/08 | *BAH ic57a25.met | JE08.014 | 1
15 | MRL 6 | ic57a25.met | JE08.015 | 1
16 | PCE004SL | *BAH ic57a25.met | JE08.016 | 1
17 | PCE004SC ad 05/08/08 | ic57a25.met | JE08.017 | 1
18 | MRL | ic57a25.met | JE08.018 | 1
19 | D206-03R ad 05/08/08 | *BAH ic57a25.met | JE08.019 | 1
20 | D206-04R | ic57a25.met | JE08.020 | 1
21 | RINSE | ic57a25.met | JE08.021 | 1
22 | CCV174-15 | ic57a25.met | JE08.022 | 1
23 | E041-01 | *BAH ic57a25.met | JE08.023 | 1
24 | E041-02 | ic57a25.met | JE08.024 | 1
Instrument 1: T057
Friday, May 09, 2008
Start EZChrom Chromatog... Method: Ic57a25.me... Method: Ic57a2... Calculator 12:40 PM


Method: Ic57a25.met Batch: Je08.seq Data: Je08.042 - [Batch: je08.SEQ]
File Edit Method Batch Options Analysis Control Window Help
Method Data Batch Setup Batch Preview Run Single Run Batch Recalib Analyse Reports
Run Sample ID Method Filename Mult. Description
25 E041-03 *BAH ic57a25.met JE08.025 1
26 E041-03D ic57a25.met JE08.026 1
27 E041-03M ic57a25.met JE08.027 1
28 E041-04 ic57a25.met JE08.028 1
29 E041-05 ic57a25.met JE08.029 1
30 E041-06 ic57a25.met JE08.030 1
31 E041-07 ic57a25.met JE08.031 1
32 RINSE ic57a25.met JE08.032 1
33 CCV175-30 ic57a25.met JE08.033 1
34 E041-08 *BAH ic57a25.met JE08.034 1
35 E041-09 ic57a25.met JE08.035 1
36 E041-10 ic57a25.met JE08.036 1
37 E041-11 ic57a25.met JE08.037 1
38 E041-12 ic57a25.met JE08.038 1
39 E041-13 ic57a25.met JE08.039 1
40 E041-15 ic57a25.met JE08.040 1
41 RINSE ic57a25.met JE08.041 1
42 CCV176-15 ic57a25.met JE08.042 1
43 B ic57a25.met JE08.043 1
44 B ic57a25.met JE08.044 1
45 B ic57a25.met JE08.045 1
46 B ic57a25.met JE08.046 1
47 B ic57a25.met JE08.047 1
48 B ic57a25.met JE08.048 1
Instrument 1: T057
Friday, May 09, 2008
Start EZChrom Chromatog... Method: Ic57a25.me... Method: Ic57a2... Calculator untitled - Paint 12:41 PM

EXTRACTION LOGS

SAMPLE PREPARATION LOG FOR ORGANIC ACID/PERCHLORATE

SOP ☑ EMAX-314.0 ☐ EMAX-300.0M Book # E0P-002

Matrix Soil Start Date 05/07/08 Time 17:35 End Date 05/07/08 Time 18:30

PREPARATION BATCH # PCE0069

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Dilution Volume (ml)	Extract Volume (ml)	Notes
*01	PCE0069MB	10.000g	100 ml	100 ml	
*02	WL				ad 05/07/08
*03	WLC				
*04	D206-03				
*05	04				
*06	E041-01				
*07	02				
*08	03				
*09	04				
*10	05				
*11	06				
*12	07				
*13	08				
*14	09				
*15	10				
*16	11				
*17	12				
*18	13				
*19	15				
*20	D3D				
*21	D3M				
*22					
*23					
*24			ad 05/07/08		
*25					

Standards	ID	Amount Added (ml)
Acetate		
Butyrate		
Lactate		
Propionate		
Pyruvate		
Perchlorate LCS/MS	SW8B-02-1090	2.5ml/1.0ml

Reagent	Lot # / ID
H_2SO_4	
Nanopure	DI H_2O

Legend:

Color	Texture	Clarity	Artifacts
Bu = Blue Bl = Black	Cs = Coarse	Cr = Clear	Rk = Rocks
Bn = Brown Gn = Green	Md = Medium	Cy = Cloudy	Sl = Shale
Og = Orange Rd = Red	Fn = Fine	Td = turbid	Vg= Vegetation
Yw = Yellow			

Comments:

Prepared By: ad/KS

Standard Added By: ad

Checked By:

EMAX LABORATORIES, INC. 1835 W. 205th St. Torrance, CA 90501

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08D206

METHOD 350.2
AMMONIA AS N

Two (2) water samples were received on 04/18/08 for Ammonia analysis by Method 350.2 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blanks were free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Sample D206-01 was analyzed for duplicate. %RPD was within QC limit.

5. **Matrix Spike**

   Sample D206-01 was spiked. %Recovery was within QC limit.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 350.2
AMMONIA as N

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	NHD006WB	0.0808J	1	NA	0.100	0.0500	04/21/0816:41	04/21/0812:45	NHD00614	NHD00610	NHD006W	NA	04/21/08
LCS1W	NHD006WL	1.00	1	NA	0.100	0.0500	04/21/0816:41	04/21/0812:45	NHD00615	NHD00610	NHD006W	NA	04/21/08
LCD1W	NHD006WC	1.01	1	NA	0.100	0.0500	04/21/0816:41	04/21/0812:45	NHD00616	NHD00610	NHD006W	NA	04/21/08
TT-MW2-7	D206-01	0.0911J	1	NA	0.100	0.0500	04/21/0816:44	04/21/0812:45	NHD00617	NHD00610	NHD006W	04/18/0809:10	04/18/08
TT-MW2-7DUP	D206-01D	0.0859J	1	NA	0.100	0.0500	04/21/0816:44	04/21/0812:45	NHD00618	NHD00610	NHD006W	04/18/0809:10	04/18/08
TT-MW2-7MS	D206-01M	0.939	1	NA	0.100	0.0500	04/21/0816:45	04/21/0812:45	NHD00619	NHD00610	NHD006W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	0.112	1	NA	0.100	0.0500	04/21/0816:45	04/21/0812:45	NHD00620	NHD00610	NHD006W	04/18/0809:15	04/18/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 350.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: NHD006WL/C

DATE RECEIVED: 04/21/08
DATE EXTRACTED: 04/21/08 12:45
DATE ANALYZED: 04/21/08 16:41/16:41

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Ammonia (NH3-N)	0.0808J	1.00	1.00	92	1.00	1.01	93	1	80-120	20

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 350.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206 DATE RECEIVED: 04/18/08
SAMPLE ID: TT-MW2-7MS DATE EXTRACTED: 04/21/08 12:45
CONTROL NO.: D206-01M DATE ANALYZED: 04/21/08 16:45

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	QC LIMIT (%)
Ammonia (NH3-N)	0.0911J	1.00	0.939	85	75-125

0951

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 350.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206 DATE RECEIVED: 04/18/08
SAMPLE ID: TT-MW2-7DUP DATE EXTRACTED: 04/21/08 12:45
CONTROL NO.: D206-01D DATE ANALYZED: 04/21/08 16:44

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
Ammonia (NH3-N)	0.0911J	0.0859J	NA	20

8951

ANALYSIS RUN LOG
for
AMMONIA

ICAL stock conc. 10 ppm	ICAL stock exp Date: 9/28/08
ICV/LCS/MS stock conc: 10 ppm	ICV/LCS/MS exp Date: 7/9/08

Book #: A70-NH3-010

Instrument No.: 70

Analytical Batch: NH0006

SOP #	Rev. #
☒ EMAX-350.2	2
☐ EMAX-4500 NH3F	

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

STANDARDS ID	☐ 350.2		☐ 4500	
	Conc. ppm	Vol of std used 25 mL Final Vol	Conc. ppm	Vol of std used ___ mL Final Vol
S0 SWPI-02-037	0	0	0	
S1 SW2-01-427	0.1	0.25	0.05	
S2	0.2	0.5	0.1	
S3	0.4	1.0	0.2	
S4	0.6	1.5	0.4	
S5	0.8	2.0	0.6	
S6	1.0	2.5	0.8	
S7	1.6	4.0		
S8	2.0	5.0		
SW2-01-394 ICV/LCS/MS	1.0	2.5	0.4	
CCV SW2-01-427	1.0	2.5	0.4	

Prep Date: 4/21/08 Exp Date: 4/21/08

REAGENT	ID
Color Reagent	RWR1-01-037
Phenol Solution	NA
Sodium Nitroprusside	NA
Oxidizing Solution	NA

Analyzed By: CH.

Date: 4/21/08

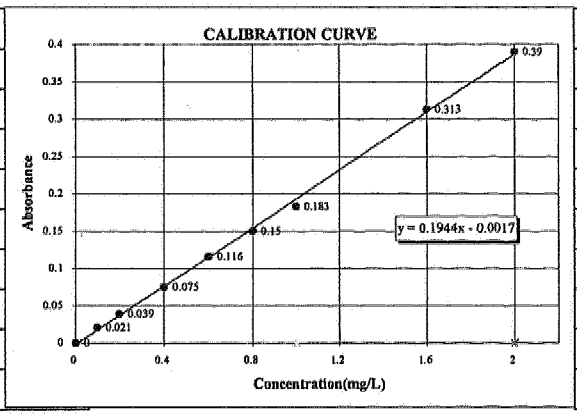
EMAX LABORATORIES, INC.

AMMONA-N ANALYSIS

Instrument ID: 70 Book #: A70-NH-010 Page: 15

SOP: EMAX-350.2 Rev. 2 Calibration Reference: 08NH70D21 Analytical Batch: NHD006

ICAL	mg/L
S0	0
S1	0.1
S2	0.2
S3	0.4
S4	0.6
S5	0.8
S6	1
S7	1.6
S8	2



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.03 mg/L	0.5 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
MB	0 mg/L	0 mg/Kg	< RL
LCS/LCD	1 mg/L	10 mg/Kg	80-120 %
MS	1 mg/L	10 mg/Kg	75-125 %
DUPLICATE	Sample Concentration		RPD: ≤20%
ICV	1 mg/L		85-115%
STD. HIGH	1.6 mg/L		90-110%
STD. LOW	0.4 mg/L		90-110%

r (Coeff. Correl.)= 0.99948 ✓ CF= 5.144480716 Y= -0.00878 ✓

$$FC = [(A * CF) - Y] * DF$$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
NHD00601	S0	425nm	0 a	04/21/08	16:34:39	0	1	0.008783702	mg/L	25	ml	25
NHD00602	S1	425nm	0.021 a	04/21/08	16:34:51	0	1	0.116817797	mg/L	25	ml	25
NHD00603	S2	425nm	0.039 a	04/21/08	16:35:11	0	1	0.20941845	mg/L	25	ml	25
NHD00604	S3	425nm	0.075 a	04/21/08	16:35:23	0	1	0.394619756	mg/L	25	ml	25
NHD00605	S4	425nm	0.116 a	04/21/08	16:35:35	0	1	0.605543465	mg/L	25	ml	25
NHD00606	S5	425nm	0.15 a	04/21/08	16:35:48	0	1	0.780455809	mg/L	25	ml	25
NHD00607	S6	425nm	0.183 a	04/21/08	16:36:08	0	1	0.950223673	mg/L	25	ml	25
NHD00608	S7	425nm	0.313 a	04/21/08	16:36:19	0	1	1.619006166	mg/L	25	ml	25
NHD00609	S8	425nm	0.39 a	04/21/08	16:36:33	0	1	2.015131181	mg/L	25	ml	25
NHD00610	ICV	425nm	0.201 a	04/21/08	16:36:56	0	1	1.042824326	mg/L	25	ml	25
NHD00611	ICB	425nm	0 a	04/21/08	16:37:09	0	1	0.008783702	mg/L	25	ml	25
NHD00612	STD HIGH ✓	425nm	0.283 a	04/21/08	16:40:20	0	1	1.464671745	mg/L	25	ml	25
NHD00613	STD LOW ✓	425nm	0.081 a	04/21/08	16:40:30	0	1	0.42548664	mg/L	25	ml	25
NHD00614	NHD006WB ✓	425nm	0.014 a	04/21/08	16:41:16	0	1	0.080806432	mg/L	25	ml	25
NHD00615	NHD006WL ✓	425nm	0.193 a	04/21/08	16:41:36	0	1	1.00166848	mg/L	25	ml	25
NHD00616	NHD006WC ✓	425nm	0.194 a	04/21/08	16:41:47	0	1	1.006812961	mg/L	25	ml	25
NHD00617	D206-01 ✓	425nm	0.016 a	04/21/08	16:44:30	0	1	0.091095394	mg/L	25	ml	25
NHD00618	D206-01D ✓	425nm	0.015 a	04/21/08	16:44:53	0	1	0.085950913	mg/L	25	ml	25
NHD00619	D206-01M ✓	425nm	0.181 a	04/21/08	16:45:29	0	1	0.939934712	mg/L	25	ml	25
NHD00620	D206-02	425nm	0.02 a	04/21/08	16:45:39	0	1	0.111673316	mg/L	25	ml	25
NHD00621	D467-01	425nm	0.474 a	04/21/08	16:46:06	0	1	2.447267561	mg/L	25	ml	25
NHD00622	CCV1	425nm	0.192 a	04/21/08	16:46:18	0	1	0.996524	mg/L	25	ml	25
NHD00623	CCB1	425nm	0 a	04/21/08	16:46:29	0	1	0.008783702	mg/L	25	ml	25
NHD00624	D467-01T	425nm	0.097 a	04/21/08	16:49:01	0	5	2.538991658	mg/L	25	ml	25
NHD00625	CCV2	425nm	0.194 a	04/21/08	16:49:26	0	1	1.006812961	mg/L	25	ml	25
NHD00626	CCB2	425nm	0 a	04/21/08	16:49:37	0	1	0.008783702	mg/L	25	ml	25

CF= Calibration Factor
DF=Dilution Factor
FC= Found Concentration

Analyzed by: 8067

DISTILLATION LOG FOR NH_3

SOP ☒ EMAX-350.2 Rev. No.: 2 ☐ EMAX-4500-NH_3F Rev. No.: 0 ☐ Book # A70-NH3-010B

Start Date 4/21/08 Time 12:45 End Date 4/21/08 Time 13:45

PREPARATION BATCH* NH0006

Sample Prep ID	Lab Sample ID	Sample pH	NaOH Added (ml)	Boric Acid (ml)	0.04N H_2SO_4 (ml)	Borate Buffer (ml)	Sample Amount (ml)	Extract Volume (ml)	Notes
*01	S-0.4	9.5	1.6mL 4/21/08	2.5	NA	1.25mL	25	25	
*02	S-1.6	↓	↓	↓	↓	↓	↓	↓	
*03	NH0006WB								
*04	↓ WL								
*05	↓ WL								
*06	D206-01								
*07	-01D								
*08	-01M								
*09	↓ -02								
*10	D467-01								
*11									
*12									
*13									
*14									
*15									
*16									
*17									
*18									
*19									
*20									
*21									
*22									
*23									
*24									
*25									
*26									
*27									

CJS 4/21/08

Standards	ID	Amount Added (ml)
ICV/MS	SW2-01-324 CJS 9/21/08	~~2.5mL/100~~
LCS	↓	2.5mL/100

Reagent	Lot# / ID
NaOH	SWP1-01-008
Digestion Mixture	NA
Borate Buffer	SWP1-01-317
0.04N H_2SO_4	NA
H_3BO_3	SWP1-01-031
Distilling Soln.	NA

Comments:

Prepared By: CJS

Standard Added By: CJS

Checked By:

0203

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08D206

METHOD 351.3
TKN

Two (2) water samples and two (2) soil samples were received on 04/18/08 for TKN analysis by Method 351.3 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blanks were free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Samples D206-01 and -03 were analyzed for duplicate. %RPDs were within QC limit.

5. **Matrix Spike**

   Samples D206-01 and -03 were spiked. %Recoveries were within QC limit.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 351.3
TKN

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	KND007WB	0.0624J	1	NA	0.100	0.0500	04/22/0818:02	04/21/0811:00	KND00713	KND00709	KND007W	NA	04/21/08
LCS1W	KND007WL	1.08	1	NA	0.100	0.0500	04/22/0818:02	04/21/0811:00	KND00714	KND00709	KND007W	NA	04/21/08
LCD1W	KND007WC	1.05	1	NA	0.100	0.0500	04/22/0818:03	04/21/0811:00	KND00715	KND00709	KND007W	NA	04/21/08
TT-MW2-7	D206-01	0.350	1	NA	0.100	0.0500	04/22/0818:03	04/21/0811:00	KND00716	KND00709	KND007W	04/18/0809:10	04/18/08
TT-MW2-7DUP	D206-01D	0.324	1	NA	0.100	0.0500	04/22/0818:03	04/21/0811:00	KND00717	KND00709	KND007W	04/18/0809:10	04/18/08
TT-MW2-7MS	D206-01M	1.18	1	NA	0.100	0.0500	04/22/0818:03	04/21/0811:00	KND00718	KND00709	KND007W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	0.261	1	NA	0.100	0.0500	04/22/0818:04	04/21/0811:00	KND00719	KND00709	KND007W	04/18/0809:15	04/18/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 351.3
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: KND007WL/C

DATE RECEIVED: 04/21/08
DATE EXTRACTED: 04/21/08 11:00
DATE ANALYZED: 04/22/08 18:02//18:03

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
TKN	0.0624J	1.00	1.08	102	1.00	1.05	99	3	80-120	20

SDG

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 351.3
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206 DATE RECEIVED: 04/18/08
SAMPLE ID: TT-MW2-7MS DATE EXTRACTED: 04/21/08 11:00
CONTROL NO.: D206-01M DATE ANALYZED: 04/22/08 18:03

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	QC LIMIT (%)
TKN	0.350	1.00	1.18	83	75-125

8512

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 351.3
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: TT-MW2-7DUP
CONTROL NO.: D206-01D

DATE RECEIVED: 04/18/08
DATE EXTRACTED: 04/21/08 11:00
DATE ANALYZED: 04/22/08 18:03

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
TKN	0.350	0.324	8	20

9079

METHOD 351.3
TKN

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : SOIL
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	KND009SB	0.563J	1	NA	1.00	0.500	05/01/0816:54	04/30/0811:00	KND00913	KND00909	KND009S	NA	04/30/08
LCS1S	KND009SL	9.55	1	NA	1.00	0.500	05/01/0816:54	04/30/0811:00	KND00914	KND00909	KND009S	NA	04/30/08
LCD1S	KND009SC	9.55	1	NA	1.00	0.500	05/01/0816:55	04/30/0811:00	KND00915	KND00909	KND009S	NA	04/30/08
SB2-7-15	D206-03	48.6	4.77	6.7	5.11	2.56	05/01/0816:55	04/30/0811:00	KND00916	KND00909	KND009S	04/17/0813:30	04/18/08
SB2-7-15DUP	D206-03D	46.5	4.84	6.7	5.19	2.59	05/01/0816:55	04/30/0811:00	KND00917	KND00909	KND009S	04/17/0813:30	04/18/08
SB2-7-15MS	D206-03M	99.2	4.87	6.7	5.22	2.61	05/01/0816:55	04/30/0811:00	KND00918	KND00909	KND009S	04/17/0813:30	04/18/08
SB2-7-15-DUP	D206-04	43.7	9.67	6.8	10.4	5.19	05/01/0816:55	04/30/0811:00	KND00919	KND00909	KND009S	04/17/0813:30	04/18/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 351.3
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: LCS1S/LCD1S
CONTROL NO.: KND009SL/C

DATE RECEIVED: 04/30/08
DATE EXTRACTED: 04/30/08 11:00
DATE ANALYZED: 05/01/08 16:54/16:55

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
TKN	0.536J	10.0	9.55	90	10.0	9.55	90	0	80-120	20

9075

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 351.3
MATRIX: SOIL
% MOISTURE: 6.7

==========

BATCH NO.: 08D206
SAMPLE ID: SB2-7-15MS
CONTROL NO.: D206-03M

DATE RECEIVED: 04/18/08
DATE EXTRACTED: 04/30/08 11:00
DATE ANALYZED: 05/01/08 16:55

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	QC LIMIT (%)
TKN	48.6	52.2	99.2	97	75-125

8076

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 351.3
MATRIX: SOIL
% MOISTURE: 6.7

BATCH NO.: 08D206 DATE RECEIVED: 04/18/08
SAMPLE ID: SB2-7-15DUP DATE EXTRACTED: 04/30/08 11:00
CONTROL NO.: D206-03D DATE ANALYZED: 05/01/08 16:55

ACCESSION:

PARAMETER	SAMPLE (mg/kg)	DUP. SAMPLE (mg/kg)	RPD (%)	RPD LIMIT (%)
TKN	48.6	46.5	4	20

8617

ANALYSIS RUN LOG
for
TKN

Book #:	**A70-KN-010**
Instrument No.:	**70**
Analytical Batch:	KND007

ICAL stock conc. 10 mg/L	**ICAL stock exp Date:** 9/28/08
ICV/LCS/MS stock conc: 10 mg/L	**ICV/LCS/MS exp Date:** 7/9/08

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

SOP #	
☒ EMAX-351.3	
☐ EMAX-4500 NOrgC	

STANDARDS ID	☒351.3		☐4500	
	Conc. ppm	Vol of std used 50mL Final Vol	Conc. ppm	Vol of std used __mL Final Vol
S0 SWA1-02-38	0.00	0	0.00	
S1 SW2-01-427	0.10	0.1	0.05	
S2	0.20	0.2	0.10	
S3	0.50	0.5	0.20	
S4	0.80	0.8	0.40	
S5	1.00	1.0	0.60	
S6	1.60	1.6	0.80	
S7	2.00	2.0		
SW2-01-324 ICV/LCS/MS	1.00	1.0	0.40	
CCV SWA1-427	1.00	1.0	0.40	

Prep Date: 4/22/08 Exp Date: 4/22/08

REAGENT	ID
Color Reagent	SWR1-01-037
Phenol Solution	NA
Sodium Nitroprusside	NA
Oxidizing Solution	NA

Analyzed By: CR

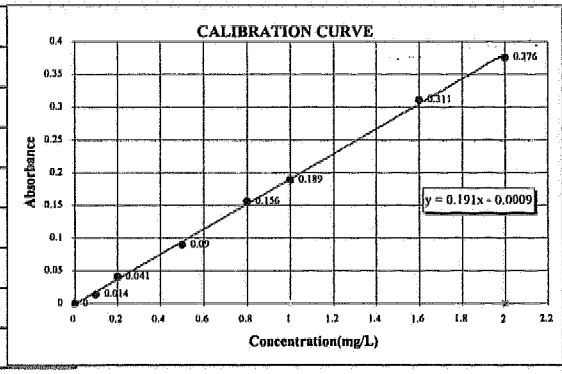
Date: 4/22/08

EMAX LABORATORIES, INC.
TKN ANALYSIS

Instrument ID: 70 Book #: A70-KN-010 Page: 8

SOP: EMAX-351.3 Rev. 1 Calibration Reference: 08KND007 Analytical Batch: KND007

ICAL	mg/L
S0	0
S1	0.1
S2	0.2
S3	0.5
S4	0.8
S5	1
S6	1.6
S7	2



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.03 mg/L	0.5 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	1 mg/L	5 mg/Kg	80-120 %
MS/MSD	1 mg/L	5 mg/Kg	75-125 %
ICV	1 mg/L		85-115%
CCV	1 mg/L		90-110%
STD LOW	0.5 mg/L		90-110%
STD HIGH	1.6 mg/L		90-110%

r (Coeff. Correl.)= 0.99949 ✓ CF= 5.235008678 Y= -0.004799348 ✓

$$FC = [(A * CF) - Y] * DF$$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
KND00701	S0	425NM	0 A	04/22/08	17:55:26	0	1	0.004799348	mg/L	50	ml	50
KND00702	S1	425NM	0.014 A	04/22/08	17:55:42	0	1	0.07808947	mg/L	50	ml	50
KND00703	S2	425NM	0.041 A	04/22/08	17:56:06	0	1	0.219434704	mg/L	50	ml	50
KND00704	S3	425NM	0.09 A	04/22/08	17:56:29	0	1	0.475950129	mg/L	50	ml	50
KND00705	S4	425NM	0.156 A	04/22/08	17:56:41	0	1	0.821460702	mg/L	50	ml	50
KND00706	S5	425NM	0.189 A	04/22/08	17:56:51	0	1	0.994215988	mg/L	50	ml	50
KND00707	S6	425NM	0.311 A	04/22/08	17:57:10	0	1	1.632887047	mg/L	50	ml	50
KND00708	S7	425NM	0.376 A	04/22/08	17:57:20	0	1	1.973162611	mg/L	50	ml	50
KND00709	ICV	425NM	0.202 A	04/22/08	17:57:34	0	1	1.062271101	mg/L	50	ml	50
KND00710	ICB	425NM	0 A	04/22/08	18:01:47	0	1	0.004799348	mg/L	50	ml	50
KND00711	STD HIGH	425NM	0.288 A	04/22/08	18:01:54	0	1	1.512461847	mg/L	50	ml	50
KND00712	STD LOW	425NM	0.097 A	04/22/08	18:02:04	0	1	0.51259519	mg/L	50	ml	50
KND00713	KND007WB ✓	425NM	0.011 A	04/22/08	18:02:13	0	1	0.062384444	mg/L	50	ml	50
KND00714	KND007WL ✓	425NM	0.205 A	04/22/08	18:02:43	0	1	1.077976127	mg/L	50	ml	50
KND00715	KND007WC ✓	425NM	0.199 A	04/22/08	18:03:02	0	1	1.046566075	mg/L	50	ml	50
KND00716	D206-01 ✓	425NM	0.066 A	04/22/08	18:03:14	0	1	0.350309921	mg/L	50	ml	50
KND00717	D206-01D ✓	425NM	0.061 A	04/22/08	18:03:31	0	1	0.324134878	mg/L	50	ml	50
KND00718	D206-01M ✓	425NM	0.225 A	04/22/08	18:03:59	0	1	1.182676301	mg/L	50	ml	50
KND00719	D206-02	425NM	0.049 A	04/22/08	18:04:19	0	1	0.261314773	mg/L	50	ml	50
KND00720	D467-01	425NM	0.97 A	04/22/08	18:04:31	0	1	5.082757766	mg/L	50	ml	50
KND00721	CCV1	425NM	0.196 A	04/22/08	18:06:42	0	1	1.030861049	mg/L	50	ml	50
KND00722	CCB1	425NM	0 A	04/22/08	18:06:54	0	1	0.004799348	mg/L	50	ml	50
KND00723	MDLV@100PPB	425NM	0.027 A	04/22/08	18:08:41	0	1	0.146144583	mg/L	50	ml	50
KND00724	D467-01T	425NM	0.184 A	04/22/08	18:09:14	0	5	4.840204725	mg/L	50	ml	50
KND00725	CCV2	425NM	0.195 A	04/22/08	18:09:37	0	1	1.02562604	mg/L	50	ml	50
KND00726	CCB2	425NM	0 A	04/22/08	18:09:48	0	1	0.004799348	mg/L	50	ml	50

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

Analyzed by: 5079

ANALYSIS RUN LOG
for
TKN

ICAL stock conc. 10 ppm	ICAL stock exp Date: 9/28/08
ICV/LCS/MS stock conc: 10 ppm	ICV/LCS/MS exp Date: 7/9/08

Book #: A70-KN-010

Instrument No.: 70

Analytical Batch: KND009

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

SOP #	
☒ EMAX-351.3	
☐ EMAX-4500 NOrgC	

STANDARDS ID	☒ 351.3		☐ 4500	
	Conc. ppm	Vol of std used 50 mL Final Vol	Conc. ppm	Vol of std used __mL Final Vol
S0 Sw91-04-50 ~~Sw91-01-357~~	0.00	0	0.00	
S1 Lot 511108 Sw2-01-427	0.10	0.1	0.05	
S2	0.20	0.2	0.10	
S3	0.50	0.5	0.20	
S4	0.80	0.8	0.40	
S5	1.00	1.0	0.60	
S6	1.60	1.6	0.80	
S7	2.00	2.0		
ICV/LCS/MS	1.00	1.0	0.40	
CCV Sw2-01-427	1.00	1.0	0.40	

Prep Date: 5/1/08 Exp Date: 5/1/08

REAGENT	ID
Color Reagent	Sw2-01-037
Phenol Solution	NA
Sodium Nitroprusside	NA
Oxidizing Solution	NA

Analyzed By: CH

Date: ~~5/1/08~~ 5/1/08
CH
5/1/08

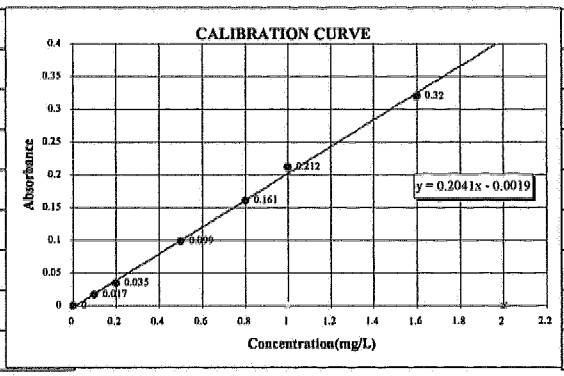
EMAX LABORATORIES, INC.

TKN ANALYSIS

Instrument ID: 70 Book #: A70-KN-010 Page: 10

SOP: EMAX-351.3 Rev. 1 Calibration Reference: 08KN70E1 Analytical Batch: KND009

ICAL	mg/L
S0	0
S1	0.1
S2	0.2
S3	0.5
S4	0.8
S5	1
S6	1.6
S7	2



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.03 mg/L	0.5 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	1 mg/L	10 mg/Kg	80-120 %
MS/MSD	1 mg/L	50 mg/Kg	75-125 %
ICV	1 mg/L		85-115%
CCV	1 mg/L		90-110%
STD LOW	0.5 mg/L		90-110%
STD HIGH	1.6 mg/L		90-110%

r (Coeff. Correl.)= 0.99954 CF= 4.898906198 Y= -0.009545907 $FC = [(A * CF) - Y] * DF$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
KND00901	S0	425NM	0 A	05/01/08	16:41:30	0	1	0.009545907	mg/L	50	ml	50
KND00902	S1	425NM	0.017 A	05/01/08	16:41:49	0	1	0.092827312	mg/L	50	ml	50
KND00903	S2	425NM	0.035 A	05/01/08	16:42:11	0	1	0.181007623	mg/L	50	ml	50
KND00904	S3	425NM	0.099 A	05/01/08	16:42:21	0	1	0.49453762	mg/L	50	ml	50
KND00905	S4	425NM	0.161 A	05/01/08	16:42:49	0	1	0.798269804	mg/L	50	ml	50
KND00906	S5	425NM	0.212 A	05/01/08	16:43:13	0	1	1.048114021	mg/L	50	ml	50
KND00907	S6	425NM	0.32 A	05/01/08	16:43:51	0	1	1.57719589	mg/L	50	ml	50
KND00908	S7	425NM	0.406 A	05/01/08	16:44:10	0	1	1.998501823	mg/L	50	ml	50
KND00909	ICV	425NM	0.213 A	05/01/08	16:44:26	0	1	1.053012927	mg/L	50	ml	50
KND00910	ICB	425NM	0 A	05/01/08	16:48:32	0	1	0.009545907	mg/L	50	ml	50
KND00911	STD HIGH	425NM	0.304 A	05/01/08	16:52:30	0	1	1.498813391	mg/L	50	ml	50
KND00912	STD LOW	425NM	0.097 A	05/01/08	16:52:47	0	1	0.484739808	mg/L	50	ml	50
KND00913	KND009SB	425NM	0.009 A	05/01/08	16:54:35	0	1	0.053636062	mg/Kg	5	g	50
KND00914	KND009SL	425NM	0.193 A	05/01/08	16:54:47	0	1	0.955034803	mg/Kg	5	g	50
KND00915	KND009SC	425NM	0.193 A	05/01/08	16:55:01	0	1	0.955034803	mg/Kg	5	g	50
KND00916	D206-03	425NM	0.192 A	05/01/08	16:55:12	0	1	0.950135897	mg/Kg	1.0482	g	50
KND00917	D206-03D	425NM	0.181 A	05/01/08	16:55:27	0	1	0.896247928	mg/Kg	1.0335	g	50
KND00918	D206-03M	425NM	0.386 A	05/01/08	16:55:42	0	1	1.900523699	mg/Kg	1.0263	g	50
KND00919	D206-04 (A)	425NM	0.084 A	05/01/08	16:55:54	0	1	0.421054027	mg/Kg	0.5172	g	50
KND00920	CCV1	425NM	0.21 A	05/01/08	16:56:29	0	1	1.038316208	mg/L	50	ml	50
KND00921	CCB1	425NM	0 A	05/01/08	16:56:49	0	1	0.009545907	mg/L	50	ml	50
KND00922	CCV2	425NM	0.209 A	05/01/08	17:30:32	0	1	1.033417302	mg/L	50	ml	50
KND00923	CCB2	425NM	0 A	05/01/08	17:31:21	0	1	0.009545907	mg/L	50	ml	50
KND00924	MDLV@100PPB	425NM	0.025 A	05/01/08	17:33:26	0	1	0.132018561	mg/Kg	5	g	50
KND00925	CCV3	425NM	0.221 A	05/01/08	17:33:43	0	1	1.092204176	mg/L	50	ml	50
KND00926	CCB3	425NM	0 A	05/01/08	17:33:55	0	1	0.009545907	mg/L	50	ml	50

(A) $0.421054027 \times \frac{50}{0.5172} = 40.7$ mg/kg

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

8081

Analyzed by: CG

DIGESTION AND DISTILLATION LOG FOR TKN

SOP ☒ EMAX-351.3 Rev. No.: ☐ EMAX-4500(ORGANIC)C Rev. No.: ☐ Book # A70-KN-010B

Start Date 4/21/08 Time 11:00 End Date 4/22/08 Time 12:30

PREPARATION BATCH * KN0007

Sample Prep ID	Lab Sample ID	Sample pH	Boric Acid (ml)	0.04N H_2SO4 (ml)	Sample Amount (ml)	Extract Volume (ml)	Notes
*01	S-1.6	9.5	50	WA	50	50	
*02	S-0.5						
*03	KND00766						
*04	WL						
*05	WL						
*06	D206-01						
*07	-01D						
*08	-01M						
*09	-02						
*10	D467-01						
*11	MOLV@ 100PPB						
*12							
*13							
*14							
*15							
*16							
*17							
*18							
*19							
*20							
*21							
*22							
*23							
*24							
*25							
*26							
*27							

CPS 4/22/08

Standards	ID	Amount Added (ml)
ICV/MS	SW2-01-394	50ml / 10ppm
LCS	↓	↓

Reagent	Lot# / ID
Digestion Mixture	SW7A-02-205
0.04N H_2SO4	NA
H_3BO_3	SWR1-01-031
Distilling Soln.	SWP1-01-319

Comments:

Prepared By: CPS

Standard Added By: CPS

Checked By:

8082

DIGESTION AND DISTILLATION LOG FOR TKN

SOP ☒ EMAX-351.3 Rev. No.: ☐ EMAX-4500(ORGANIC)C Rev. No.: ☐ Book # A70-KN-010B

Start Date 4/30/08 Time 11:00 End Date 5/1/08 Time 15:00 PM

PREPARATION BATCH * KND0089 [illegible] 5/1/08

Sample Prep ID	Lab Sample ID	Sample pH	Boric Acid (ml)	0.04N H_2SO4 (ml)	Sample Amount (ml)	Extract Volume (ml)	Notes
*01	S-1.6	9.5	5.0	NA	50	50	
*02	S-0.5 cn. 4/30/08						
*03	KND009 ~~WB~~ SB				5g		
*04	SC						
*05	SL						
*06	0206-03 cn. 4/30/08				1.0482g		
*07	~~-03-04~~ -03D				1.0735g		
*08	~~-04~~ -03M				1.0263g		
*09	-04				0.5172g		
*10	MDLV@ 100 PPB				5g		
*11							
*12							
*13							
*14							
*15							
*16							
*17							
*18							
*19							
*20							
*21							
*22							
*23							
*24							
*25							
*26							
*27							

CJ 4/30/08

Standards	ID	Amount Added (ml)
ICV/MS	SW2-01-324	50 ml / 20 ppm
LCS	↓	↓

Reagent	Lot# / ID
Digestion Mixture	SW2A-02-205
0.04N H_2SO4	NA
H_3BO_3	SWR1-01-031
Distilling Soln.	SWP1-01-319

Comments:

Prepared By: CDJ

Standard Added By: CDJ

Checked By:

8083

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08D206

METHOD 365.2
TOTAL PHOSPHORUS

Two (2) water and two (2) soil samples were received on 04/18/08 for Total Phosphorus analysis by Method 365.2 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blanks were free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Sample D206-04 was analyzed for duplicate. %RPD was within QC limit.

5. **Matrix Spike**

   Sample D206-04 was spiked. %Recovery was within QC limit.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 365.2
TOTAL PHOSPHORUS

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	POD004WB	ND	1	NA	0.100	0.0200	04/22/0818:50	04/21/0811:50	POD00412	POD00408	POD004W	NA	04/21/08
LCS1W	POD004WL	0.519	1	NA	0.100	0.0200	04/22/0818:50	04/21/0811:50	POD00413	POD00408	POD004W	NA	04/21/08
LCD1W	POD004WC	0.515	1	NA	0.100	0.0200	04/22/0818:50	04/21/0811:50	POD00414	POD00408	POD004W	NA	04/21/08
TT-MW2-7	D206-01	0.0245J	1	NA	0.100	0.0200	04/22/0818:52	04/21/0811:50	POD00418	POD00408	POD004W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	0.0223J	1	NA	0.100	0.0200	04/22/0818:52	04/21/0811:50	POD00419	POD00408	POD004W	04/18/0809:15	04/18/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: POD004WL/C

DATE RECEIVED: 04/21/08
DATE EXTRACTED: 04/21/08 11:50
DATE ANALYZED: 04/22/08 18:50/18:50

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Phosphorus	ND	0.500	0.519	104	0.500	0.515	103	1	80-120	20

0999

METHOD 365.2
TOTAL PHOSPHORUS

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : SOIL
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	POD007SB	ND	1	NA	1.00	0.200	04/30/0816:20	04/29/0812:00	POD00712	POD00708	POD007S	NA	04/29/08
LCS1S	POD007SL	5.51	1	NA	1.00	0.200	04/30/0816:20	04/29/0812:00	POD00713	POD00708	POD007S	NA	04/29/08
LCD1S	POD007SC	5.21	1	NA	1.00	0.200	04/30/0816:21	04/29/0812:00	POD00714	POD00708	POD007S	NA	04/29/08
SB2-7-15	D206-03	0.278J	1	6.7	1.07	0.214	04/30/0816:22	04/29/0812:00	POD00715	POD00708	POD007S	04/17/0813:30	04/18/08
SB2-7-15-DUP	D206-04	1.48	1	6.8	1.07	0.215	04/30/0816:23	04/29/0812:00	POD00716	POD00708	POD007S	04/17/0813:30	04/18/08
SB2-7-15-DUPDUP	D206-04D	1.26	1	6.8	1.07	0.215	04/30/0816:23	04/29/0812:00	POD00717	POD00708	POD007S	04/17/0813:30	04/18/08
SB2-7-15-DUPMS	D206-04M	6.36	1	6.8	1.07	0.215	04/30/0816:23	04/29/0812:00	POD00718	POD00708	POD007S	04/17/0813:30	04/18/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: LCS1S/LCD1S
CONTROL NO.: POD007SL/C

DATE RECEIVED: 04/29/08
DATE EXTRACTED: 04/29/08 12:00
DATE ANALYZED: 04/30/08 16:20/16:21

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Phosphorus	ND	5.00	5.51	110	5.00	5.21	104	6	80-120	20

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: SOIL
% MOISTURE: 6.8

BATCH NO.: 08D206
SAMPLE ID: SB2-7-15-DUPMS
CONTROL NO.: D206-04D

DATE RECEIVED: 04/18/08
DATE EXTRACTED: 04/29/08 12:00
DATE ANALYZED: 04/30/08 16:23

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	QC LIMIT (%)
Phosphorus	1.48	5.00	6.36	98	75-125

0800

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: SOIL
% MOISTURE: 6.8

BATCH NO.: 08D206
SAMPLE ID: SB2-7-15-DUPDUP
CONTROL NO.: D206-04D

DATE RECEIVED: 04/18/08
DATE EXTRACTED: 04/29/08 12:00
DATE ANALYZED: 04/30/08 16:23

ACCESSION:

PARAMETER	SAMPLE (mg/kg)	DUP. SAMPLE (mg/kg)	RPD (%)	RPD LIMIT (%)
Phosphorus	1.48	1.26	16	20

ANALYSIS RUN LOG
for
PHOSPHORUS

Total

ICAL stock conc. 50 ppm	ICAL stock exp Date: 6/22/08
ICV/LCS/MS stock conc: 10 ppm	ICV/LCS/MS exp Date: 6/22/08

Book #: A70-PO-006A

Instrument No.: 70

Analytical Batch: P0D004

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

SOP #	Rev. #
☒ EMAX-365.2	3
☐ EMAX-	

STANDARDS ID		aliquot (mL) in 50 final vol.	CONC. (mg/L)
S0	nanopure	0	0.0
S1	SW2-01-385	0.25	0.05
S2		0.5	0.10
S3		1.0	0.20
S4		2.5	0.50
S5		3.5	0.70
S6		5.0	1.00
ICV/LCS/MS	SW2-01-386	2.5	0.5
CCV	SW2-01-385	2.5	0.5

Prep Date: 4/22/08 Exp Date: 4/22/08

REAGENT	ID
Ammonium Persulfate	SWA-06-233
Coloring Reagent	SWP1-02-39
H_2SO_4, 5 N	SWP1-02-27
H_2SO_4, 11 N	SWP1-01-305
NaOH, ~~1N~~ 20%	SWP1-01-375

cm 4/22/08

Analyzed By: ~~4/22/08~~ CM
cm 4/22/08

Date: 4/22/08

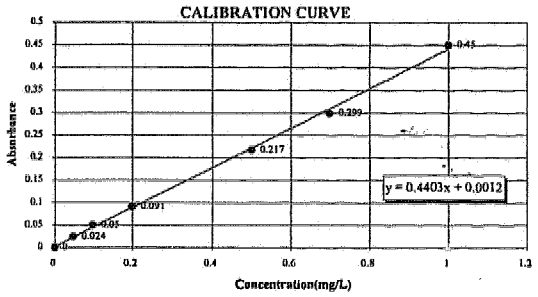
EMAX LABORATORIES, INC.

PHOSPHORUS ANALYSIS

Instrument ID: 70 Book #: A70-PO-006A Page: 5

SOP: EMAX-365.2 Rev. 3 Calibration Reference: 08PO70D22 Analytical Batch: POD004

ICAL	mg/L
S0	0
S1	0.05
S2	0.1
S3	0.2
S4	0.5
S5	0.7
S6	1



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.02 mg/L	0.1 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	0.5 mg/L	5 mg/Kg	80-120 %
MS/MSD	0.5 mg/L	5 mg/Kg	75-125 %
ICV	0.5 mg/L		80-120%
CCV	0.5 mg/L		80-120%
STD LOW	0.1 mg/L		80-120%
STD HIGH	0.8 mg/L		80-120%

r (Coeff. Correl.)= 0.99932 CF= 2.271403611 Y= 0.00271 $FC = [(A * CF) - Y] * DF$

Data File Name	Lab Sample ID	λ	Absorbance		DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
POD00401	S0	650NM	0	A	04/22/08	18:47:50	0	1	-0.002708212	mg/L	20	ml	20
POD00402	S1	650NM	0.024	A	04/22/08	18:48:01	0	1	0.051805475	mg/L	20	ml	20
POD00403	S2	650NM	0.05	A	04/22/08	18:48:11	0	1	0.110861969	mg/L	20	ml	20
POD00404	S3	650NM	0.091	A	04/22/08	18:48:25	0	1	0.203989517	mg/L	20	ml	20
POD00405	S4	650NM	0.217	A	04/22/08	18:48:34	0	1	0.490186372	mg/L	20	ml	20
POD00406	S5	650NM	0.299	A	04/22/08	18:48:48	0	1	0.676441468	mg/L	20	ml	20
POD00407	S6	650NM	0.45	A	04/22/08	18:49:10	0	1	1.019423413	mg/L	20	ml	20
POD00408	ICV	650NM	0.229	A	04/22/08	18:49:21	0	1	0.517443215	mg/L	20	ml	20
POD00409	ICB	650NM	0	A	04/22/08	18:49:36	0	1	-0.002708212	mg/L	20	ml	20
POD00410	STD LOW	650NM	0.049	A	04/22/08	18:49:46	0	1	0.106590565	mg/L	20	ml	20
POD00411	STD HIGH	650NM	0.373	A	04/22/08	18:50:00	0	1	0.844525335	mg/L	20	ml	20
POD00412	POD004WB ✓	650NM	0.003	A	04/22/08	18:50:11	0	1	0.004105999	mg/L	20	ml	20
POD00413	POD004WL ✓	650NM	0.23	A	04/22/08	18:50:29	0	1	0.519714619	mg/L	20	ml	20
POD00414	POD004WC ✓	650NM	0.228	A	04/22/08	18:50:38	0	1	0.515171011	mg/L	20	ml	20
POD00415	D467-01	650NM	1.01	A	04/22/08	18:50:52	0	1	2.291409435	mg/L	20	ml	20
POD00416	D467-01D	650NM	1	A	04/22/08	18:51:15	0	1	2.268695399	mg/L	20	ml	20
POD00417	D467-01M	650NM	1.16	A	04/22/08	18:51:37	0	1	2.632119977	mg/L	20	ml	20
POD00418	D206-01	650NM	0.012	A	04/22/08	18:52:11	0	1	0.024548631	mg/L	20	ml	20
POD00419	D206-02	650NM	0.011	A	04/22/08	18:52:21	0	1	0.022277228	mg/L	20	ml	20
POD00420	CCV1	650NM	0.217	A	04/22/08	18:52:32	0	1	0.490186372	mg/L	20	ml	20
POD00421	CCB1	650NM	0	A	04/22/08	18:52:43	0	1	-0.002708212	mg/L	20	ml	20
POD00422	MDLV@0.1	650NM	0.051	A	04/22/08	18:52:58	0	1	0.113133372	mg/L	20	ml	20
POD00423	MDLV@0.04	650NM	0.021	A	04/22/08	18:53:09	0	1	0.044991264	mg/L	20	ml	20
POD00424	CCV2	650NM	0.217	A	04/22/08	18:58:25	0	1	0.490186372	mg/L	20	ml	20
POD00425	CCB2	650NM	0	A	04/22/08	18:58:33	0	1	-0.002708212	mg/L	20	ml	20
POD00426	D467-01T ✓	650NM	0.229	A	04/22/08	19:07:28	0	10	5.174432149	mg/L	20	ml	20
POD00427	D467-01DT ✓	650NM	0.232	A	04/22/08	19:07:40	0	10	5.242574257	mg/L	20	ml	20
POD00428	D467-01MT ✓	650NM	0.247	A	04/22/08	19:08:03	0	10	5.583284799	mg/L	20	ml	20
POD00429	CCV3	650NM	0.217	A	04/22/08	19:08:46	0	1	0.490186372	mg/L	20	ml	20
POD00430	CCB3	650NM	0	A	04/22/08	19:09:05	0	1	-0.002708212	mg/L	20	ml	20

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

Analyzed by: 8092

ANALYSIS RUN LOG
for
PHOSPHORUS

Total

ICAL stock conc. 10 ppm	ICAL stock exp Date: 4/20/08
ICV/LCS/MS stock conc: 10 ppm	ICV/LCS/MS exp Date: 5/1/08

Book #: A70-PO-006A

Instrument No.: 70

Analytical Batch: P0D007

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

SOP #	Rev. #
☒ EMAX-365.2	3
☐ EMAX-	

STANDARDS ID		aliquot (mL) in 50 final vol.	CONC. (mg/L)
S0	0.040.2	0	0.0
S1	SW2-01-437	0.25	0.05
S2		0.5	0.10
S3		1.0	0.20
S4		2.5	0.50
S5		3.5	0.70
S6		5.0	1.00
ICV/LCS/MS	SW2-01-436	2.5	0.5
CCV	SW2-01-437	2.5	0.5

Prep Date: 4/30/08 Exp Date: 4/30/08

REAGENT	ID
Ammonium Persulfate	SW7A-06-233
Coloring Reagent	SWA1-02-48
H_2SO_4, 5 N	SWP1-02-27
H_2SO_4, 11 N	SWP1-01-205
NaOH, 1 N 20%	SWP1-01-375

Analyzed By: CJL

Date: 4/30/08

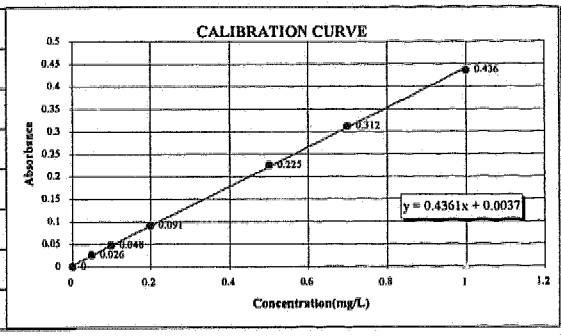
EMAX LABORATORIES, INC.

PHOSPHORUS ANALYSIS

Instrument ID: 70 Book #: A70-PO-006 Page: 8

SOP: EMAX-365.2 Rev. 3 Calibration Reference: 08PO70D29 Analytical Batch: POD007

ICAL	mg/L
S0	0
S1	0.05
S2	0.1
S3	0.2
S4	0.5
S5	0.7
S6	1



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.02 mg/L	0.1 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	0.5 mg/L	5 mg/Kg	80-120 %
MS/MSD	0.5 mg/L	5 mg/Kg	75-125 %
ICV	0.5 mg/L		80-120%
CCV	0.5 mg/L		80-120%
STD LOW	0.1 mg/L		80-120%
STD HIGH	0.8 mg/L		80-120%

r (Coeff. Correl.)= 0.99985 ✓ CF= 2.292812441 Y= 0.00846 ✓

$$FC = [(A * CF) - Y] * DF$$

Data File Name	Lab Sample ID	λ	Absorbance		DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
POD00701	S0	650nm	0	a	04/30/08	16:17:14	0	1	-0.00846008	mg/L	20	ml	20
POD00702	S1	650nm	0.026	a	04/30/08	16:17:25	0	1	0.051153044	mg/L	20	ml	20
POD00703	S2	650nm	0.048	a	04/30/08	16:17:34	0	1	0.101594918	mg/L	20	ml	20
POD00704	S3	650nm	0.091	a	04/30/08	16:17:58	0	1	0.200188852	mg/L	20	ml	20
POD00705	S4	650nm	0.225	a	04/30/08	16:18:25	0	1	0.50742272	mg/L	20	ml	20
POD00706	S5	650nm	0.312	a	04/30/08	16:18:35	0	1	0.706897402	mg/L	20	ml	20
POD00707	S6	650nm	0.436	a	04/30/08	16:18:46	0	1	0.991206145	mg/L	20	ml	20
POD00708	ICV	650nm	0.215	a	04/30/08	16:18:59	0	1	0.484494595	mg/L	20	ml	20
POD00709	ICB	650nm	0	a	04/30/08	16:19:19	0	1	-0.00846008	mg/L	20	ml	20
POD00710	STD LOW ✓	650nm	0.051	a	04/30/08	16:19:39	0	1	0.108473355	mg/L	20	ml	20
POD00711	STD HIGH ✓	650nm	0.362	a	04/30/08	16:20:30	0	1	0.821538024	mg/L	20	ml	20
POD00712	POD007SB ✓	650nm	0.001	a	04/30/08	16:20:46	0	1	-0.006167267	mg/Kg	5	g	50
POD00713	POD007SL ✓	650nm	0.244	a	04/30/08	16:20:59	0	1	0.550986156	mg/Kg	5	g	50
POD00714	POD007SC ✓	650nm	0.231	a	04/30/08	16:21:36	0	1	0.521179594	mg/Kg	5	g	50
POD00715	D206-03	650nm	0.015	a	04/30/08	16:22:29	0	1	0.025932107	mg/Kg	5.063	g	50
POD00716	D206-04	650nm	0.064	a	04/30/08	16:23:02	0	1	0.138279917	mg/Kg	5.0413	g	50
POD00717	D206-04D	650nm	0.055	a	04/30/08	16:23:43	0	1	0.117644605	mg/Kg	5.0124	g	50
POD00718	D206-04M	650nm	0.262	a	04/30/08	16:23:53	0	1	0.59225678	mg/Kg	5.015	g	50
POD00719	MDLV@200PPB	650nm	0.109	a	04/30/08	16:24:21	0	1	0.241456476	mg/Kg	5	g	50
POD00720	CCV1	650nm	0.224	a	04/30/08	16:24:42	0	1	0.505129907	mg/L	20	ml	20
POD00721	CCB1	650nm	0	a	04/30/08	16:24:55	0	1	-0.00846008	mg/L	20	ml	20

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

Analyzed by: [signature]

EXTRACTION LOG FOR PHOSPHORUS

Method ☐ Distillation: EMAX_____ - Rev. No.___ ☒ Digestion: EMAX 365.2 - Rev. No.___ ☐ Book # A70-PO-006B

Matrix: W Start Date: 4/21/08 Time: 11:50 End Date: 4/22/08 Time: 17:15 PM

PREPARATION BATCH * Pebble4

	Sample Prep ID	Lab Sample ID	Sample Amount (g)	Extraction Solution (ml)	Notes
01		S-0.1	50	50	
02		S-0.8			
03		POD 004 WB			
04		↓ WL			
05		↓ WC			
06		D467-01			
07		↓ -01D			
08		↓ -01M			
09		0206-01			
10		-02			
11		MDLV@ 0.1 PPM (100 PPB)			
12		MDLV@ 0.04 PPM (40 PPB)			
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

CM 4/22/08

Calibration of pH meter

Buffer ID	Value	Reading
	7	
	4	
Slope		
pH meter ID		

Reagents

Reagents	Lot #	Amount (ml)	Final Volume (ml)
H_2SO_4	SUPL-01-305	1	50
$(NH_4)_2S_2O_3$	3471-06-233	0.4g	
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)

High	Low	Thermostat Setting	Criteria
			20-40

Comments:

Prepared By: CM

Checked By:

Extracts Received By: CM

Disposed by: Disposal Date:

EXTRACTION LOG FOR PHOSPHORUS

Method ☐ Distillation: EMAX_____ - Rev. No.___ ☒ Digestion: EMAX 3051 - Rev. No.___ ☒ ~~Lachat~~ on 4/29/08

Matrix: S Start Date: 4/29/08 Time: 12:00 End Date: 4/29/08 Time: 17:00PM

Book # A70-PO-006B

PREPARATION BATCH # PDD807

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Extraction Solution (ml)	Notes
01	S-0.1	50 ml	50	
02	S-0.8	↓	↓	
03	PODD0758	5g		
04	↓ SC	↓		
05	↓ SC	↓		
06	D206-03	5.0630g		
07	D206-04	5.0413g		
08	-04D	5.0124g		
09	↓ -04M	5.0180g		
10	MOLV@200PPB	5g	↓	
11				
12				
13				
14				
15				
16				
17				
18			CDL 4/29/08	
19				
20				
21				
22				
23				
24				
25				
26				

Calibration of pH meter

Buffer ID	Value	Reading
	7	
	4	
Slope		
pH meter ID		

Reagents

Reagents	Lot #	Amount (ml)	Final Volume (ml)
H_2SO_4	SWA-01-305	1	50
$(NH_4)_2S_2O_3$	SWA-06-233	0.4g	
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)

High	Low	Thermostat Setting	Criteria
			20-40

Comments:

Prepared By: CDL

Checked By:

Extracts Received By: CDL

Disposed by: Disposal Date:

8896

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08D206

METHOD 365.2
ORTHO-PHOSPHATE

Two (2) water and two (2) soil samples were received on 04/18/08 for Ortho-phosphate analysis by Method 365.2 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. Holding Time

Analysis met holding time criteria.

2. Method Blank

Method blanks were free of contamination at the reporting limit.

3. Lab Control Sample/Lab Control Sample Duplicate

Lab control results were within QC limit.

4. Duplicate

Samples D206-01 and -04 were analyzed for duplicate. %RPDs were within QC limit.

5. Matrix Spike

Samples D206-01 and -04 were spiked. %Recoveries were within QC limit.

6. Sample Analysis

Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 365.2
Ortho-PHOSPHATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	POD003WB	ND	1	NA	0.100	0.0200	04/18/0817:49	NA	POD00310	POD00308	POD003W	NA	NA
LCS1W	POD003WL	0.499	1	NA	0.100	0.0200	04/18/0817:50	NA	POD00311	POD00308	POD003W	NA	NA
LCD1W	POD003WC	0.506	1	NA	0.100	0.0200	04/18/0817:50	NA	POD00312	POD00308	POD003W	NA	NA
TT-MW2-7	D206-01	ND	1	NA	0.100	0.0200	04/18/0817:50	NA	POD00313	POD00308	POD003W	04/18/0809:10	04/18/08
TT-MW2-7DUP	D206-01D	ND	1	NA	0.100	0.0200	04/18/0817:50	NA	POD00314	POD00308	POD003W	04/18/0809:10	04/18/08
TT-MW2-7MS	D206-01M	0.531	1	NA	0.100	0.0200	04/18/0817:50	NA	POD00315	POD00308	POD003W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	ND	1	NA	0.100	0.0200	04/18/0817:51	NA	POD00316	POD00308	POD003W	04/18/0809:15	04/18/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: POD003WL/C

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 04/18/08 17:50/17:50

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Phosphorus	ND	0.500	0.499	100	0.500	0.506	101	1	80-120	20

8696

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206 DATE RECEIVED: 04/18/08
SAMPLE ID: TT-MW2-7MS DATE EXTRACTED: NA
CONTROL NO.: D206-01M DATE ANALYZED: 04/18/08 17:50

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	QC LIMIT (%)
Phosphorus	ND	0.500	0.531	106	75-125

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: TT-MW2-7DUP
CONTROL NO.: D206-01D

DATE RECEIVED: 04/18/08
DATE EXTRACTED: NA
DATE ANALYZED: 04/18/08 17:50

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
Phosphorus	ND	ND	0	20

0152

METHOD 365.2
Ortho-PHOSPHATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : SOIL
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	POD006SB	ND	1	NA	1.00	0.200	04/29/0816:55	04/29/0811:30	POD00610	POD00608	POD006S	NA	04/29/08
LCS1S	POD006SL	4.57	1	NA	1.00	0.200	04/29/0816:56	04/29/0811:30	POD00611	POD00608	POD006S	NA	04/29/08
LCD1S	POD006SC	4.59	1	NA	1.00	0.200	04/29/0816:56	04/29/0811:30	POD00612	POD00608	POD006S	NA	04/29/08
SB2-7-15	D206-03	ND	1	6.7	1.07	0.214	04/29/0816:56	04/29/0811:30	POD00613	POD00608	POD006S	04/17/0813:30	04/18/08
SB2-7-15-DUP	D206-04	ND	1	6.8	1.07	0.215	04/29/0816:56	04/29/0811:30	POD00614	POD00608	POD006S	04/17/0813:30	04/18/08
SB2-7-15-DUPDUP	D206-04D	ND	1	6.8	1.07	0.215	04/29/0816:57	04/29/0811:30	POD00615	POD00608	POD006S	04/17/0813:30	04/18/08
SB2-7-15-DUPMS	D206-04M	4.68	1	6.8	1.07	0.215	04/29/0816:57	04/29/0811:30	POD00616	POD00608	POD006S	04/17/0813:30	04/18/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: LCS1S/LCD1S
CONTROL NO.: POD006SL/C

DATE RECEIVED: 04/29/08
DATE EXTRACTED: 04/29/08 11:30
DATE ANALYZED: 04/29/08 16:56/16:56

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Phosphorus	ND	5.00	4.57	91	5.00	4.59	92	0	80-120	20

8153

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: SOIL
% MOISTURE: 6.8

BATCH NO.: 08D206
SAMPLE ID: SB2-7-15-DUPMS
CONTROL NO.: D206-04M

DATE RECEIVED: 04/18/08
DATE EXTRACTED: 04/29/08 11:30
DATE ANALYZED: 04/29/08 16:57

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	QC LIMIT (%)
Phosphorus	ND	5.00	4.68	94	75-125

0157

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: SOIL
% MOISTURE: 6.8

BATCH NO.: 08D206 DATE RECEIVED: 04/18/08
SAMPLE ID: SB2-7-15-DUPDUP DATE EXTRACTED: 04/29/08 11:30
CONTROL NO.: D206-04D DATE ANALYZED: 04/29/08 16:57

ACCESSION:

PARAMETER	SAMPLE (mg/kg)	DUP. SAMPLE (mg/kg)	RPD (%)	RPD LIMIT (%)
Phosphorus	ND	ND	0	20

0150

ANALYSIS RUN LOG
for
PHOSPHORUS

ICAL stock conc.	10 ppm	**ICAL stock exp Date:**	6/22/08
ICV/LCS/MS stock conc:	10 ppm	**ICV/LCS/MS exp Date:**	6/22/08

Book #: A70-PO-006A

Instrument No.: 70

Analytical Batch: POD003

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

SOP #	Rev. #
☒ EMAX-365.2	3
☐ EMAX-	

STANDARDS ID		aliquot (mL) in 20 final vol.	CONC. (mg/L)
S0	Nanopure	0	0.0
S1	SW2-01-385	0.1	0.05
S2		0.2	0.10
S3		0.4	0.20
S4		1.0	0.50
S5		1.4	0.70
S6		2.0	1.00
ICV/LCS/MS	SW2-01-386	1.0	0.5
CCV	SW2-01-385	1.0	0.5

Prep Date: 4/18/08 Exp Date: 4/18/08

REAGENT	ID
Ammonium Persulfate	NA
Coloring Reagent	SWP1-02-36
H_2SO_4, 5 N	SWP1-02-27
H_2SO_4, 11 N	NA
NaOH, 1 N	NA

Analyzed By: CA

Date: 4/18/08

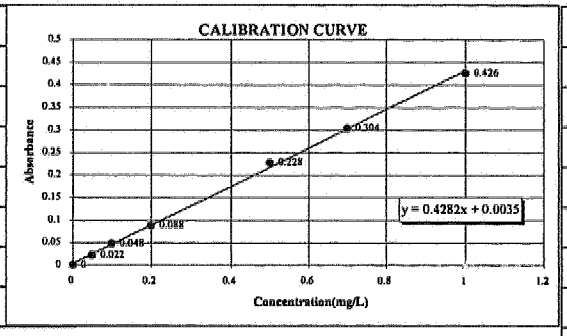
EMAX LABORATORIES, INC.

PHOSPHORUS ANALYSIS

Instrument ID: 70 **Book #:** A70-PO-006A **Page:** 4

SOP: EMAX-365.2 Rev. 3 **Calibration Reference:** 08PO70D18 **Analytical Batch:** POD003

ICAL	mg/L
S0	0
S1	0.05
S2	0.1
S3	0.2
S4	0.5
S5	0.7
S6	1



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.02 mg/L	0.1 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	0.5 mg/L	5 mg/Kg	80-120 %
MS/MSD	0.5 mg/L	5 mg/Kg	75-125 %
ICV	0.5 mg/L		80-120%
CCV	0.5 mg/L		80-120%
STD LOW	0.1 mg/L		80-120%
STD HIGH	0.8 mg/L		80-120%

r (Coeff. Correl.)= 0.99948 CF= 2.335509794 Y= 0.00806

$$FC = [(A * CF) - Y] * DF$$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
POD00301	S0	650nm	0 a	04/18/08	17:45:35	0	1	-0.008061276	mg/L	20	ml	20
POD00302	S1	650nm	0.022 a	04/18/08	17:45:47	0	1	0.04331994	mg/L	20	ml	20
POD00303	S2	650nm	0.048 a	04/18/08	17:47:53	0	1	0.104043194	mg/L	20	ml	20
POD00304	S3	650nm	0.088 a	04/18/08	17:48:02	0	1	0.197463586	mg/L	20	ml	20
POD00305	S4	650nm	0.228 a	04/18/08	17:48:19	0	1	0.524434957	mg/L	20	ml	20
POD00306	S5	650nm	0.304 a	04/18/08	17:48:28	0	1	0.701933702	mg/L	20	ml	20
POD00307	S6	650nm	0.426 a	04/18/08	17:48:38	0	1	0.986865897	mg/L	20	ml	20
POD00308	ICV	650nm	0.216 a	04/18/08	17:48:59	0	1	0.49640884	mg/L	20	ml	20
POD00309	ICB	650nm	0 a	04/18/08	17:49:17	0	1	-0.008061276	mg/L	20	ml	20
	STD LOW											
	STD HIGH											
POD00310	POD003WB	650nm	0 a	04/18/08	17:49:56	0	1	-0.008061276	mg/L	20	ml	20
POD00311	POD003WL	650nm	0.217 a	04/18/08	17:50:05	0	1	0.49874435	mg/L	20	ml	20
POD00312	POD003WC	650nm	0.22 a	04/18/08	17:50:13	0	1	0.505750879	mg/L	20	ml	20
POD00313	D206-01	650nm	0.008 a	04/18/08	17:50:25	0	1	0.010622803	mg/L	20	ml	20
POD00314	D206-01D	650nm	0.007 a	04/18/08	17:50:43	0	1	0.008287293	mg/L	20	ml	20
POD00315	D206-01M	650nm	0.231 a	04/18/08	17:50:53	0	1	0.531441487	mg/L	20	ml	20
POD00316	D206-02	650nm	0.009 a	04/18/08	17:51:05	0	1	0.012958312	mg/L	20	ml	20
POD00317	CCV1	650nm	0.221 a	04/18/08	17:51:20	0	1	0.508086389	mg/L	20	ml	20
POD00318	CCB1	650nm	0 a	04/18/08	17:51:32	0	1	-0.008061276	mg/L	20	ml	20

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

Analyzed by: GM07

ANALYSIS RUN LOG
for
PHOSPHORUS

Ortho

ICAL stock conc. 10 ppm	ICAL stock exp Date: 11/20/08
ICV/LCS/MS stock conc: 10 ppm	ICV/LCS/MS exp Date: 5/1/08

Book #: A70-PO-006A

Instrument No.: 70

Analytical Batch: POD006

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

SOP #	Rev. #
☒ EMAX-365.2	3
☐ EMAX-	

STANDARDS ID	aliquot (mL) in 20 final vol.	CONC. (mg/L)
S0 nanopure	0	0.0
S1 SW2-01-437	0.1	0.05
S2	0.2	0.10
S3	0.4	0.20
S4	1.0	0.50
S5	1.4	0.70
S6	2.0	1.00
ICV/LCS/MS SW2-01-436	1.0	0.5
CCV SW2-01-437	1.0	0.5

Prep Date: 4/29/08 Exp Date: 4/29/08

REAGENT	ID
Ammonium Persulfate	NA
Coloring Reagent	~~SWP1-02-48~~ SWP1-02-46
H_2SO_4, 5 N	ctc 4/29/08 SWP1-01-27
H_2SO_4, 11 N	NA
NaOH, 1 N	NA

Analyzed By: ctc

Date: 4/29/08

8108

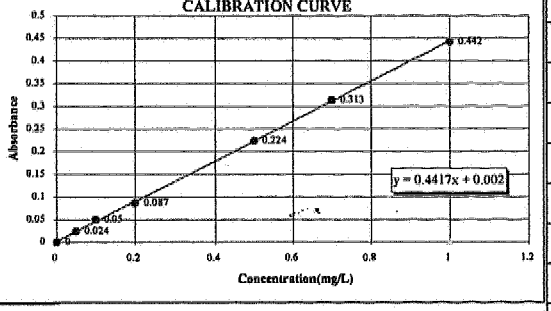
EMAX LABORATORIES, INC.

PHOSPHORUS ANALYSIS

Instrument ID: 70 **Book #:** A70-PO-006 **Page:** 7

SOP: EMAX-365.2 Rev. 3 **Calibration Reference:** 08PO70D29 **Analytical Batch:** POD006

ICAL	mg/L
S0	0
S1	0.05
S2	0.1
S3	0.2
S4	0.5
S5	0.7
S6	1



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.02 mg/L	0.1 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	0.5 mg/L	5 mg/Kg	80-120 %
MS/MSD	0.5 mg/L	5 mg/Kg	75-125 %
ICV	0.5 mg/L		80-120%
CCV	0.5 mg/L		80-120%
STD LOW	0.1 mg/L		80-120%
STD HIGH	0.8 mg/L		80-120%

r (Coeff. Correl.)= 0.99989 CF= 2.264129743 Y= 0.00444

$$FC = [(A * CF) - Y] * DF$$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
POD00601	S0	650nm	0 a	04/29/08	16:52:40	0	1	-0.004443987	mg/L	20	ml	20
POD00602	S1	650nm	0.024 a	04/29/08	16:52:53	0	1	0.049895127	mg/L	20	ml	20
POD00603	S2	650nm	0.05 a	04/29/08	16:53:15	0	1	0.1087625	mg/L	20	ml	20
POD00604	S3	650nm	0.087 a	04/29/08	16:53:32	0	1	0.192535301	mg/L	20	ml	20
POD00605	S4	650nm	0.224 a	04/29/08	16:53:45	0	1	0.502721076	mg/L	20	ml	20
POD00606	S5	650nm	0.313 a	04/29/08	16:54:20	0	1	0.704228623	mg/L	20	ml	20
POD00607	S6	650nm	0.442 a	04/29/08	16:54:34	0	1	0.99630136	mg/L	20	ml	20
POD00608	ICV	650nm	0.214 a	04/29/08	16:54:48	0	1	0.480079778	mg/L	20	ml	20
POD00609	ICB	650nm	0 a	04/29/08	16:55:22	0	1	-0.004443987	mg/L	20	ml	20
	STD LOW											
	STD HIGH											
POD00610	POD006SB	650nm	0.002 a	04/29/08	16:55:48	0	1	8.42728E-05	mg/Kg	5	g	50
POD00611	POD006SL	650nm	0.204 a	04/29/08	16:56:11	0	1	0.457436461	mg/Kg	5	g	50
POD00612	POD006SC	650nm	0.205 a	04/29/08	16:56:21	0	1	0.459702611	mg/Kg	5	g	50
POD00613	D206-03	650nm	0.008 a	04/29/08	16:56:32	0	1	0.013669051	mg/Kg	5.0058	g	50
POD00614	D206-04	650nm	0.011 a	04/29/08	16:56:52	0	1	0.020461441	mg/Kg	5.0076	g	50
POD00615	D206-04D	650nm	0.012 a	04/29/08	16:57:13	0	1	0.02272557	mg/Kg	5.0003	g	50
POD00616	D206-04M	650nm	0.209 a	04/29/08	16:57:25	0	1	0.46875913	mg/Kg	5.0068	g	50
POD00617	CCV1	650nm	0.225 a	04/29/08	16:58:49	0	1	0.504985205	mg/L	20	ml	20
POD00618	CCB1	650nm	0 a	04/29/08	16:59:04	0	1	-0.004443987	mg/L	20	ml	20

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in PC)

Analyzed by: [signature]

EXTRACTION LOG FOR PHOSPHORUS

Method ☐ Distillation: EMAX_____ - Rev. No.___ ☐ Digestion: EMAX_____ - Rev. No.___ ☒ Lactate.

Book # A70-PO-006B

Matrix: S Start Date: ~~11:30~~ 4/29/08 Time: 11:30 End Date: 4/29/08 Time: 12:30

PREPARATION BATCH * POD006

Sample Prep ID	Lab Sample ID (CJL 4/29/08)	Sample Amount (g) (CJL 4/29/08)	Extraction Solution (ml)	Notes
01	POD006 SB	~~5.10~~ 5	50	
02	SL			
03	SC			
04	D206-03	5.0058		
05	D206-04	5.0076		
06	D206-04D	5.0003		
07	D206-04M	5.0068		
08				
09				
10				
11				
12				
13				
14				
15				
16				
17			CJL	
18			4/29/08	
19				
20				
21				
22				
23				
24				
25				
26				

Calibration of pH meter

Buffer ID	Value	Reading
	7	
	4	
Slope		
pH meter ID		

Reagents

Reagents	Lot #	Amount (ml)	Final Volume (ml)
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)

High	Low	Thermostat Setting	Criteria
			20-40

Comments:

Prepared By: CJL

Checked By:

Extracts Received By: CJL

Disposed by: Disposal Date:

8110

CASE NARRATIVE

CLIENT: **TETRA TECH, INC.**

PROJECT: **LMC BEAUMONT SITE 2**

SDG: **08D206**

METHOD 376.1
TOTAL SULFIDE

Two (2) soil samples were received on 04/18/08 for Total Sulfide analysis by Method 376.1 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. Holding Time

Analysis met holding time criteria.

2. Method Blank

Method blank was free of contamination at the reporting limit.

3. Lab Control Sample/Lab Control Sample Duplicate

Lab control results were within QC limit.

4. Duplicate

Sample D206-04 was analyzed for duplicate. %RPD was within QC limit.

5. Sample Analysis

Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 376.1
TOTAL SULFIDE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : SOIL
Instrument ID : NA

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	SDD007SB	ND	1	NA	10.0	4.00	04/24/0810:29	04/24/0809:00	SDD00701	NA	SDD007S	NA	04/24/08
LCS1S	SDD007SL	60.0	1	NA	10.0	4.00	04/24/0810:30	04/24/0809:00	SDD00702	NA	SDD007S	NA	04/24/08
SB2-7-15	D206-03	ND	1	NA	10.0	4.00	04/24/0810:37	04/24/0809:00	SDD00703	NA	SDD007S	04/17/0813:30	04/18/08
SB2-7-15-DUP	D206-04	ND	1	NA	10.0	4.00	04/24/0810:41	04/24/0809:00	SDD00704	NA	SDD007S	04/17/0813:30	04/18/08
SB2-7-15-DUPDUP	D206-04D	ND	1	NA	10.0	4.00	04/24/0810:45	04/24/0809:00	SDD00705	NA	SDD007S	04/17/0813:30	04/18/08

EMAX QUALITY CONTROL DATA
LCS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 376.1
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: LCS1S
CONTROL NO.: SDD007SL

DATE RECEIVED: 04/24/08
DATE EXTRACTED: 04/24/08 09:00
DATE ANALYZED: 04/24/08 10:30

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	LCS RSLT (mg/kg)	LCS % REC	QC LIMIT (%)
Sulfide	ND	58.7	60.0	10	80-120

8113

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 376.1
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08D206 DATE RECEIVED: 04/18/08
SAMPLE ID: SB2-7-15-DUPDUP DATE EXTRACTED: 04/24/08 09:00
CONTROL NO.: D206-04D DATE ANALYZED: 04/24/08 10:45

ACCESSION:

PARAMETER	SAMPLE (mg/kg)	DUP. SAMPLE (mg/kg)	RPD (%)	RPD LIMIT (%)
Sulfide	ND	ND	0	20

ANALYSIS RUN LOG
for
SULFIDE

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Book #: ASD-013

Analytical Batch: SDD087

Comments:

SOP #	Rev. #
☑ EMAX-376.1	2
☐ EMAX-9034	0

STANDARDS ID	CONC.
LCS SWI-01-041	58.7mg/kg 5.87mg/L
Spike NA	
$Na_2S_2O_3$ Standard SWRI-01-067	0.025N
Iodine SWRI-01-066	0.025N
HCl SWPI-01-047	1:1
Indicator SWPI-01-047	

Analyzed By: RM

Date: 4/24/08

EMAX LABORATORIES, INC.

ANALYSIS FOR SULFIDE

SOP: EMAX-376.1 Rev. 1 Analytical Batch: **SDD007** Book #: ASD-013 Page: 18

Data File Name	Lab Sample ID	Sample Amount g	V_e (ml)	V_i (ml)	%Moisture	Volume of Titant V_t (ml)	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Sulfide	Sample Result	Flag J	Unit	LCS Recovery (%)	RPD (%)
SDD0071	SDD007SB		100	10		10	04/24/08	10:29:46	0	ND		mg/L		
SDD0072	SDD007SL		100	10		8.5	04/24/08	10:30:49	6	6 = 60mg/kg		mg/L	102	
SDD0073	D206-03		100	10		9.9	04/24/08	10:37:29	0.4	ND		mg/L	#VALUE!	
SDD0074	D206-04		100	10		9.9	04/24/08	10:41:26	0.4	ND		mg/L		0
SDD0075	D206-04D		100	10		9.9	04/24/08	10:45:33	0.4	ND		mg/L		

PM 4/24/08

STANDARDIZATION

V_i (ml)	V_{Na2SO3} (ml)	DATE	TIME	Titrant Na_2SO_3 (N)
	Average Normality of Iodine (N_1)=			0.025000

☑ Standard Purchased as Certified Solution

$$N_1 = \frac{(N * V)_{Na_2SO_3}}{V_1}$$

MISCELLANEOUS INFORMATION

Standard	Concentration		Unit
Iodine	0.025		N
$Na_2S_2O_3$	0.025		N
LCS [WATER | SOIL]	5.87	58.7	mg/L | mg/Kg
MDL [WATER | SOIL]	0.4	4	mg/L | mg/Kg
RL	1	10	mg/L | mg/Kg

$$S(mg/L) = \frac{[(V_1 * N_1) - (V_t * N_t)](16{,}000)}{V_S}$$

MS/MSD	TV=	5.87	mg/L
ID	Result (mg/L)	%Rec.	RPD
D206-04	0.4		
D206-04D	0.4	0%	

Comments:

computation from water to soil

LCS = 6 mg/L x 100 (group factor for soil) = 60 mg/kg

Analyzed By: PM

EXTRACTION LOG FOR WET CHEMISTRY

Method ☐ Distillation: EMAX_____ - Rev. No.___ ☐ Digestion: EMAX_____ - Rev. No.___ ☑ Leaching Book # EWE-015

Matrix: Soil Start Date: 4/24/08 Time: 9:00 End Date: 4/24/08 Time: 9:30

PREPARATION BATCH * SD D007

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Extraction Solution (ml)	Notes
01	D206-03	10.08	100	
02	-04	10.06	100	
03	-04D	10.04	100	
04	SD D007 SB	10.00	100	
05	SL	10.00	100	
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				RM 4/25/08

Calibration of pH meter

Buffer ID	Value	Reading
	7	
NA	4	
Slope		NA
pH meter ID		

Reagents

Reagents	Lot #	Amount (ml)	Final Volume (ml)
Vanzyme			
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)

High	Low	Thermostat Setting	Criteria
			20-40

Comments:

Prepared By: RM

Checked By: RM

Extracts Received By:

Disposed by: Disposal Date:

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08D206

METHOD 415.1
TOTAL ORGANIC CARBON

Two (2) water samples and two (2) soil samples were received on 4/18/08 for Total Organic Carbon analysis by Method 415.1 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   No duplicate sample was designated in this SDG.

5. **Matrix Spike**

   No MS sample was designated in this SDG.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

   Soil samples were analyzed at a dilution due to high turbidity.

METHOD 415.1
TOC

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I62

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
LCS1W	TCD021WL	23.9	1	NA	1.00	0.500	04/23/0821:29	NA	TCD020-32	TCD020-26	TCD021W	NA	NA
LCD1W	TCD021WC	23.7	1	NA	1.00	0.500	04/23/0821:42	NA	TCD020-33	TCD020-26	TCD021W	NA	NA
MBLK1W	TCD021WB	ND	1	NA	1.00	0.500	04/23/0821:54	NA	TCD020-34	TCD020-26	TCD021W	NA	NA
TT-MW2-7	D206-01	1.01	1	NA	1.00	0.500	04/24/0800:00	NA	TCD020-45	TCD020-38	TCD021W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	1.05	1	NA	1.00	0.500	04/24/0800:12	NA	TCD020-46	TCD020-38	TCD021W	04/18/0809:15	04/18/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 415.1

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	TCD021WB	TCD021WL	TCD021WC		
LAB FILE ID:	TCD020-34	TCD020-32	TCD020-33		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	04/23/0821:54	04/23/0821:29	04/23/0821:42	DATE RECEIVED:	NA
PREP. BATCH:	TCD021W	TCD021W	TCD021W		
CALIB. REF:	TCD020-26	TCD020-26	TCD020-26		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
TOC	ND	25.0	23.9	95	25.0	23.7	95	1	80-120	20

METHOD 415.1
TOC

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : SOIL
Instrument ID : I62

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
LCS1S	TCE004SL	24.7	1	NA	10.0	5.00	05/03/0803:41	05/02/0813:00	TCE002-46	TCE002-38	TCE004S	NA	05/02/08
LCD1S	TCE004SC	24.7	1	NA	10.0	5.00	05/03/0803:54	05/02/0813:00	TCE002-47	TCE002-38	TCE004S	NA	05/02/08
MBLK1S	TCE004SB	ND	1	NA	10.0	5.00	05/03/0804:08	05/02/0813:00	TCE002-48	TCE002-38	TCE004S	NA	05/02/08
SB2-7-15DL	D206-03T	ND	2	6.7	21.4	10.7	05/03/0805:14	05/02/0813:00	TCE002-53	TCE002-50	TCE004S	04/17/0813:30	04/18/08
SB2-7-15-DUPDL	D206-04T	11.8J	2	6.8	21.5	10.7	05/03/0805:28	05/02/0813:00	TCE002-54	TCE002-50	TCE004S	04/17/0813:30	04/18/08

052

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08D206
METHOD: METHOD 415.1

MATRIX:	SOIL			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1S				
LAB SAMP ID:	TCE004SB	TCE004SL	TCE004SC		
LAB FILE ID:	TCE002-48	TCE002-46	TCE002-47		
DATE EXTRACTED:	05/02/0813:00	05/02/0813:00	05/02/0813:00	DATE COLLECTED:	NA
DATE ANALYZED:	05/03/0804:08	05/03/0803:41	05/03/0803:54	DATE RECEIVED:	05/02/08
PREP. BATCH:	TCE004S	TCE004S	TCE004S		
CALIB. REF:	TCE002-38	TCE002-38	TCE002-38		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
TOC	ND	25.0	24.7	99	25.0	24.7	99	0	80-120	20

0122

EMAX LABORATORIES, INC.

ANALYSIS LOG
for
TOC

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Start Date/Time : 04/23/08 11:09

Stop Date/Time : 04/24/08 01:48.

TCD020W: D204-03T
D186-04T to -06
D879, D126, D136, D214
D165

TCD021W: D194, D211, D206, D898.

All samples had a pH < 2.

Book #: A62-011

Instrument No.: 62

Analytical Sequence: TCD020

Method File: TCD020

Analytical Batch: TCD020W, TCD021W.

SOP #	Rev. #
☐ EMAX-415.1	1
☑ EMAX-9060	1
☐ EMAX-	

STANDARDS ID		CONC. (mg/L)
S0	Nahopure	0
S1	SW10B-01-899	1
S2	↓	5
S3	↓	10
S4	↓	40
S5	↓	80
S6	—	—
ICV/LCS	SW10B-01-900	25
CCV	SW10B-01-901	25

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ TOC	
☐	

Analyzed By: BL

Date: 4/24/08.

	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result	Comment
1	Standard	NPOC	ICAL	TCD020-1	0A-123456-	C:\Program	1.000		
2	Control	NPOC	ICV	TCD020-2	0A-123456-	C:\Program	1.000	NPOC:23.6	
3	Unknown	NPOC	ICB	TCD020-3	0A-123456-	C:\Program	1.000	NPOC:0.18	
4	Unknown	NPOC	HCO3\CO3	TCD020-4	0A-123456-	C:\Program	1.000	NPOC:0.22	
5	Unknown	NPOC	TCD020WB	TCD020-5	0A-123456-	C:\Program	1.000	NPOC:0.15	
6	Unknown	NPOC	TCD020WL	TCD020-6	0A-123456-	C:\Program	1.000	NPOC:23.6	
7	Unknown	NPOC	TCD020WC	TCD020-7	0A-123456-	C:\Program	1.000	NPOC:23.7	
8	Unknown	NPOC	08D204-03T	TCD020-8	0A-123456-	C:\Program	100.0	NPOC:1413	
9	Unknown	NPOC	08D186-04T	TCD020-9	0A-123456-	C:\Program	1000	NPOC:3691	DF=1000
10	Unknown	NPOC	08D186-05	TCD020-10	0A-123456-	C:\Program	1.000	NPOC:0.82	
11	Unknown	NPOC	08D186-06	TCD020-11	0A-123456-	C:\Program	1.000	NPOC:0.78	
12	Unknown	NPOC	08D879-01	TCD020-12	0A-123456-	C:\Program	1.000	NPOC:0.70	
13	Unknown	NPOC	08D126-02	TCD020-13	0A-123456-	C:\Program	1.000	NPOC:1.23	
14	Control	NPOC	CCV1	TCD020-14	0A-123456-	C:\Program	1.000	NPOC:23.9	
15	Unknown	NPOC	CCB1	TCD020-15	0A-123456-	C:\Program	1.000	NPOC:0.32	
16	Unknown	NPOC	08D126-06	TCD020-16	0A-123456-	C:\Program	1.000	NPOC:0.92	
17	Unknown	NPOC	08D136-04	TCD020-17	0A-123456-	C:\Program	1.000	~~NPOC:0.55~~	0.4124 EL 4/24/0
18	Unknown	NPOC	08D136-05	TCD020-18	0A-123456-	C:\Program	1.000	NPOC:0.52	
19	Unknown	NPOC	08D136-06	TCD020-19	0A-123456-	C:\Program	1.000	NPOC:5.89	
20	Unknown	NPOC	08D214-02	TCD020-20	0A-123456-	C:\Program	1.000	NPOC:4.47	
21	Unknown	NPOC	08D214-02D	TCD020-21	0A-123456-	C:\Program	1.000	NPOC:4.44	
22	Unknown	NPOC	08D214-02M	TCD020-22	0A-123456-	C:\Program	1.000	NPOC:28.3	
23	Unknown	NPOC	08D214-03	TCD020-23	0A-123456-	C:\Program	1.000	NPOC:4.44	
24	Unknown	NPOC	08D214-04	TCD020-24	0A-123456-	C:\Program	1.000	NPOC:6.77	
25	Unknown	NPOC	08D214-05	TCD020-25	0A-123456-	C:\Program	1.000	NPOC:6.12	
26	Control	NPOC	CCV2	TCD020-26	0A-123456-	C:\Program	1.000	NPOC:24.0	
27	Unknown	NPOC	CCB2	TCD020-27	0A-123456-	C:\Program	1.000	NPOC:0.09	
28	Unknown	NPOC	08D214-06	TCD020-28	0A-123456-	C:\Program	1.000	NPOC:2.78	
29	Unknown	NPOC	08D214-07	TCD020-29	0A-123456-	C:\Program	1.000	NPOC:3.78	
30	Unknown	NPOC	08D155-03	TCD020-30	0A-123456-	C:\Program	1.000	NPOC:1.74	
31	Unknown	NPOC	08D155-04	TCD020-31	0A-123456-	C:\Program	1.000	NPOC:0.78	
32	Unknown	NPOC	TCD021WL	TCD020-32	0A-123456-	C:\Program	1.000	NPOC:23.8	
33	Unknown	NPOC	TCD021WC	TCD020-33	0A-123456-	C:\Program	1.000	NPOC:23.6	
34	Unknown	NPOC	TCD021WB	TCD020-34	0A-123456-	C:\Program	1.000	NPOC:0.08	
35	Unknown	NPOC	TCD021WQ	TCD020-35	0A-123456-	C:\Program	1.000	NPOC:0.12	not evaluated.
36	Unknown	NPOC	08D194-03	TCD020-36	0A-123456-	C:\Program	1.000	NPOC:1.05	
37	Unknown	NPOC	08D194-06	TCD020-37	0A-123456-	C:\Program	1.000	NPOC:0.75	
38	Control	NPOC	CCV3	TCD020-38	0A-123456-	C:\Program	1.000	NPOC:23.9	
39	Unknown	NPOC	CCB3	TCD020-39	0A-123456-	C:\Program	1.000	NPOC:0.10	
40	Unknown	NPOC	08D211-02	TCD020-40	0A-123456-	C:\Program	1.000	NPOC:0.56	
41	Unknown	NPOC	08D211-02D	TCD020-41	0A-123456-	C:\Program	1.000	NPOC:0.60	
42	Unknown	NPOC	08D211-02M	TCD020-42	0A-123456-	C:\Program	1.000	NPOC:24.8	
43	Unknown	NPOC	08D211-05	TCD020-43	0A-123456-	C:\Program	1.000	NPOC:0.97	
44	Unknown	NPOC	08D211-07	TCD020-44	0A-123456-	C:\Program	1.000	NPOC:0.59	
45	Unknown	NPOC	08D206-01	TCD020-45	0A-123456-	C:\Program	1.000	NPOC:1.01	
46	Unknown	NPOC	08D206-02	TCD020-46	0A-123456-	C:\Program	1.000	NPOC:1.04	
47	Unknown	NPOC	08D898-01	TCD020-47	0A-123456-	C:\Program	1.000	NPOC:1.90	
48	Unknown	NPOC	08D898-02	TCD020-48	0A-123456-	C:\Program	1.000	NPOC:2.00	
49	Unknown	NPOC	08D898-03	TCD020-49	0A-123456-	C:\Program	1.000	NPOC:1.93	
50	Control	NPOC	CCV4	TCD020-50	0A-123456-	C:\Program	1.000	NPOC:23.5	
51	Unknown	NPOC	CCB4	TCD020-51	0A-123456-	C:\Program	1.000	NPOC:0.09	
52	Unknown	NPOC	08D898-04	TCD020-52	0A-123456-	C:\Program	1.000	NPOC:1.92	
53	Control	NPOC	CCV5	TCD020-53	0A-123456-	C:\Program	1.000	NPOC:23.4	
54	Unknown	NPOC	CCB5	TCD020-54	0A-123456-	C:\Program	1.000	NPOC:0.22	
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EL 4/24/08.

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Instr.Information

System	toc
Detector	Combustion
Catalyst	Regular Sensitivity
Cell Length	long

Cal. Curve

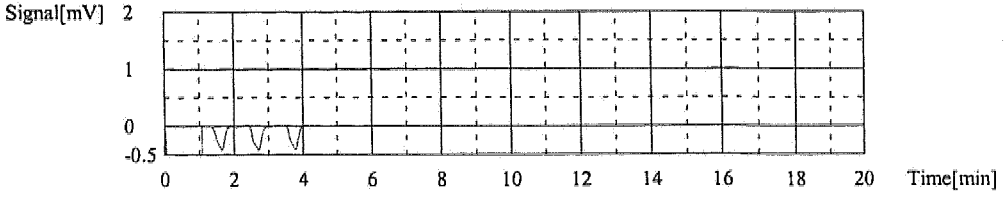
Sample Name:	ICAL
Sample ID:	TCD020-1
Cal. Curve:	Tcd020.2008_04_23_13_01_28.cal

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	0.3423	50uL	1	*******		04/23/08 01:09:16 PM
2	0.3794	50uL	1	*******		04/23/08 01:10:29 PM
3	0.3803	50uL	1	*******		04/23/08 01:11:43 PM
4	0.4140	50uL	1	*******		04/23/08 01:13:01 PM

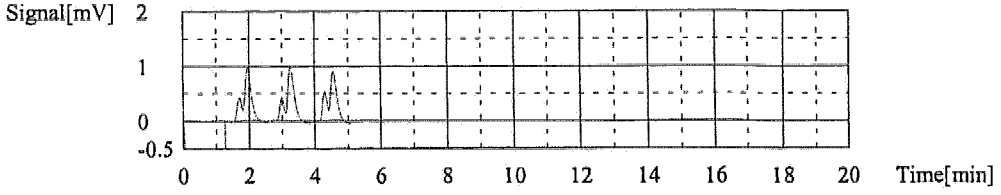
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 0.3790



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1.577	50uL	10	*******		04/23/08 01:21:26 PM
2	1.783	50uL	10	*******		04/23/08 01:22:53 PM
3	1.815	50uL	10	*******		04/23/08 01:24:21 PM
4	1.799	50uL	10	*******		04/23/08 01:25:45 PM

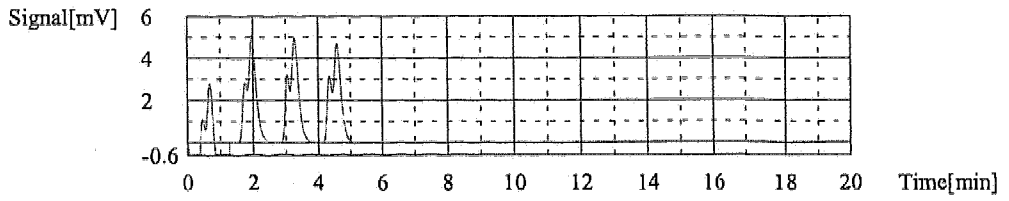
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 1.744



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	10.25	50uL	2	*******		04/23/08 01:32:17 PM
2	10.59	50uL	2	*******		04/23/08 01:33:45 PM
3	10.57	50uL	2	*******		04/23/08 01:35:13 PM
4	10.58	50uL	2	*******		04/23/08 01:36:41 PM

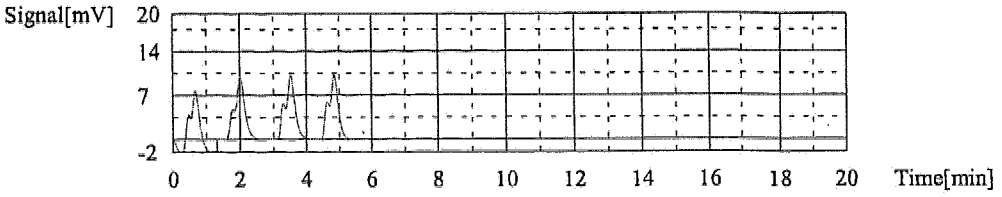
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 10.50



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	20.48	50uL	1	*******		04/23/08 01:42:32 PM
2	21.45	50uL	1	*******		04/23/08 01:44:13 PM
3	21.58	50uL	1	*******		04/23/08 01:45:43 PM
4	21.43	50uL	1	*******		04/23/08 01:47:12 PM

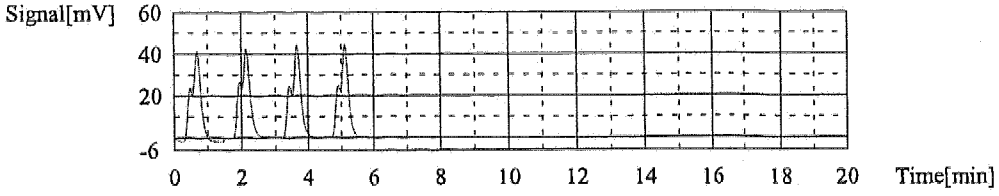
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 21.23



Conc: 40.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	87.73	50uL	2	*******		04/23/08 01:55:50 PM
2	87.23	50uL	2	*******		04/23/08 01:57:30 PM
3	88.93	50uL	2	*******		04/23/08 01:59:08 PM
4	88.18	50uL	2	*******		04/23/08 02:00:46 PM

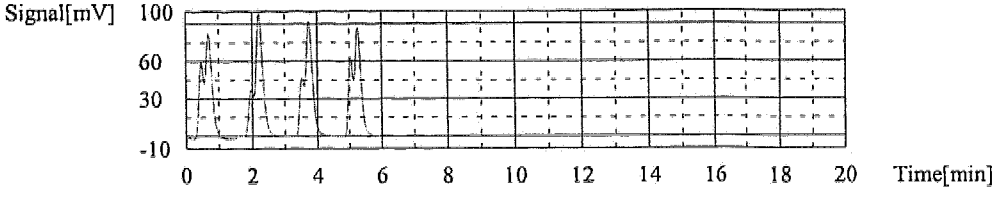
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 88.02



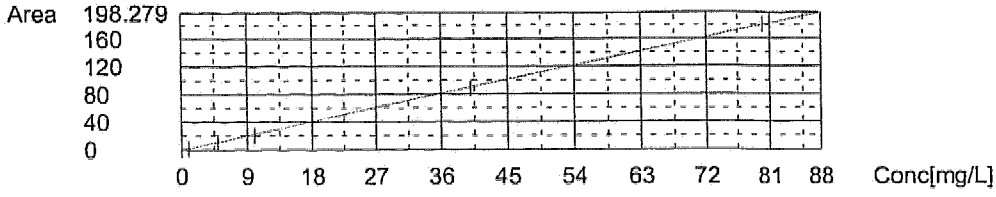
Conc: 80.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	179.5	50uL	1	*******		04/23/08 02:06:48 PM
2	180.3	50uL	1	*******		04/23/08 02:08:31 PM
3	180.2	50uL	1	*******		04/23/08 02:10:12 PM
4	181.3	50uL	1	*******		04/23/08 02:11:50 PM

Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 180.3



Slope: 2.253
Intercept 0.000
r^2 0.999838



Control Sample

Sample Name: ICV
Sample ID: TCD020-2
Method: Tcd020.tpl
Chk. Result Control value: 23.63 / Control exceeds range!

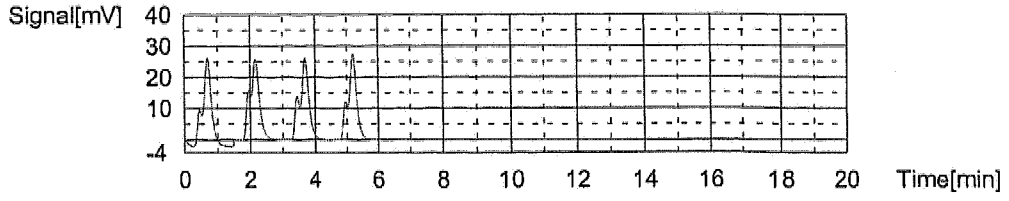
Type	Anal.	Dil.	Result
Control	NPOC	1.000	NPOC:23.63 mg/L

1. Det.

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	52.93	23.49mg/L	50uL	1		Tcd020.2008_04_23_13_01_28.cal	04/23/08 02:20:02 PM
2	53.96	23.95mg/L	50uL	1		Tcd020.2008_04_23_13_01_28.cal	04/23/08 02:21:42 PM
3	52.58	23.34mg/L	50uL	1		Tcd020.2008_04_23_13_01_28.cal	04/23/08 02:23:23 PM
4	53.51	23.75mg/L	50uL	1		Tcd020.2008_04_23_13_01_28.cal	04/23/08 02:25:05 PM

Mean Area 53.25
Mean Conc. 23.63mg/L



Sample

Sample Name: ICB
Sample ID: TCD020-3
Origin: Tcd020.cal
Chk. Result

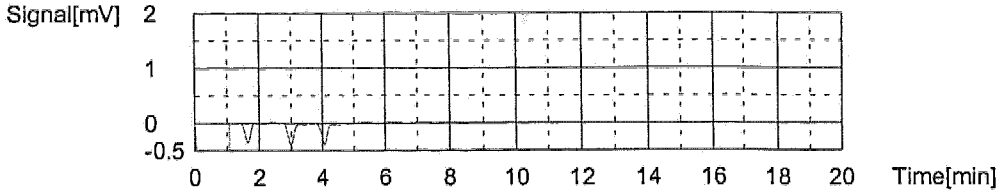
Type	Anal.	Dil.	Result
Unknown	NPOC	1.000	NPOC:0.1832 mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.3766	0.1671mg/L	50uL	1		Tcd020.2008_04_23_13_01_28.cal	04/23/08 02:32:37 PM
2	0.6447	0.2861mg/L	50uL	1		Tcd020.2008_04_23_13_01_28.cal	04/23/08 02:34:08 PM
3	0.3437	0.1525mg/L	50uL	1		Tcd020.2008_04_23_13_01_28.cal	04/23/08 02:35:22 PM
4	0.2857	0.1268mg/L	50uL	1		Tcd020.2008_04_23_13_01_28.cal	04/23/08 02:36:37 PM

Mean Area 0.4127
Mean Conc. 0.1832mg/L



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	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result	Comment
1	Standard	NPOC	ICAL	TCD020-1	0A-123456-	C:\Program	1.000		
2	Control	NPOC	ICV	TCD020-2	0A-123456-	C:\Program	1.000		
3	Unknown	NPOC	ICB	TCD020-3	0A-123456-	C:\Program	1.000		
4	Unknown	NPOC	HCO3\CO3	TCD020-4	0A-123456-	C:\Program	1.000		
5	Unknown	NPOC	TCD020WB	TCD020-5	0A-123456-	C:\Program	1.000		
6	Unknown	NPOC	TCD020WL	TCD020-6	0A-123456-	C:\Program	1.000		
7	Unknown	NPOC	TCD020WC	TCD020-7	0A-123456-	C:\Program	1.000		
8	Unknown	NPOC	08D204-03T	TCD020-8	0A-123456-	C:\Program	100.0		
9	Unknown	NPOC	08D186-04T	TCD020-9	0A-123456-	C:\Program	1000		
10	Unknown	NPOC	08D186-05	TCD020-10	0A-123456-	C:\Program	1.000		
11	Unknown	NPOC	08D186-06	TCD020-11	0A-123456-	C:\Program	1.000		
12	Unknown	NPOC	08D879-01	TCD020-12	0A-123456-	C:\Program	1.000		
13	Unknown	NPOC	08D126-02	TCD020-13	0A-123456-	C:\Program	1.000		
14	Control	NPOC	CCV1	TCD020-14	0A-123456-	C:\Program	1.000		
15	Unknown	NPOC	CCB1	TCD020-15	0A-123456-	C:\Program	1.000		
16	Unknown	NPOC	08D126-06	TCD020-16	0A-123456-	C:\Program	1.000		
17	Unknown	NPOC	08D136-04	TCD020-17	0A-123456-	C:\Program	1.000		
18	Unknown	NPOC	08D136-05	TCD020-18	0A-123456-	C:\Program	1.000		
19	Unknown	NPOC	08D136-06	TCD020-19	0A-123456-	C:\Program	1.000		
20	Unknown	NPOC	08D214-02	TCD020-20	0A-123456-	C:\Program	1.000		
21	Unknown	NPOC	08D214-02D	TCD020-21	0A-123456-	C:\Program	1.000		
22	Unknown	NPOC	08D214-02M	TCD020-22	0A-123456-	C:\Program	1.000		
23	Unknown	NPOC	08D214-03	TCD020-23	0A-123456-	C:\Program	1.000		
24	Unknown	NPOC	08D214-04	TCD020-24	0A-123456-	C:\Program	1.000		
25	Unknown	NPOC	08D214-05	TCD020-25	0A-123456-	C:\Program	1.000		
26	Control	NPOC	CCV2	TCD020-26	0A-123456-	C:\Program	1.000		
27	Unknown	NPOC	CCB2	TCD020-27	0A-123456-	C:\Program	1.000		
28	Unknown	NPOC	08D214-06	TCD020-28	0A-123456-	C:\Program	1.000		
29	Unknown	NPOC	08D214-07	TCD020-29	0A-123456-	C:\Program	1.000		
30	Unknown	NPOC	08D155-03	TCD020-30	0A-123456-	C:\Program	1.000		
31	Unknown	NPOC	08D155-04	TCD020-31	0A-123456-	C:\Program	1.000		
32	Unknown	NPOC	TCD021WL	TCD020-32	0A-123456-	C:\Program	1.000		
33	Unknown	NPOC	TCD021WC	TCD020-33	0A-123456-	C:\Program	1.000		
34	Unknown	NPOC	TCD021WB	TCD020-34	0A-123456-	C:\Program	1.000		
35	Unknown	NPOC	TCD021WQ	TCD020-35	0A-123456-	C:\Program	1.000		
36	Unknown	NPOC	08D194-03	TCD020-36	0A-123456-	C:\Program	1.000		
37	Unknown	NPOC	08D194-06	TCD020-37	0A-123456-	C:\Program	1.000		
38	Control	NPOC	CCV3	TCD020-38	0A-123456-	C:\Program	1.000		
39	Unknown	NPOC	CCB3	TCD020-39	0A-123456-	C:\Program	1.000		
40	Unknown	NPOC	08D211-02	TCD020-40	0A-123456-	C:\Program	1.000		
41	Unknown	NPOC	08D211-02D	TCD020-41	0A-123456-	C:\Program	1.000		
42	Unknown	NPOC	08D211-02M	TCD020-42	0A-123456-	C:\Program	1.000		
43	Unknown	NPOC	08D211-05	TCD020-43	0A-123456-	C:\Program	1.000		
44	Unknown	NPOC	08D211-07	TCD020-44	0A-123456-	C:\Program	1.000		
45	Unknown	NPOC	08D206-01	TCD020-45	0A-123456-	C:\Program	1.000		
46	Unknown	NPOC	08D206-02	TCD020-46	0A-123456-	C:\Program	1.000		
47	Unknown	NPOC	08D898-01	TCD020-47	0A-123456-	C:\Program	1.000		
48	Unknown	NPOC	08D898-02	TCD020-48	0A-123456-	C:\Program	1.000		
49	Unknown	NPOC	08D898-03	TCD020-49	0A-123456-	C:\Program	1.000		
50	Control	NPOC	CCV4	TCD020-50	0A-123456-	C:\Program	1.000		
51	Unknown	NPOC	CCB4	TCD020-51	0A-123456-	C:\Program	1.000		
52	Unknown	NPOC	08D898-04	TCD020-52	0A-123456-	C:\Program	1.000		
53	Control	NPOC	CCV5	TCD020-53	0A-123456-	C:\Program	1.000		
54	Unknown	NPOC	CCB5	TCD020-54	0A-123456-	C:\Program	1.000		
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BL 4124108

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Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Start Date/Time: 5/2/08 15:15
Stop Date/Time: 5/3/08 06:07

TCE002W: D284, D303
TCE003W: D302, E009
TCE004S: D246, D206, D294

All samples had a pH <2.

Book #: A62-011
Instrument No.: 62
Analytical Sequence: TCE002
Method File: TCE002
Analytical Batch: TCE002W, TCE003W, TCE004S

SOP #	Rev. #
☐ EMAX-415.1	1
☑ EMAX-9060	1
☐ EMAX-	

STANDARDS ID		CONC. (mg/L)
S0	Nanopure	0
S1	SW10B-01-903	1
S2	↓	5
S3	↓	10
S4	↓	40
S5	↓	80
S6	—	—
ICV/LCS	SW10B-01-904	25
CCV	SW10B-01-905	25

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ TOC	
☐	

Analyzed By: ISS
Date: 5/5/09

	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result	Comment
1	Standard	NPOC	ICAL	TCE002-1	0A-123456-000	C:\Program	1.000		
2	Control	NPOC	ICV	TCE002-2	0A-123456-000	C:\Program	1.000	NPOC:23.76 mg/	
3	Unknown	NPOC	ICB	TCE002-3	0A-123456-000	C:\Program	1.000	NPOC:0.04992 m	
4	Unknown	NPOC	HCO3\CO3	TCE002-4	0A-123456-000	C:\Program	1.000	NPOC:0.6878 mg	
5	Unknown	NPOC	TCE002WB	TCE002-5	0A-123456-000	C:\Program	1.000	NPOC:0.07754 m	
6	Unknown	NPOC	TCE002WL	TCE002-6	0A-123456-000	C:\Program	1.000	NPOC:24.01 mg/	
7	Unknown	NPOC	TCE002WC	TCE002-7	0A-123456-000	C:\Program	1.000	NPOC:24.12 mg/	
8	Unknown	NPOC	08D284-03	TCE002-8	0A-123456-000	C:\Program	1.000	NPOC:0.1125 mg	
9	Unknown	NPOC	08D284-04	TCE002-9	0A-123456-000	C:\Program	1.000	NPOC:0.02009 m	
10	Unknown	NPOC	08D284-04D	TCE002-10	0A-123456-000	C:\Program	1.000	NPOC:0.000 mg/	
11	Unknown	NPOC	08D284-04M	TCE002-11	0A-123456-000	C:\Program	1.000	NPOC:24.33 mg/	
12	Unknown	NPOC	08D284-05	TCE002-12	0A-123456-000	C:\Program	1.000	NPOC:0.000 mg/	
13	Unknown	NPOC	08D284-06	TCE002-13	0A-123456-000	C:\Program	1.000	NPOC:0.2688 mg	
14	Control	NPOC	CCV1	TCE002-14	0A-123456-000	C:\Program	1.000	NPOC:24.19 mg/	
15	Unknown	NPOC	CCB1	TCE002-15	0A-123456-000	C:\Program	1.000	NPOC:0.2316 mg	
16	Unknown	NPOC	08D284-09	TCE002-16	0A-123456-000	C:\Program	1.000	NPOC:0.2273 mg	
17	Unknown	NPOC	08D303-10	TCE002-17	0A-123456-000	C:\Program	1.000	NPOC:1.928 mg/	
18	Unknown	NPOC	08D303-04	TCE002-18	0A-123456-000	C:\Program	1.000	NPOC:0.7291 mg	
19	Unknown	NPOC	08D303-05T	TCE002-19	0A-123456-000	C:\Program	10.00	NPOC:1.497 mg/	RP, overdil Not
20	Unknown	NPOC	08D303-07	TCE002-20	0A-123456-000	C:\Program	1.000	NPOC:0.8638 mg	
21	Unknown	NPOC	08D303-08	TCE002-21	0A-123456-000	C:\Program	1.000	NPOC:0.2536 mg	
22	Unknown	NPOC	08D303-03T	TCE002-22	0A-123456-000	C:\Program	10.00	NPOC:1.235 mg/	RP, overdil Not
23	Unknown	NPOC	08D303-06T	TCE002-23	0A-123456-000	C:\Program	2.000	NPOC:74.31 mg/	
24	Unknown	NPOC	08D284-01T	TCE002-24	0A-123456-000	C:\Program	10000	NPOC:219532 mg	DF=10000
25	Unknown	NPOC	08D284-02T	TCE002-25	0A-123456-000	C:\Program	10000	NPOC:208024 mg	DF=10000
26	Control	NPOC	CCV2	TCE002-26	0A-123456-000	C:\Program	1.000	NPOC:24.35 mg/	
27	Unknown	NPOC	CCB2	TCE002-27	0A-123456-000	C:\Program	1.000	NPOC:0.4825 mg	
28	Unknown	NPOC	08D303-09T	TCE002-28	0A-123456-000	C:\Program	200.0	NPOC:8051 mg/L	
29	Unknown	NPOC	08D303-11T	TCE002-29	0A-123456-000	C:\Program	100.0	NPOC:2919 mg/L	
30	Unknown	NPOC	08D303-01T	TCE002-30	0A-123456-000	C:\Program	100.0	NPOC:2416 mg/L	
31	Unknown	NPOC	08D303-02	TCE002-31	0A-123456-000	C:\Program	1.000	NPOC:28.62 mg/	
32	Unknown	NPOC	08D303-12T	TCE002-32	0A-123456-000	C:\Program	10000	NPOC:205292 mg	DF=10000
33	Unknown	NPOC	08D303-13T	TCE002-33	0A-123456-000	C:\Program	10000	NPOC:205967 mg	DF=10000
34	Unknown	NPOC	TCE003WL	TCE002-34	0A-123456-000	C:\Program	1.000	NPOC:24.64 mg/	
35	Unknown	NPOC	TCE003WC	TCE002-35	0A-123456-000	C:\Program	1.000	NPOC:24.59 mg/	
36	Unknown	NPOC	TCE003WB	TCE002-36	0A-123456-000	C:\Program	1.000	NPOC:0.6597 mg	Not evaluated
37	Unknown	NPOC	TCE003WQ	TCE002-37	0A-123456-000	C:\Program	1.000	NPOC:0.5100 mg	
38	Control	NPOC	CCV3	TCE002-38	0A-123456-000	C:\Program	1.000	NPOC:24.31 mg/	
39	Unknown	NPOC	CCB3	TCE002-39	0A-123456-000	C:\Program	1.000	NPOC:0.5096 mg	
40	Unknown	NPOC	08D302-01T	TCE002-40	0A-123456-000	C:\Program	10.00	NPOC:3.908 mg/	} Reruns overdiluted
41	Unknown	NPOC	08D302-02T	TCE002-41	0A-123456-000	C:\Program	10.00	NPOC:5.510 mg/	
42	Unknown	NPOC	08D302-03T	TCE002-42	0A-123456-000	C:\Program	10.00	NPOC:5.848 mg/	
43	Unknown	NPOC	08E009-01T	TCE002-43	0A-123456-000	C:\Program	100.0	NPOC:1162 mg/L	
44	Unknown	NPOC	08E009-03T	TCE002-44	0A-123456-000	C:\Program	100.0	NPOC:1163 mg/L	
45	Unknown	NPOC	08E009-02	TCE002-45	0A-123456-000	C:\Program	1.000	NPOC:4.418 mg/	
46	Unknown	NPOC	TCE004SL	TCE002-46	0A-123456-000	C:\Program	1.000	NPOC:24.69 mg/	
47	Unknown	NPOC	TCE004SC	TCE002-47	0A-123456-000	C:\Program	1.000	NPOC:24.66 mg/	
48	Unknown	NPOC	TCE004SB	TCE002-48	0A-123456-000	C:\Program	1.000	NPOC:0.4085 mg	
49	Unknown	NPOC	TCE004SQ	TCE002-49	0A-123456-000	C:\Program	1.000	NPOC:0.5402 mg	not evaluated
50	Control	NPOC	CCV4	TCE002-50	0A-123456-000	C:\Program	1.000	NPOC:24.83 mg/	
51	Unknown	NPOC	CCB4	TCE002-51	0A-123456-000	C:\Program	1.000	NPOC:0.08961 m	
52	Unknown	NPOC	08D246-08R	TCE002-52	0A-123456-000	C:\Program	1.000	NPOC:2.895 mg/	
53	Unknown	NPOC	08D206-03T	TCE002-53	0A-123456-000	C:\Program	2.000	NPOC:8.940 mg/	
54	Unknown	NPOC	08D206-04T	TCE002-54	0A-123456-000	C:\Program	2.000	NPOC:10.98 mg/	
55	Unknown	NPOC	08D294-02	TCE002-55	0A-123456-000	C:\Program	1.000	NPOC:1.352 mg/	
56	Control	NPOC	CCV5	TCE002-56	0A-123456-000	C:\Program	1.000	NPOC:24.61 mg/	
57	Unknown	NPOC	CCB5	TCE002-57	0A-123456-000	C:\Program	1.000	NPOC:0.1620 mg	
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66									
67									

BJ 5/15/08

8130

Instr.Information

System	toc
Detector	Combustion
Catalyst	Regular Sensitivity
Cell Length	long

Cal. Curve

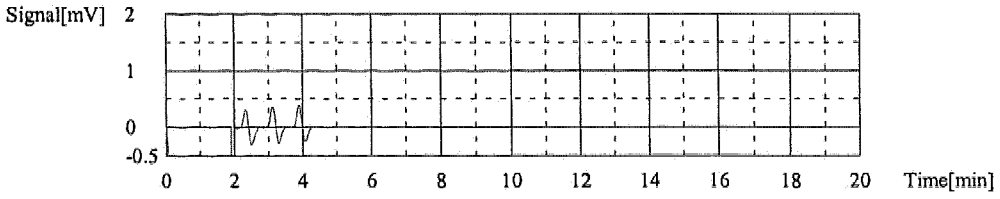
Sample Name:	ICAL
Sample ID:	TCE002-1
Cal. Curve:	tce002.2008_05_02_15_06_48.cal

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	0.000	50uL	1	*******		05/02/08 03:15:54 PM
2	0.000	50uL	1	*******		05/02/08 03:16:51 PM
3	0.04700	50uL	1	*******		05/02/08 03:17:48 PM
4	0.1297	50uL	1	*******		05/02/08 03:18:45 PM

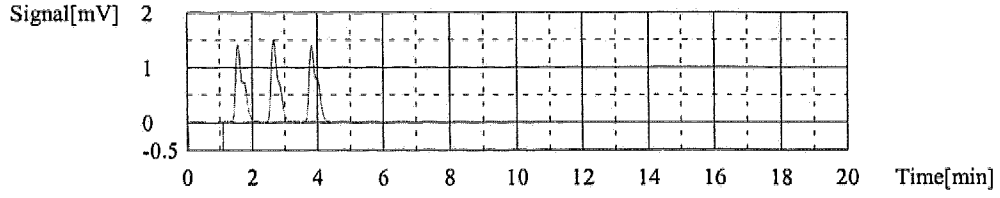
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 0.04418



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1.952	50uL	10	*******		05/02/08 03:27:02 PM
2	2.298	50uL	10	*******		05/02/08 03:28:17 PM
3	2.358	50uL	10	*******		05/02/08 03:29:37 PM
4	2.400	50uL	10	*******		05/02/08 03:30:55 PM

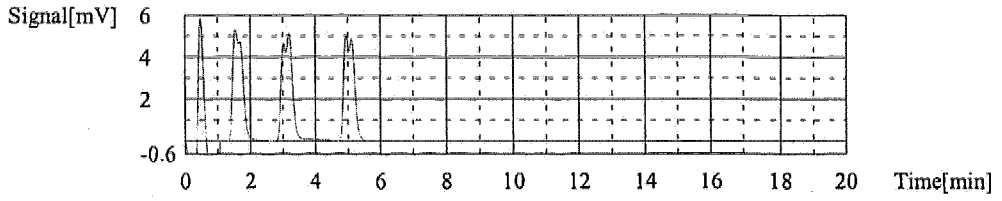
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 2.252



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	10.72	50uL	2	*******		05/02/08 03:37:14 PM
2	11.15	50uL	2	*******		05/02/08 03:38:53 PM
3	11.52	50uL	2	*******		05/02/08 03:40:59 PM
4	11.24	50uL	2	*******		05/02/08 03:42:21 PM

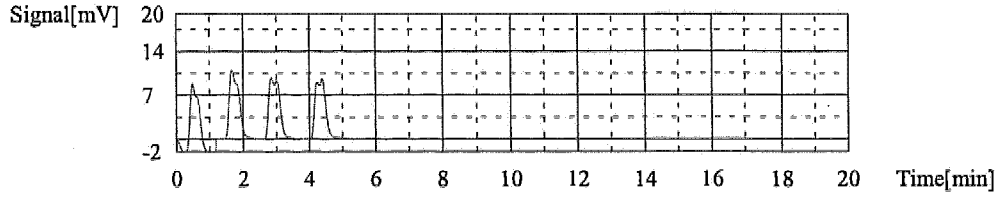
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 11.16



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	21.05	50uL	1	*******		05/02/08 03:48:05 PM
2	21.87	50uL	1	*******		05/02/08 03:49:26 PM
3	21.95	50uL	1	*******		05/02/08 03:50:59 PM
4	21.93	50uL	1	*******		05/02/08 03:52:55 PM

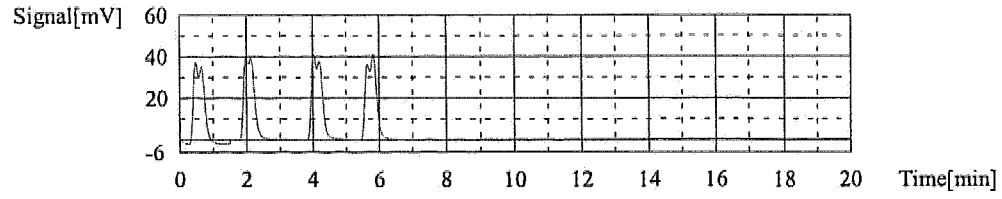
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 21.70



Conc: 40.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	89.78	50uL	2	*******		05/02/08 04:01:36 PM
2	91.48	50uL	2	*******		05/02/08 04:03:49 PM
3	91.67	50uL	2	*******		05/02/08 04:05:36 PM
4	91.26	50uL	2	*******		05/02/08 04:07:24 PM

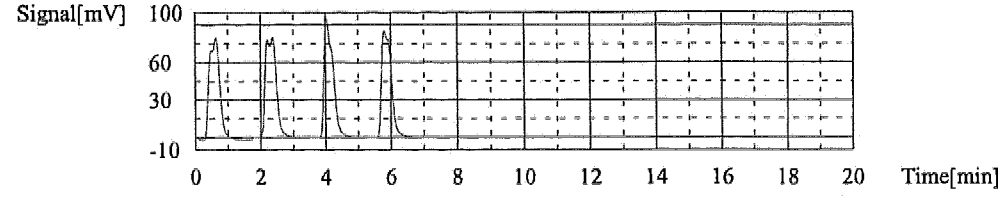
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 91.05



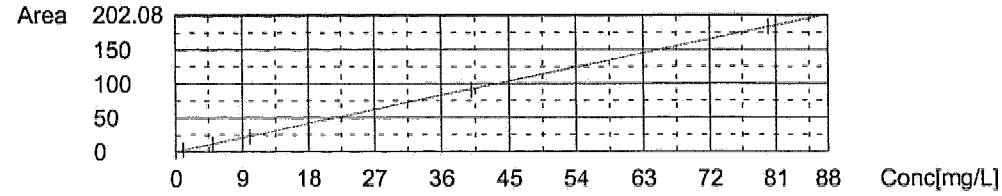
Conc: 80.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	180.9	50uL	1	*******		05/02/08 04:13:41 PM
2	183.6	50uL	1	*******		05/02/08 04:15:40 PM
3	185.8	50uL	1	*******		05/02/08 04:17:35 PM
4	184.0	50uL	1	*******		05/02/08 04:19:32 PM

Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 183.6



Slope: 2.296
Intercept 0.000
r^2 0.999951



8132

Control Sample

Sample Name: ICV
Sample ID: TCE002-2
Method: tce002.tpl
Chk. Result Control value: 23.76 / Control exceeds range!

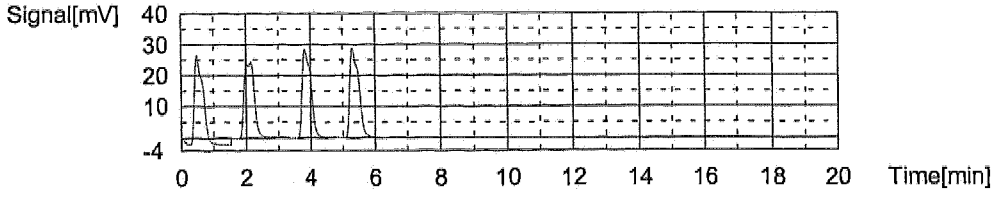
Type	Anal.	Dil.	Result
Control	NPOC	1.000	NPOC:23.76 mg/L

1. Det.

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	53.85	23.45mg/L	50uL	1		tce002.2008_05_02_15_06_48.cal	05/02/08 04:27:46 PM
2	55.11	24.00mg/L	50uL	1		tce002.2008_05_02_15_06_48.cal	05/02/08 04:29:46 PM
3	54.23	23.62mg/L	50uL	1		tce002.2008_05_02_15_06_48.cal	05/02/08 04:31:25 PM
4	55.07	23.98mg/L	50uL	1		tce002.2008_05_02_15_06_48.cal	05/02/08 04:33:09 PM

Mean Area 54.56
Mean Conc. 23.76mg/L



Sample

Sample Name: ICB
Sample ID: TCE002-3
Origin: tce002.cal
Chk. Result

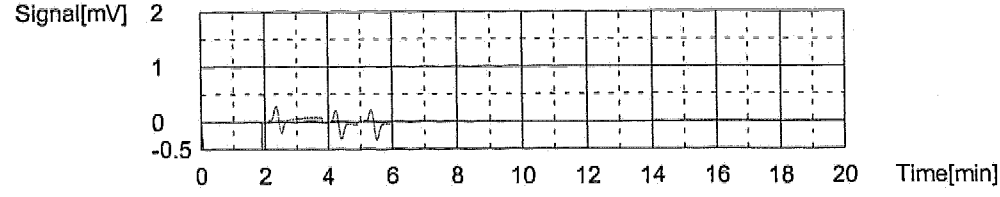
Type	Anal.	Dil.	Result
Unknown	NPOC	1.000	NPOC:0.04992 mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.000	0.000mg/L	50uL	1		tce002.2008_05_02_15_06_48.cal	05/02/08 04:41:32 PM
2	0.000	0.000mg/L	50uL	1		tce002.2008_05_02_15_06_48.cal	05/02/08 04:43:37 PM
3	0.2642	0.1151mg/L	50uL	1		tce002.2008_05_02_15_06_48.cal	05/02/08 04:44:53 PM
4	0.1943	0.08461mg/L	50uL	1		tce002.2008_05_02_15_06_48.cal	05/02/08 04:46:10 PM

Mean Area 0.1146
Mean Conc. 0.04992mg/L



	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result
1	Standard	NPOC	ICAL	TCE002-1	0A-123456-000	C:\Program	1.000	
2	Control	NPOC	ICV	TCE002-2	0A-123456-000	C:\Program	1.000	
3	Unknown	NPOC	ICB	TCE002-3	0A-123456-000	C:\Program	1.000	
4	Unknown	NPOC	HCO3\CO3	TCE002-4	0A-123456-000	C:\Program	1.000	
5	Unknown	NPOC	TCE002WB	TCE002-5	0A-123456-000	C:\Program	1.000	
6	Unknown	NPOC	TCE002WL	TCE002-6	0A-123456-000	C:\Program	1.000	
7	Unknown	NPOC	TCE002WC	TCE002-7	0A-123456-000	C:\Program	1.000	
8	Unknown	NPOC	08D284-03	TCE002-8	0A-123456-000	C:\Program	1.000	
9	Unknown	NPOC	08D284-04	TCE002-9	0A-123456-000	C:\Program	1.000	
10	Unknown	NPOC	08D284-04D	TCE002-10	0A-123456-000	C:\Program	1.000	
11	Unknown	NPOC	08D284-04M	TCE002-11	0A-123456-000	C:\Program	1.000	
12	Unknown	NPOC	08D284-05	TCE002-12	0A-123456-000	C:\Program	1.000	
13	Unknown	NPOC	08D284-06	TCE002-13	0A-123456-000	C:\Program	1.000	
14	Control	NPOC	CCV1	TCE002-14	0A-123456-000	C:\Program	1.000	
15	Unknown	NPOC	CCB1	TCE002-15	0A-123456-000	C:\Program	1.000	
16	Unknown	NPOC	08D284-09	TCE002-16	0A-123456-000	C:\Program	1.000	
17	Unknown	NPOC	08D303-10	TCE002-17	0A-123456-000	C:\Program	1.000	
18	Unknown	NPOC	08D303-04	TCE002-18	0A-123456-000	C:\Program	1.000	
19	Unknown	NPOC	08D303-05T	TCE002-19	0A-123456-000	C:\Program	10.00	
20	Unknown	NPOC	08D303-07	TCE002-20	0A-123456-000	C:\Program	1.000	
21	Unknown	NPOC	08D303-08	TCE002-21	0A-123456-000	C:\Program	1.000	
22	Unknown	NPOC	08D303-03T	TCE002-22	0A-123456-000	C:\Program	10.00	
23	Unknown	NPOC	08D303-06T	TCE002-23	0A-123456-000	C:\Program	2.000	
24	Unknown	NPOC	08D284-01T	TCE002-24	0A-123456-000	C:\Program	10000	
25	Unknown	NPOC	08D284-02T	TCE002-25	0A-123456-000	C:\Program	10000	
26	Control	NPOC	CCV2	TCE002-26	0A-123456-000	C:\Program	1.000	
27	Unknown	NPOC	CCB2	TCE002-27	0A-123456-000	C:\Program	1.000	
28	Unknown	NPOC	08D303-09T	TCE002-28	0A-123456-000	C:\Program	200.0	
29	Unknown	NPOC	08D303-11T	TCE002-29	0A-123456-000	C:\Program	100.0	
30	Unknown	NPOC	08D303-01T	TCE002-30	0A-123456-000	C:\Program	100.0	
31	Unknown	NPOC	08D303-02	TCE002-31	0A-123456-000	C:\Program	1.000	
32	Unknown	NPOC	08D303-12T	TCE002-32	0A-123456-000	C:\Program	10000	
33	Unknown	NPOC	08D303-13T	TCE002-33	0A-123456-000	C:\Program	10000	
34	Unknown	NPOC	TCE003WL	TCE002-34	0A-123456-000	C:\Program	1.000	
35	Unknown	NPOC	TCE003WC	TCE002-35	0A-123456-000	C:\Program	1.000	
36	Unknown	NPOC	TCE003WB	TCE002-36	0A-123456-000	C:\Program	1.000	
37	Unknown	NPOC	TCE003WQ	TCE002-37	0A-123456-000	C:\Program	1.000	
38	Control	NPOC	CCV3	TCE002-38	0A-123456-000	C:\Program	1.000	
39	Unknown	NPOC	CCB3	TCE002-39	0A-123456-000	C:\Program	1.000	
40	Unknown	NPOC	08D302-01T	TCE002-40	0A-123456-000	C:\Program	10.00	
41	Unknown	NPOC	08D302-02T	TCE002-41	0A-123456-000	C:\Program	10.00	
42	Unknown	NPOC	08D302-03T	TCE002-42	0A-123456-000	C:\Program	10.00	
43	Unknown	NPOC	08E009-01T	TCE002-43	0A-123456-000	C:\Program	100.0	
44	Unknown	NPOC	08E009-03T	TCE002-44	0A-123456-000	C:\Program	100.0	
45	Unknown	NPOC	08E009-02	TCE002-45	0A-123456-000	C:\Program	1.000	
46	Unknown	NPOC	TCE004SL	TCE002-46	0A-123456-000	C:\Program	1.000	
47	Unknown	NPOC	TCE004SC	TCE002-47	0A-123456-000	C:\Program	1.000	
48	Unknown	NPOC	TCE004SB	TCE002-48	0A-123456-000	C:\Program	1.000	
49	Unknown	NPOC	TCE004SQ	TCE002-49	0A-123456-000	C:\Program	1.000	
50	Control	NPOC	CCV4	TCE002-50	0A-123456-000	C:\Program	1.000	
51	Unknown	NPOC	CCB4	TCE002-51	0A-123456-000	C:\Program	1.000	
52	Unknown	NPOC	08D246-08	TCE002-52	0A-123456-000	C:\Program	1.000	
53	Unknown	NPOC	08D206-03T	TCE002-53	0A-123456-000	C:\Program	2.000	
54	Unknown	NPOC	08D206-04T	TCE002-54	0A-123456-000	C:\Program	2.000	
55	Unknown	NPOC	08D294-02	TCE002-55	0A-123456-000	C:\Program	1.000	
56	Control	NPOC	CCV5	TCE002-56	0A-123456-000	C:\Program	1.000	
57	Unknown	NPOC	CCB5	TCE002-57	0A-123456-000	C:\Program	1.000	
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ES
5/5/08

8134

EXTRACTION LOG FOR WET CHEMISTRY

Method ☐ Distillation: EMAX_____ - Rev. No.___ ☐ Digestion: EMAX_____ - Rev. No.___ ☑ 9060 Leaching Book # EWE-009

Matrix: Soil Start Date: 5/2/09 Time: 13:00 End Date: 5/2/09 Time: 14:00

PREPARATION BATCH # TCE 09 KS

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Extraction Solution (ml)	Notes
01	TCE004SB	30g	30mL	
02	↓ L	↓	↓	SW10A oil @ 25ppm
03	↓ C			↓
04	08D246-08R			
05	08D206-03R			
06	↓ 04R			
07	08D294-02	↓	↓	
08				
09				
10				
11				
12				
13				
14				
15				
16				KS
17				5/2/09
18				
19				
20				
21				
22				
23				
24				
25				
26				

Calibration of pH meter

Buffer ID	Value	Reading
	7	
	4	
Slope		
pH meter ID		

Reagents

Reagents	Lot #	Amount (ml)	Final Volume (ml)
DI H_2O	Nanopure		
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)

High	Low	Thermostat Setting	Criteria
			20-40

Comments:

Prepared By: KS

Checked By:

Extracts Received By:

Disposed by: Disposal Date:

EMAX LABORATORIES, INC. 1835 W. 205th St. Torrance, CA 90501

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08D206

METHOD 9045C
pH

Two (2) soil samples were received on 04/18/08 for pH analysis by Method 9045C in accordance with "Test Methods for Evaluating Solid Waste, Physical/Chemical Method", SW846, 3rd edition.

1. Holding Time

Extract of soil samples were analyzed on the same day as extraction.

2. Duplicate

Sample D206-04 was analyzed for duplicate. %RPD was within QC limit.

3. Sample Analysis

Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 9045C
PH

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : SOIL
Instrument ID : I53

SAMPLE ID	EMAX SAMPLE ID	RESULTS (pH Unit)	DLF	MOIST	RL (pH Unit)	MDL (pH Unit)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
SB2-7-15	D206-03	9.00	1	NA	NA	NA	04/21/0812:07	04/21/0810:30	PHD01702	PHD01701	PHD017W	04/17/0813:30	04/18/08
SB2-7-15-DUP	D206-04	8.98	1	NA	NA	NA	04/24/0812:08	04/21/0810:30	PHD01703	PHD01701	PHD017W	04/17/0813:30	04/18/08
SB2-7-15-DUPDUP	D206-04D	8.96	1	NA	NA	NA	04/24/0812:09	04/21/0810:30	PHD01704	PHD01701	PHD017W	04/17/0813:30	04/18/08

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 9045C
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: SB2-7-15-DUPDUP
CONTROL NO.: D206-04D

DATE RECEIVED: 04/18/08
DATE EXTRACTED: 04/21/08 10:30
DATE ANALYZED: 04/24/08 12:09

ACCESSION:

PARAMETER	SAMPLE (pH Unit)	DUP. SAMPLE (pH Unit)	DIFFERENCE (pH Unit)	RPD LIMIT (pH Unit)
PH	8.98	8.96	0.02	+/- 0.1

8138

ANALYSIS RUN LOG
for
pH

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Soil Sample

Book #: APH-017

Instrument No.: ☑ 53 ☐ 97

Analytical Batch: 08PHD017

SOP #	Rev. #
☐ EMAX-150.1	3
☐ EMAX-9040	3
☑ EMAX-9045	0
☐ EMAX-	

STANDARDS ID	pH Value
Buffer 4 SW7A-07-110	4.00
Buffer 7 SW-01-001	7.00
Buffer 10 SW-01-073	10.00
Buffer	
Buffer	
LCS/ICV SW-01-057	8.00

Analyzed By: [signature]

Date: 4-21-08

EMAX LABORATORIES, INC.

ANALYSIS FOR pH

Book #: APH-017 Page: 15

SOP: EMAX-9045 Rev.0

Analytical Batch: **08PHD017**

Data File Name	Lab Sample ID	Sample Amount	Unit	Initial pH	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Final pH	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Diff. of Initial and Final pH	Result	Unit	Comments
08PHD017-01	ICV/LCS	20	ml	8.02	04/21/08	12:05:58	8.02	04/21/08	12:06:01	0	8.02	pH Unit	
08PHD017-02	D206-03	20	ml	9	04/21/08	12:07:47	9	04/21/08	12:07:49	0	9	pH Unit	
08PHD017-03	D206-04	20	ml	8.98	04/21/08	12:08:37	8.98	04/21/08	12:08:40	0	8.98	pH Unit	
08PHD017-04	D206-04D	20	ml	8.96	04/21/08	12:09:40	8.96	04/21/08	12:09:42	0	8.96	pH Unit	
08PHD017-05	CCV	20	ml	7.03	04/21/08	12:12:12	7.03	04/21/08	12:12:14	0	7.03	pH Unit	

VV 4-21-08

pH Meter Calibration			
		Instrument ID:	53
Buffer 4	3.97	04/21/08	12:00:30
Buffer 7	7.01	04/21/08	12:01:33
Buffer 10	10.00	04/21/08	12:02:09
Slope (%)	99	04/21/08	12:02:52
pH Check Buffer	7.96	04/21/08	12:03:40

STANDARD	STANDARD ID/LOT#
Buffer 4	SW7A-07-110
Buffer 7	SW1-01-001
Buffer 10	SW1-01-073
pH Check Buffer	SW1-01-057

Duplicate Sample	Result	Diff.	Comment
D206-04	8.98	0.02	Passed
D206-04D	8.96		

Notes: ☑ pH meter autocompensates sample temperature.

Electrode Slope (%) Acceptance Criteria 92 - 102

Electrode Slope: Acceptable

Analyzed By: VV [signature]

8140

EXTRACTION LOG FOR WET CHEMISTRY

Method ☐ Distillation: EMAX_____ - Rev. No.___ ☐ Digestion: EMAX_____ - Rev. No.___ ☑ Leaching

Book # EWE-015

Matrix: S Start Date: 04-21-08 Time: 1030 H End Date: 04-21-08 Time: 1135 H

PREPARATION BATCH * 08PHD017

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Extraction Solution (ml)	Notes
01	D206-03	20	20	
02	D206-04	20	20	
03	D206 04D	20	20	
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26	[illegible] 4-21-08			

Calibration of pH meter

Buffer ID	Value	Reading
NA	7	
	4	
Slope		
pH meter ID		

Reagents

Reagents	Lot #	Amount (ml)	Final Volume (ml)
D1-Water			
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)

High	Low	Thermostat Setting	Criteria
			20-40

Comments:

Prepared By: [illegible]

Checked By:

Extracts Received By:

Disposed by: [illegible] Disposal Date:

8141

CASE NARRATIVE

CLIENT: **TETRA TECH, INC.**

PROJECT: **LMC BEAUMONT SITE 2**

SDG: **08D206**

METHOD 2320B
ALKALINITY

Two (2) water samples were received on 04/18/08 for Bicarbonate, Carbonate and Total Alkalinity analyses by Method 2320B in accordance with "Standard Methods for the Examination of Water and Wastewater", 18th edition (1990).

1. Holding Time

Analysis met holding time criteria.

2. Method Blank

Method blank was free of contamination at the reporting limit.

3. Lab Control Sample/Lab Control Sample Duplicate

Lab control results were within QC limit.

4. Duplicate

Duplicate sample was not designated in this SDG.

5. Sample Analysis

Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 2320B
BICARBONATE ALKALINITY

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I53

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ALD017WB	ND	1	NA	5.00	1.00	04/24/0815:08	NA	ALD01701	NA	ALD017W	NA	NA
TT-MW2-7	D206-01	280	1	NA	5.00	1.00	04/24/0815:18	NA	ALD01704	NA	ALD017W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	300	1	NA	5.00	1.00	04/24/0815:21	NA	ALD01705	NA	ALD017W	04/18/0809:15	04/18/08

0153

METHOD 2320B
CARBONATE ALKALINITY

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I53

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ALD017WB	ND	1	NA	5.00	1.00	04/24/0815:08	NA	ALD01701	NA	ALD017W	NA	NA
TT-MW2-7	D206-01	ND	1	NA	5.00	1.00	04/24/0815:18	NA	ALD01704	NA	ALD017W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	ND	1	NA	5.00	1.00	04/24/0815:21	NA	ALD01705	NA	ALD017W	04/18/0809:15	04/18/08

Page 5

METHOD 2320B
TOTAL ALKALINITY

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08D206

Matrix : WATER
Instrument ID : I53

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ALD017WB	ND	1	NA	5.00	1.00	04/24/0815:08	NA	ALD01701	NA	ALD017W	NA	NA
LCS1W	ALD017WL	190	1	NA	5.00	1.00	04/24/0815:11	NA	ALD01702	NA	ALD017W	NA	NA
LCD1W	ALD017WC	185	1	NA	5.00	1.00	04/24/0815:14	NA	ALD01703	NA	ALD017W	NA	NA
TT-MW2-7	D206-01	280	1	NA	5.00	1.00	04/24/0815:18	NA	ALD01704	NA	ALD017W	04/18/0809:10	04/18/08
TT-MW2-7-DUP	D206-02	300	1	NA	5.00	1.00	04/24/0815:21	NA	ALD01705	NA	ALD017W	04/18/0809:15	04/18/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 2320B
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08D206
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: ALD017WL/C

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 04/24/08 15:11/15:14

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Total Alkalinity	ND	186	190	102	186	185	99	3	80-120	20

ANALYSIS RUN LOG
for
ALKALINITY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

MS/MSD amount of spike:

Book #: AAL-021

Instrument No.: ☑ 53 ☐ 97

Analytical Batch: 08ALD017

SOP #	Rev. #
☑ EMAX-310.1	3
☑ EMAX-2320B	1
☐ EMAX-	

STANDARDS ID		CONC. (mg/L)
LCS	SWI-01-079	186
MS/MSD	NA	
ICV	NA	
0.02N HCL	SWRI-01-065	0.02N

pH Buffer	ID
pH 4	SWI-01-086
pH 7	SWI-01-096
pH 10	SWI-01-073
pH Check	SWI-01-057

Analyzed By: [signature] PLM

Date: 4-24-08

EMAX LABORATORIES, INC.

ALKALINITY RAW DATA

MISCELLANEOUS INFORMATION		
Standard	Concentration	
Acid Titrant, HCl	0.02	*N*
Na_2CO_3 (Zor Z_N)*	2.63	*g/L*
LCS	186	*mg/L*
MS	66.25	*mg/L*
MDL	1	*mg/L*
RL	5	*mg/L*

pH Meter Calibration			
Instrument ID:		53	
Buffer 4	4.01	04/24/08	15:02:32
Buffer 7	7	04/24/08	15:03:23
Buffer 10	9.99	04/24/08	15:05:11
pH Check Buffer	7.97	04/24/08	15:06:32

STANDARDIZATION				
V_{Na2CO3} / V_b (ml)	V_{HCl} (ml)	DATE	TIME	Acid Titrant HCl (N)
5				NA
5				#DIV/0!
5				#DIV/0!
5				#DIV/0!
			Average HCl (N)=	0.02000

☑ Acid Titrant is purchased as certified standard solution

Book #: AAL-021

Page: 30

SOP: EMAX-310.1 Rev. 3

Analytical Batch: 08ALD017

Analyzed By: VV RM

Data File Name	Lab Sample ID	Sample Amount (ml)	Sample pH	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Volume of Acid Titant *(A) ml* pH=8.3	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Volume of Acid Titant *(B) ml* pH=4.5	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Volume of Acid Titant (C) *ml* pH=4.2	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Final pH	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	NOTES
08ALD0171	ALD017WB	100	5.69	04/24/08	15:07:24	NA	04/24/08	15:07:27	0.05	04/24/08	15:07:55	NA	04/24/08	15:07:59	4.51	04/24/08	15:08:04	
08ALD017-2	ALD017WL	20	8.89	04/24/08	15:08:58	NA	04/24/08	15:09:00	3.8	04/24/08	15:11:19	NA	04/24/08	15:11:23	4.47	04/24/08	15:11:28	
08ALD017-3	ALD017WC	20	8.86	04/24/08	15:11:54	NA	04/24/08	15:12:05	3.7	04/24/08	15:14:47	NA	04/24/08	15:14:49	4.51	04/24/08	15:14:55	
08ALD017-4	D206-01	20	7.54	04/24/08	15:16:45	NA	04/24/08	15:16:48	5.6	04/24/08	15:18:42	NA	04/24/08	15:18:47	4.52	04/24/08	15:18:50	
08ALD017-5	D206-02	10	7.64	04/24/08	15:19:22	NA	04/24/08	15:19:24	3	04/24/08	15:21:09	NA	04/24/08	15:21:12	4.48	04/24/08	15:21:18	
08ALD017-6	D177-04	20	7.56	04/24/08	15:22:33	NA	04/24/08	15:22:39	9.7	04/24/08	15:25:43	NA	04/24/08	15:25:46	4.46	04/24/08	15:25:50	
08ALD017-7	D177-04D	20	7.51	04/24/08	15:27:33	NA	04/24/08	15:27:36	9.8	04/24/08	15:34:02	NA	04/24/08	15:34:05	4.52	04/24/08	15:34:08	
08ALD017-8	D177-05	10	7.85	04/24/08	15:35:56	NA	04/24/08	15:35:58	3.95	04/24/08	15:40:42	NA	04/24/08	15:40:44	4.47	04/24/08	15:40:49	
08ALD017-9	D177-06	10	7.67	04/24/08	15:42:19	NA	04/24/08	15:42:22	4.25	04/24/08	15:46:49	NA	04/24/08	15:46:51	4.47	04/24/08	15:46:55	
08ALD017-10	D891-01	20	7.34	04/24/08	15:48:45	NA	04/24/08	15:48:47	3.5	04/24/08	15:50:55	NA	04/24/08	15:50:57	4.53	04/24/08	15:50:59	
08ALD017-11	D883-01	20	7.32	04/24/08	15:52:14	NA	04/24/08	15:52:16	3.4	04/24/08	15:54:11	NA	04/24/08	15:54:13	4.49	04/24/08	15:54:15	
08ALD017-12	D883-02	20	7.26	04/24/08	15:55:36	NA	04/24/08	15:55:38	3.25	04/24/08	16:02:01	NA	04/24/08	16:02:03	4.48	04/24/08	16:02:06	
08ALD017-13	D883-03	20	7.3	04/24/08	16:03:29	NA	04/24/08	16:03:34	3.2	04/24/08	16:06:02	NA	04/24/08	16:06:04	4.47	04/24/08	16:06:14	
08ALD017-14	D883-04	20	7.22	04/24/08	16:29:05	NA	04/24/08	16:29:06	3.55	04/24/08	16:32:05	NA	04/24/08	16:32:08	4.49	04/24/08	16:32:13	
08ALD017-15	D883-05	20	7.25	04/24/08	16:33:27	NA	04/24/08	16:33:31	3.6	04/24/08	16:35:19	NA	04/24/08	16:35:22	4.51	04/24/08	16:35:27	
08ALD017-16	D883-06	20	7.3	04/24/08	16:38:04	NA	04/24/08	16:38:07	3.45	04/24/08	16:39:19	NA	04/24/08	16:39:21	4.52	04/24/08	16:39:24	
08ALD017-17	D883-07	20	7.36	04/24/08	16:40:43	NA	04/24/08	16:40:45	3.75	04/24/08	16:44:05	NA	04/24/08	16:44:07	4.52	04/24/08	16:44:10	
08ALD017-18	D883-08	20	7.27	04/24/08	16:45:29	NA	04/24/08	16:45:35	3.35	04/24/08	16:46:26	NA	04/24/08	16:46:28	4.49	04/24/08	16:46:30	
08ALD017-19	D883-09	20	7.37	04/24/08	16:48:50	NA	04/24/08	16:48:51	3.2	04/24/08	16:49:57	NA	04/24/08	16:49:58	4.48	04/24/08	16:50:02	
08ALD017-20	D883-10	20	7.29	04/24/08	16:51:11	NA	04/24/08	16:51:15	3.4	04/24/08	16:52:46	NA	04/24/08	16:52:49	4.47	04/24/08	16:52:52	
08ALD017-21	D883-11	20	7.4	04/24/08	16:53:37	NA	04/24/08	16:53:44	3.45	04/24/08	16:54:47	NA	04/24/08	16:54:49	4.51	04/24/08	16:54:55	
											RM		4/24/08					

Comments: Standardization of Acid Titrant (*N*)

$$N = \frac{(Z)(V_{Na2CO3})}{(53)(V_{HCl})} \qquad N = \frac{(Z_N)(V_{Na2CO3})}{(V_{HCl})}$$

Z=g/L Na_2CO_3. If the concentration of Na_2CO_3 is in N, then Z=Z_N.

EMAX LABORATORIES, INC.

ALKALINITY REPORT FORM

08ALD017

SOP: EMAX-310.1 Rev. 3

Start Date/Time: 4/24/08 15:02 End Date/Time: 4/24/08 16:54

Book #: AAL-021

Page: 30

Data File Name	Lab Sample ID	Sample Amount (ml)	Volume of Acid Titant (A) ml pH=8.3	Volume of Acid Titant (B) ml pH=4.5	Volume of Acid Titant (C) ml pH=4.2	ALKALINITY (mg/L) TOTAL[P]	TOTAL[T]	[OH]	[CO_3]	[HCO_3]	NOTES
08ALD0171	ALD017WB	100	NA	0.05	NA	ND	ND	ND	ND	ND	
08ALD017-2	ALD017WL	20	NA	3.8	NA	ND	190	ND	ND	190	
08ALD017-3	ALD017WC	20	NA	3.7	NA	ND	185	ND	ND	185	
08ALD017-4	D206-01	20	NA	5.6	NA	ND	280	ND	ND	280	
08ALD017-5	D206-02	10	NA	3	NA	ND	300	ND	ND	300	
08ALD017-6	D177-04	20	NA	9.7	NA	ND	485	ND	ND	485	
08ALD017-7	D177-04D	20	NA	9.8	NA	ND	490	ND	ND	490	
08ALD017-8	D177-05	10	NA	3.95	NA	ND	395	ND	ND	395	
08ALD017-9	D177-06	10	NA	4.25	NA	ND	425	ND	ND	425	
08ALD017-1	D891-01	20	NA	3.5	NA	ND	175	ND	ND	175	
08ALD017-1	D883-01	20	NA	3.4	NA	ND	170	ND	ND	170	
08ALD017-1	D883-02	20	NA	3.25	NA	ND	163	ND	ND	163	
08ALD017-1	D883-03	20	NA	3.2	NA	ND	160	ND	ND	160	
08ALD017-1	D883-04	20	NA	3.55	NA	ND	178	ND	ND	178	
08ALD017-1	D883-05	20	NA	3.6	NA	ND	180	ND	ND	180	
08ALD017-1	D883-06	20	NA	3.45	NA	ND	173	ND	ND	173	
08ALD017-1	D883-07	20	NA	3.75	NA	ND	188	ND	ND	188	
08ALD017-1	D883-08	20	NA	3.35	NA	ND	168	ND	ND	168	
08ALD017-1	D883-09	20	NA	3.2	NA	ND	160	ND	ND	160	
08ALD017-2	D883-10	20	NA	3.4	NA	ND	170	ND	ND	170	
08ALD017-2	D883-11	20	NA	3.45	NA	ND	173	ND	ND	173	
							pw 4/24/08				

TITRANT HCl (N)=	0.02000

MISCELLANEOUS INFORMATION		
Standard	Concentration	
Acid Titrant, HCl	0.02	*N*
Na_2CO_3 (Zor Z_N)*	2.63	*g/L*
LCS	186	*mg/L*
MS	66.25	*mg/L*
MDL	1	*mg/L*
RL	5	*mg/L*

ALKALINITY (mg/L)

$$P = \frac{(A)(N)(50,000)}{S}$$

$$T = \frac{(2B-C)(N)(50,000)}{S} \quad for T < 20 mg/L$$

$$T = \frac{(B)(N)(50,000)}{S} \quad for T > 20 mg/L$$

Comments:

Sample Duplicate		
Sample ID	Result	RPD
D177-04	485	
D177-04D	490	1%

Total Alkalinity MS Recovery		
Sample ID	Result	Rec.
RPD		

Total Alkalinity LCS Recovery			
Sample ID	Result	Rec.	RPD
ALD017WL	190	102%	
ALD017WC	185	99%	3%
Comments: Standardization of Acid Titrant (N)			

Analyzed by: VV /pw

LABORATORY REPORT FOR

TETRA TECH, INC.

LMC BEAUMONT SITE 2

SULFUR, TOTAL

SDG#: 08D206

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

April 29, 2008

TestAmerica Project Number: G8D240286
PO/Contract: 08D206

Ye Myint
EMAX Laboratories Inc
1835 205th Street
Torrance, CA 90501

Dear Mr. Myint,

This report contains the analytical results for the samples received under chain of custody by TestAmerica on April 24, 2008. These samples are associated with your 08D206 project.

The test results in this report meet all NELAC requirements for parameters that accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916) 374-4442.

Sincerely,

Karen Sellers

Karen M. Sellers
Project Manager

Table of Contents

TestAmerica West Sacramento Project Number G8D240286

Case Narrative

Quality Assurance Program

Sample Description Information

Chain of Custody Documentation

WATER, Sulfur, 6010B
Samples: 1, 2
- Sample Data Sheets
- Method Blank Report
- Laboratory QC Reports

Case Narrative

TestAmerica West Sacramento Project Number G8D240286

There were no anomalies associated with this project.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ACCREDITED IN ACCORDANCE WITH nelac

TestAmerica Laboratories West Sacramento Certifications/Accreditations

Certifying State	Certificate #	Certifying State	Certificate #
Alaska	UST-055	New York*	11666
Arizona	AZ0616	Oregon*	CA 200005
Arkansas	04-067-0	Pennsylvania	68-1272
California*	01119CA	South Carolina	87014002
Colorado	NA	Texas	TX 270-2004A
Connecticut	PH-0691	Utah*	QUAN1
Florida*	E87570	Virginia	00178
Georgia	960	Washington	C087
Hawaii	NA	West Virginia	9930C, 334
Kansas*	E10375	Wisconsin	998204680
Louisiana*	01944	NFESC	NA
Michigan	9947	USACE	NA
Nevada	CA44	USDA Foreign Plant	37-82605
New Jersey*	CA005	USDA Foreign Soil	S-46613

*NELAP accredited. A more detailed parameter list is available upon request. Updated 9/21/07

QC Parameter Definitions

QC Batch: The QC batch consists of a set of up to 20 field samples that behave similarly (i.e., same matrix) and are processed using the same procedures, reagents, and standards at the same time.

Method Blank: An analytical control consisting of all reagents, which may include internal standards and surrogates, and is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background contamination.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD): An aliquot of blank matrix spiked with known amounts of representative target analytes. The LCS (and LCSD as required) is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. If an LCSD is performed, it may also be used to evaluate the precision of the process.

Duplicate Sample (DU): Different aliquots of the same sample are analyzed to evaluate the precision of an analysis.

Surrogates: Organic compounds not expected to be detected in field samples, which behave similarly to target analytes. These are added to every sample within a batch at a known concentration to determine the efficiency of the sample preparation and analytical process.

Matrix Spike and Matrix Spike Duplicate (MS/MSD): An MS is an aliquot of a matrix fortified with known quantities of specific compounds and subjected to an entire analytical procedure in order to indicate the appropriateness of the method for a particular matrix. The percent recovery for the respective compound(s) is then calculated. The MSD is a second aliquot of the same matrix as the matrix spike, also spiked, in order to determine the precision of the method.

Isotope Dilution: For isotope dilution methods, isotopically labeled analogs (internal standards) of the native target analytes are spiked into the sample at time of extraction. These internal standards are used for quantitation, and monitor and correct for matrix effects. Since matrix effects on method performance can be judged by the recovery of these analogs, there is little added benefit of performing MS/MSD for these methods. MS/MSD are only performed for client or QAPP requirements.

Control Limits: The reported control limits are either based on laboratory historical data, method requirements, or project data quality objectives. The control limits represent the estimated uncertainty of the test results.

Sample Summary

TestAmerica West Sacramento Project Number G8D240286

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
KL0E9	1	TT-MW2-7	4/18/2008 09:10 AM	4/24/2008 09:15 AM
KL0FF	2	TT-MW2-7-DUP	4/18/2008 09:15 AM	4/24/2008 09:15 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

	08D206
	TT_0610

Ye

TEST AMERICA/STL
880 Riverside Parkway
West Sacramento, CA 95605

EMAX Sample ID	Client Sample ID	Collection Date	CollectionTime	Matrix	Method		COMMENTS
D206-01	TT-MW2-7	4/18/2008	9:10:00 AM	WATER	6010B	Sulfur, Total	
D206-02	TT-MW2-7-DUP	4/18/2008	9:15:00 AM	WATER	6010B	Sulfur, Total	

INSTRUCTION: A cross reference table for Client Sample ID and EMAX Sample ID must be included in the final report.

COOLER TEMPERATURE

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	4/23/08	1400	Cheng W	4/24/08	1040

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

LOT RECEIPT CHECKLIST
TestAmerica West Sacramento

CLIENT Emax PM KS LOG # 51588

LOT# (QUANTIMS ID) G8D240286 QUOTE# 79325 LOCATION W19A

	Initials	Date
DATE RECEIVED 4/24/08 TIME RECEIVED 0915	CN	4/24/08

DELIVERED BY
- ☑ FEDEX
- ☐ CA OVERNIGHT
- ☐ CLIENT
- ☐ AIRBORNE
- ☐ GOLDENSTATE
- ☐ DHL
- ☐ UPS
- ☐ BAX GLOBAL
- ☐ GO-GETTERS
- ☐ TAL COURIER
- ☐ VALLEY LOGISTICS
- ☐ MORGAN HILL COURIER
- ☐ OTHER

CUSTODY SEAL STATUS ☑ INTACT ☐ BROKEN ☐ N/A

CUSTODY SEAL #(S) on containers

SHIPPPING CONTAINER(S) ☐ TAL ☑ CLIENT ☐ N/A

TEMPERTURE RECORD (IN °C) IR 4 ☑ 5 ☐ ☐ OTHER ____

COC #(S) N/A

TEMPERATURE BLANK Observed: ____ Corrected: ____

SAMPLE TEMPERATURE

Observed: 0 0 Average: 0 Corrected Average: 1

COLLECTOR'S NAME: ☐ Verified from COC ☑ Not on COC

pH MEASURED ☐ YES ☐ ANOMALY ☑ N/A

LABELED BY.....

LABELS CHECKED BY.....

PEER REVIEW _____ ☑ NA

SHORT HOLD TEST NOTIFICATION

SAMPLE RECEIVING
- WETCHEM ☑ N/A
- VOA-ENCORES ☑ N/A

☐ METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL ☑ N/A

☐ COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH APPROPRIATE TEMPERATURES, CONTAINERS, PRESERVATIVES ☑ N/A

☑ CLOUSEAU ☑ TEMPERATURE EXCEEDED (2 °C – 6 °C)*1 ☐ N/A

☑ WET ICE ☐ BLUE ICE ☐ GEL PACK ☐ NO COOLING AGENTS USED ☑ PM NOTIFIED

Notes: _____

*1 Acceptable temperature range for State of Wisconsin samples is≤4°C.

LEAVE NO SPACES BLANK. USE "N/A" IF NOT APPLICABLE.

TestAmerica West Sacramento

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Bottle Lot Inventory

Lot ID: G8D240286

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VOA*																				
VOAh*																				
AGB																				
AGBs																				
250AGB																				
250AGBs																				
250AGBn																				
500AGB																				
___AGJ																				
500AGJ																				
250AGJ																				
125AGJ																				
___CGJ																				
500CGJ																				
250CGJ																				
125CGJ																				
PJ																				
PJn																				
500PJ																				
500PJn																				
500PJna																				
500PJzn/na																				
250PJ	1	1																		
250PJn																				
250PJna																				
250PJzn/na																				
Acetate Tube																				
___"CT																				
Encore																				
Folder/filter																				
PUF																				
Petri/Filter																				
XAD Trap																				
Ziploc																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

h = hydrochloric acid **s** = sulfuric acid **na** = sodium hydroxide **n** = nitric acid **zn** = zinc acetate

Number of VOAs with air bubbles present / total number of VOA's

QA-185 5/05 EM

Page 3

LEAVE NO SPACES BLANK. USE "NA" IF NOT APPLICABLE.

WATER, Sulfur, 6010B

EMAX Laboratories Inc

Client Sample ID: TT-MW2-7

TOTAL Metals

Lot-Sample #...: G8D240286-001 Matrix.....: WATER
Date Sampled...: 04/18/08 Date Received..: 04/24/08

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8119205						
Sulfur	58.5	0.50	mg/L	SW846 6010B	04/28/08	KL0E91AA
		Dilution Factor: 1		MDL.....: 0.30		

EMAX Laboratories Inc

Client Sample ID: TT-MW2-7-DUP

TOTAL Metals

Lot-Sample #...: G8D240286-002 Matrix.....: WATER
Date Sampled...: 04/18/08 Date Received..: 04/24/08

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8119205						
Sulfur	58.3	0.50	mg/L	SW846 6010B	04/28/08	KL0FF1AA
		Dilution Factor: 1		MDL.....: 0.30		

QC DATA ASSOCIATION SUMMARY

G8D240286

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 6010B		8119205	8119124
002	WATER	SW846 6010B		8119205	8119124

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: G8D240286 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: G8D280000-205 Prep Batch #...: 8119205						
Sulfur	ND	0.50	mg/L	SW846 6010B	04/28/08	KL5DX1A8
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: G8D240286 Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: G8D280000-205 Prep Batch #...: 8119205							
Sulfur	10.0	10.1	mg/L	101	SW846 6010B	04/28/08	KL5DX1A9
Dilution Factor: 1							

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

TABLE OF CONTENTS

CLIENT: **TETRA TECH, INC.**

PROJECT: **LMC BEAUMONT SITE 2**

SDG: **08E040**

SECTION		PAGE
Cover Letter, COC/Sample Receipt Form		1000 – 1003
GC/MS-VOA	METHOD 5030B/8260B	2000 – 2039
GC/MS-SVOA	**	3000 –
GC-VOA	**	4000 –
GC-SVOA	**	5000 –
HPLC	**	6000 –
METALS	**	7000 –
WET	METHOD 314.0	8000 – 8018
OTHERS	**	9000 –

** - Not Requested

EMAX
LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889
Fax: (310) 618-0818

Date: 05-27-2008
EMAX Batch No.: 08E040

Attn: Michael Wilson

Tetra Tech, Inc.
348 W Hospitality Lane, Ste 100
San Bernardino CA 92408

Subject: Laboratory Report
Project: LMC Beaumont Site 2

Enclosed is the Laboratory report for samples received on 05/06/08.
The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
LTB-050508	E040-01	05/05/08	WATER	VOLATILE ORGANICS BY GC/MS
15B-59'	E040-02	05/05/08	WATER	PERCHLORATE BY IC
				VOLATILE ORGANICS BY GC/MS

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning
these results.

Sincerely yours,

Caspar J. Pang
Acting Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that the results included in this report meet all NELAC requirements unless noted in the Case Narrative.

Tt. 0610

08 E040

CHAIN OF CUSTODY RECORD

TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: EMAX

DATE 05/05/2008 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LLNL Beaumont Site 2 Source Area Columns & Microcosms
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures)

LINE ITEM	SAMPLE NO.	DATE	TIME	VOCs (SW8260B)	Perchlorate (314.0)	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	LTB-050508	05/05/2008	0730	X		Un	W	G	2	HCl	
2.	15B-59'	05/05/2008	1317	X	X	Un	W	G/P	4	HCl/NR	
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											

PARAMETERS

TURN-AROUND TIME: Standard

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SS - Stainless Steel Sleeve; SB - Brass Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NR (None required); NaOH; H_2SO_4

RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	
David Bertolacci		TETRA TECH, INC.	05/05/2008	1730	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 6
RECEIVED BY Carlos Morales		COMPANY Top Line	DATE 5/6/08	TIME 8:36	METHOD OF SHIPMENT/SHIPMENT NO. Courier
RELINQUISHED BY Carlos Morales		COMPANY Top Line	DATE 5/6/08	TIME 10:00	Special Shipping/Handling/Storage Requirements: T=3.3 C
RECEIVED BY INDRA PATEL		COMPANY EMAX	DATE 5/6/08	TIME 10:00	

DISTRIBUTION: White and Pink = Tetra Tech, Inc. Canary = Laboratory

X:\GIS\ATT-MISC\COCR.CDR

1 of 1

LABORATORIES, INC.

SAMPLE RECEIPT FORM 1

Type of Delivery	Delivered By/Airbill	ECN 08E040
☐ EMAX Courier		Receipient I PATEL
☐ Client Delivery		Date 5-6-08
☒ Third Party Top Line Courier.		Time 10:00

COC Inspection

☒ Client Name	☐ Client PM/FC	☒ Sampler Name	☒ Sampling Date/Time/Location	☒ Sample ID	☒ Matrix
☒ Address	☒ Tel # / Fax #	☒ Courier Signature	☐ Analysis Required	☐ Preservative (if any)	☒ TAT

Safety issues

☒ None ☐ High concentrations expected ☐ Superfund Site samples ☐ Rad screening required

Comments:

Packaging Inspection

Container	☒ Cooler	☐ Box	☐ Other		
Condition	☐ Custody Seal	☒ Intact	☐ Damaged		
Packaging	☐ Bubble Pack	☐ Styrofoam	☐ Popcorn	☒ Sufficient	☒ Plastic Bag
Temperatures	☒ Cooler 1 3.3 °C	☐ Cooler 2 ____ °C	☐ Cooler 3 ____ °C	☐ Cooler 4 ____ °C	☐ Cooler 5 ____ °C
	☐ Cooler 6 ____ °C	☐ Cooler 7 ____ °C	☐ Cooler 8 ____ °C	☐ Cooler 9 ____ °C	☐ Cooler 10 ____ °C

Comments: ☐ **PM was informed on non-compliant coolers imediately.**

DISCREPANCIES

LSID	LSCID	Sample Label ID/COC ID	Discrepancy Code	Corrective Action Code
02	003 - 006	SB2-5.9	B3	R2

REVIEWS

Sample Labeling _____ Date 5/6/08

SRF _____ Date 5/6/08

PM _____ Date 5/6/08

LEGEND:

Code	Description- Sample Management	Code	Description-Sample Management	Code	Description-Project Management
A1	Analysis is not indicated in COC	E1	Preservative needed; sample has no preservative	R1	Hold sample(s); wait for further instructions
A2	Analysis is not indicated in label	E2	Preservative not needed but sample is preserved	R2	Proceed as indicated in COC
A3	Analysis is inconsistent in COC vis-à-vis label	F1	Not enough quantity of samples	R3	Refer to attached instruction
B1	Sample ID is not indicated in COC	F2	Bubble is> 6mm	R4	Cancel the analysis
B2	Sample ID is not indicated in label	G1	Temperature is out of range (4 +_ 2°C)	R5	
B3	Sample ID is inconsistent in COC vis-à-vis label	G2	Out of Holding Time	R6	
C1	Wrong container	G3	>20 % solid particle		
C2	Broken container	H1			
C3	Leaking container	H2			
D1	Date and/or time is not indicated in COC				
D2	Date and/or time is not indicated in label				
D3	Date and/or time is inconsistent in COC vis-à-vis label				

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TETRA TECH, INC.

LMC BEAUMONT SITE 2

METHOD 5030B/8260B
VOLATILE ORGANICS BY GC/MS

SDG#: 08E040

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E040

METHOD 5030B/8260B
VOLATILE ORGANICS BY GC/MS

Two (2) water samples were received on 05/06/08 for Volatile Organic analysis by Method 5030B/8260B in accordance with USEPA SW846, 3rd ed.

1. **Holding Time**

   Analytical holding time was met.

2. **Tuning and Calibration**

   Tuning and calibration were carried out at 12-hour interval. All QC requirements were met.

3. **Method Blank**

   Method blank was free of contamination at the reporting limit.

4. **Surrogate Recovery**

   Recoveries were within QC limit.

5. **Lab Control Sample/Lab Control Sample Duplicate**

   Recoveries were within QC limit.

6. **Matrix Spike/Matrix Spike Duplicate**

   No MS/MSD sample was designated in this SDG.

7. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

LAB CHRONICLE
VOLATILE ORGANICS BY GC/MS

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2

SDG NO. : 08E040
Instrument ID : T-003

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	V003E14B	1	NA	05/08/0813:19	05/08/0813:19	REB098	RDB029	V003E14	Method Blank
LCS1W	V003E14L	1	NA	05/08/0812:17	05/08/0812:17	REB096	RDB029	V003E14	Lab Control Sample (LCS)
LCD1W	V003E14C	1	NA	05/08/0812:48	05/08/0812:48	REB097	RDB029	V003E14	LCS Duplicate
15B-59'	E040-02	1	NA	05/08/0814:52	05/08/0814:52	REB101	RDB029	V003E14	Field Sample
MBLK2W	V003E18B	1	NA	05/09/0814:15	05/09/0814:15	REB143	RDB029	V003E18	Method Blank
LCS2W	V003E18L	1	NA	05/09/0814:47	05/09/0814:47	REB144	RDB029	V003E18	Lab Control Sample (LCS)
LCD2W	V003E18C	1	NA	05/09/0815:19	05/09/0815:19	REB145	RDB029	V003E18	LCS Duplicate
LTB-050508	E040-01R	1	NA	05/09/0815:50	05/09/0815:50	REB146	RDB029	V003E18	Field Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD 5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : TETRA TECH, INC.	Date Collected: 05/05/08
Project : LMC BEAUMONT SITE 2	Date Received: 05/06/08
Batch No. : 08E040	Date Extracted: 05/09/08 15:50
Sample ID: LTB-050508	Date Analyzed: 05/09/08 15:50
Lab Samp ID: E040-01R	Dilution Factor: 1
Lab File ID: REB146	Matrix : WATER
Ext Btch ID: V003E18	% Moisture : NA
Calib. Ref.: RDB029	Instrument ID : T-003

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5.0	1.0
1,1,2,2-TETRACHLOROETHANE	ND	5.0	1.0
1,1,2-TRICHLOROETHANE	ND	5.0	1.0
1,1-DICHLOROETHANE	ND	5.0	1.0
1,1-DICHLOROETHENE	ND	5.0	1.0
1,2-DICHLOROETHANE	ND	5.0	1.0
1,2-DICHLOROPROPANE	ND	5.0	1.0
2-BUTANONE	ND	10	5.0
2-HEXANONE	ND	10	5.0
4-METHYL-2-PENTANONE	ND	10	5.0
ACETONE	ND	10	5.0
BENZENE	ND	5.0	1.0
BROMODICHLOROMETHANE	ND	5.0	1.0
BROMOFORM	ND	5.0	1.0
BROMOMETHANE	ND	10	1.0
CARBON DISULFIDE	ND	5.0	1.0
CARBON TETRACHLORIDE	ND	5.0	1.0
CHLOROBENZENE	ND	5.0	1.0
CHLOROETHANE	ND	5.0	1.0
CHLOROFORM	ND	5.0	1.0
CHLOROMETHANE	ND	5.0	1.0
CIS-1,2-DICHLOROETHENE	ND	5.0	1.0
CIS-1,3-DICHLOROPROPENE	ND	5.0	1.0
DIBROMOCHLOROMETHANE	ND	5.0	1.0
ETHYLBENZENE	ND	5.0	1.0
M/P-XYLENES	ND	10	2.0
MTBE	ND	5.0	1.0
METHYLENE CHLORIDE	ND	10	1.0
O-XYLENE	ND	5.0	1.0
STYRENE	ND	5.0	1.0
TETRACHLOROETHENE	ND	5.0	1.0
TOLUENE	ND	5.0	1.0
TRANS-1,2-DICHLOROETHENE	ND	5.0	1.0
TRANS-1,3-DICHLOROPROPENE	ND	5.0	1.0
TRICHLOROETHENE	ND	5.0	1.0
VINYL CHLORIDE	ND	5.0	1.0

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	87	70-140
4-BROMOFLUOROBENZENE	99	70-130
TOLUENE-D8	94	70-140

METHOD 5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : TETRA TECH, INC.	Date Collected: 05/05/08
Project : LMC BEAUMONT SITE 2	Date Received: 05/06/08
Batch No. : 08E040	Date Extracted: 05/08/08 14:52
Sample ID: 15B-59'	Date Analyzed: 05/08/08 14:52
Lab Samp ID: E040-02	Dilution Factor: 1
Lab File ID: REB101	Matrix : WATER
Ext Btch ID: V003E14	% Moisture : NA
Calib. Ref.: RDB029	Instrument ID : T-003

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5.0	1.0
1,1,2,2-TETRACHLOROETHANE	ND	5.0	1.0
1,1,2-TRICHLOROETHANE	ND	5.0	1.0
1,1-DICHLOROETHANE	ND	5.0	1.0
1,1-DICHLOROETHENE	ND	5.0	1.0
1,2-DICHLOROETHANE	ND	5.0	1.0
1,2-DICHLOROPROPANE	ND	5.0	1.0
2-BUTANONE	ND	10	5.0
2-HEXANONE	ND	10	5.0
4-METHYL-2-PENTANONE	ND	10	5.0
ACETONE	5.4J	10	5.0
BENZENE	ND	5.0	1.0
BROMODICHLOROMETHANE	ND	5.0	1.0
BROMOFORM	ND	5.0	1.0
BROMOMETHANE	ND	10	1.0
CARBON DISULFIDE	ND	5.0	1.0
CARBON TETRACHLORIDE	ND	5.0	1.0
CHLOROBENZENE	ND	5.0	1.0
CHLOROETHANE	ND	5.0	1.0
CHLOROFORM	ND	5.0	1.0
CHLOROMETHANE	ND	5.0	1.0
CIS-1,2-DICHLOROETHENE	ND	5.0	1.0
CIS-1,3-DICHLOROPROPENE	ND	5.0	1.0
DIBROMOCHLOROMETHANE	ND	5.0	1.0
ETHYLBENZENE	ND	5.0	1.0
M/P-XYLENES	ND	10	2.0
MTBE	ND	5.0	1.0
METHYLENE CHLORIDE	2.2J	10	1.0
O-XYLENE	ND	5.0	1.0
STYRENE	ND	5.0	1.0
TETRACHLOROETHENE	ND	5.0	1.0
TOLUENE	ND	5.0	1.0
TRANS-1,2-DICHLOROETHENE	ND	5.0	1.0
TRANS-1,3-DICHLOROPROPENE	ND	5.0	1.0
TRICHLOROETHENE	ND	5.0	1.0
VINYL CHLORIDE	ND	5.0	1.0

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	89	70-140
4-BROMOFLUOROBENZENE	102	70-130
TOLUENE-D8	95	70-140

QC SUMMARIES

METHOD 5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : TETRA TECH, INC.	Date Collected: NA
Project : LMC BEAUMONT SITE 2	Date Received: 05/08/08
Batch No. : 08E040	Date Extracted: 05/08/08 13:19
Sample ID: MBLK1W	Date Analyzed: 05/08/08 13:19
Lab Samp ID: V003E14B	Dilution Factor: 1
Lab File ID: REB098	Matrix : WATER
Ext Btch ID: V003E14	% Moisture : NA
Calib. Ref.: RDB029	Instrument ID : T-003

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5.0	1.0
1,1,2,2-TETRACHLOROETHANE	ND	5.0	1.0
1,1,2-TRICHLOROETHANE	ND	5.0	1.0
1,1-DICHLOROETHANE	ND	5.0	1.0
1,1-DICHLOROETHENE	ND	5.0	1.0
1,2-DICHLOROETHANE	ND	5.0	1.0
1,2-DICHLOROPROPANE	ND	5.0	1.0
2-BUTANONE	ND	10	5.0
2-HEXANONE	ND	10	5.0
4-METHYL-2-PENTANONE	ND	10	5.0
ACETONE	ND	10	5.0
BENZENE	ND	5.0	1.0
BROMODICHLOROMETHANE	ND	5.0	1.0
BROMOFORM	ND	5.0	1.0
BROMOMETHANE	ND	10	1.0
CARBON DISULFIDE	ND	5.0	1.0
CARBON TETRACHLORIDE	ND	5.0	1.0
CHLOROBENZENE	ND	5.0	1.0
CHLOROETHANE	ND	5.0	1.0
CHLOROFORM	ND	5.0	1.0
CHLOROMETHANE	ND	5.0	1.0
CIS-1,2-DICHLOROETHENE	ND	5.0	1.0
CIS-1,3-DICHLOROPROPENE	ND	5.0	1.0
DIBROMOCHLOROMETHANE	ND	5.0	1.0
ETHYLBENZENE	ND	5.0	1.0
M/P-XYLENES	ND	10	2.0
MTBE	ND	5.0	1.0
METHYLENE CHLORIDE	1.6J	10	1.0
O-XYLENE	ND	5.0	1.0
STYRENE	ND	5.0	1.0
TETRACHLOROETHENE	ND	5.0	1.0
TOLUENE	ND	5.0	1.0
TRANS-1,2-DICHLOROETHENE	ND	5.0	1.0
TRANS-1,3-DICHLOROPROPENE	ND	5.0	1.0
TRICHLOROETHENE	ND	5.0	1.0
VINYL CHLORIDE	ND	5.0	1.0

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	94	70-140
4-BROMOFLUOROBENZENE	98	70-130
TOLUENE-D8	93	70-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E040
METHOD: METHOD 5030B/8260B

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	V003E14B	V003E14L	V003E14C		
LAB FILE ID:	REB098	REB096	REB097		
DATE EXTRACTED:	05/08/0813:19	05/08/0812:17	05/08/0812:48	DATE COLLECTED:	NA
DATE ANALYZED:	05/08/0813:19	05/08/0812:17	05/08/0812:48	DATE RECEIVED:	05/08/08
PREP. BATCH:	V003E14	V003E14	V003E14		
CALIB. REF:	RDB029	RDB029	RDB029		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20.0	16.9	85	20.0	16.4	82	3	60-130	30
Benzene	ND	20.0	19.7	99	20.0	19.1	95	3	70-130	30
Chlorobenzene	ND	20.0	21.8	109	20.0	21.1	106	3	70-130	30
Toluene	ND	20.0	20.7	104	20.0	19.6	98	6	70-130	30
Trichloroethene	ND	20.0	19.5	98	20.0	18.8	94	4	70-130	30

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	50.0	46.2	92	50.0	47.3	95	70-140
4-Bromofluorobenzene	50.0	48.6	97	50.0	48.4	97	70-130
Toluene-d8	50.0	47.3	95	50.0	46.4	93	70-130

METHOD 5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : TETRA TECH, INC.	Date Collected: NA
Project : LMC BEAUMONT SITE 2	Date Received: 05/09/08
Batch No. : 08E040	Date Extracted: 05/09/08 14:15
Sample ID: MBLK2W	Date Analyzed: 05/09/08 14:15
Lab Samp ID: V003E18B	Dilution Factor: 1
Lab File ID: REB143	Matrix : WATER
Ext Btch ID: V003E18	% Moisture : NA
Calib. Ref.: RDB029	Instrument ID : T-003

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5.0	1.0
1,1,2,2-TETRACHLOROETHANE	ND	5.0	1.0
1,1,2-TRICHLOROETHANE	ND	5.0	1.0
1,1-DICHLOROETHANE	ND	5.0	1.0
1,1-DICHLOROETHENE	ND	5.0	1.0
1,2-DICHLOROETHANE	ND	5.0	1.0
1,2-DICHLOROPROPANE	ND	5.0	1.0
2-BUTANONE	ND	10	5.0
2-HEXANONE	ND	10	5.0
4-METHYL-2-PENTANONE	ND	10	5.0
ACETONE	ND	10	5.0
BENZENE	ND	5.0	1.0
BROMODICHLOROMETHANE	ND	5.0	1.0
BROMOFORM	ND	5.0	1.0
BROMOMETHANE	ND	10	1.0
CARBON DISULFIDE	ND	5.0	1.0
CARBON TETRACHLORIDE	ND	5.0	1.0
CHLOROBENZENE	ND	5.0	1.0
CHLOROETHANE	ND	5.0	1.0
CHLOROFORM	ND	5.0	1.0
CHLOROMETHANE	ND	5.0	1.0
CIS-1,2-DICHLOROETHENE	ND	5.0	1.0
CIS-1,3-DICHLOROPROPENE	ND	5.0	1.0
DIBROMOCHLOROMETHANE	ND	5.0	1.0
ETHYLBENZENE	ND	5.0	1.0
M/P-XYLENES	ND	10	2.0
MTBE	ND	5.0	1.0
METHYLENE CHLORIDE	2.3J	10	1.0
O-XYLENE	ND	5.0	1.0
STYRENE	ND	5.0	1.0
TETRACHLOROETHENE	ND	5.0	1.0
TOLUENE	ND	5.0	1.0
TRANS-1,2-DICHLOROETHENE	ND	5.0	1.0
TRANS-1,3-DICHLOROPROPENE	ND	5.0	1.0
TRICHLOROETHENE	ND	5.0	1.0
VINYL CHLORIDE	ND	5.0	1.0

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	92	70-140
4-BROMOFLUOROBENZENE	97	70-130
TOLUENE-D8	95	70-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E040
METHOD: METHOD 5030B/8260B

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK2W				
LAB SAMP ID:	V003E18B	V003E18L	V003E18C		
LAB FILE ID:	REB143	REB144	REB145		
DATE EXTRACTED:	05/09/0814:15	05/09/0814:47	05/09/0815:19	DATE COLLECTED:	NA
DATE ANALYZED:	05/09/0814:15	05/09/0814:47	05/09/0815:19	DATE RECEIVED:	05/09/08
PREP. BATCH:	V003E18	V003E18	V003E18		
CALIB. REF:	RDB029	RDB029	RDB029		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20.0	16.8	84	20.0	16.2	81	3	60-130	30
Benzene	ND	20.0	19.8	99	20.0	19.2	96	3	70-130	30
Chlorobenzene	ND	20.0	21.8	109	20.0	21.0	105	4	70-130	30
Toluene	ND	20.0	20.2	101	20.0	19.5	97	3	70-130	30
Trichloroethene	ND	20.0	19.0	95	20.0	18.3	92	4	70-130	30

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	50.0	48.6	97	50.0	46.0	92	70-140
4-Bromofluorobenzene	50.0	46.1	92	50.0	47.5	95	70-130
Toluene-d8	50.0	47.1	94	50.0	47.0	94	70-130

INITIAL CALIBRATIONS

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMAX Inc
Contract: LMC BEAUMONT SITE 2
Lab Code: EMXT Case No.:
SAS No.: SDG No.: 08E040
Lab File ID: RDB024
BFB Injection Date : 04/02/08
Instrument ID: T-003
BFB Injection Time : 11:43
GC Column:RTX502.2ID:0.32mm (mm)
Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.45
75	30.0 - 60.0% of mass 95	54.46
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.54
173	Less than 2.0% of mass 174	0.00(0.0)1
174	Greater than 50% of mass 95	68.82
175	5.0 - 9.0% of mass 174	5.16(7.5)1
176	95.0 - 101.0% of mass 174	66.46(96.6)1
177	5.0 - 9.0% of mass 176	4.45(6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD,BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	VSTD02	V003D021	RDB025	04/02/08	12:15
2	VSTD05	V003D022	RDB026	04/02/08	12:47
3	VSTD010	V003D023	RDB027	04/02/08	13:19
4	VSTD020	V003D024	RDB028	04/02/08	13:52
5	VSTD050	V003D025	RDB029	04/02/08	14:23
6	VSTD080	V003D026	RDB030	04/02/08	14:55
7	VSTD100	V003D027	RDB031	04/02/08	15:27
8	VSTD200	V003D028	RDB032	04/02/08	15:58
9	VSTD300	V003D029	RDB033	04/02/08	16:30
10	VSTD050	IV003D021	RDB036	04/02/08	18:06

2012

INITIAL_CALIBRATION - RELATIVE_RESPONSE_FACTOR

Instrument ID :T003
Beginning DateTime :04/02/08 12:15
Spike Units :PPB
IC File :RDB029

Column Spec :RTX502.2 ID :0.32MM
Ending DateTime :04/02/08 16:30
HPChem Method :V003D02

			2	5	10	20	50	80	100	200	300			
			12:15	12:47	13:19	13:52	14:23	14:55	15:27	15:58	16:30			
M	IDX	Parameters	RDB025	RDB026	RDB027	RDB028	RDB029	RDB030	RDB031	RDB032	RDB033	Av_RRF	%_RSD	Av_Rt_M
	1	1,4-DIFLUOROBENZENE	1	1	1	1	1	1	1	1	1	1	0	10.5912
	2	Dichlorodifluoromethane	0.376	0.406	0.423	0.324	0.381	0.410	0.404	0.405	0.377	0.390	7.57	3.0284
	3	Dichlorotetrafluoroethane	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
	4	Chloromethane	0.337	0.331	0.351	0.285	0.329	0.351	0.356	0.401	0.397	0.349	10.11	3.4435
	5	Vinyl chloride	0.270	0.320	0.346	0.287	0.339	0.361	0.358	0.361	0.332	0.330	9.96	3.6055
	6	Bromomethane	0.200	0.238	0.269	0.244	0.287	0.326	0.348	0.355	0.323	0.288	18.78	4.3233
	7	Chloroethane	0.146	0.169	0.185	0.150	0.176	0.197	0.196	0.196	0.178	0.177	10.72	4.4457
	8	Dichlorofluoromethane	0.707	0.777	0.771	0.773	0.773	0.728	0.741	0.764	0.719	0.751	3.58	4.5102
	9	Trichlorofluoromethane	0.526	0.607	0.663	0.507	0.621	0.679	0.679	0.696	0.645	0.625	10.87	4.8674
	10	sec-Propyl alcohol	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
4	11	Acrolein	0.025	0.029	0.031	0.035	0.032	0.033	0.033	0.031	0.030	0.031	9.84	5.5041
	12	1,1,2-Trichloro-1,2,2-trifluoroethane	0.230	0.244	0.239	0.250	0.248	0.236	0.239	0.246	0.229	0.240	3.10	5.5422
4	13	Acetone	0.100	0.085	0.098	0.104	0.086	0.085	0.081	0.077	0.076	0.088	11.63	5.6100
	14	1,1-Dichloroethene	0.601	0.633	0.615	0.595	0.578	0.544	0.554	0.568	0.533	0.580	5.78	5.8134
5	15	tert-Butyl alcohol	0.016	0.019	0.022	0.025	0.022	0.022	0.020	0.016	------	0.020	16.47	5.9505
	16	Acetonitrile	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
	17	Iodomethane	0.397	0.484	0.507	0.516	0.515	0.461	0.460	0.439	0.362	0.460	11.66	6.2946
	18	Methyl acetate	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
	19	Methylene chloride	0.416	0.383	0.366	0.367	0.354	0.337	0.336	0.349	0.354	0.362	6.90	6.5361
	20	Carbon disulfide	0.661	0.715	0.728	0.733	0.764	0.740	0.768	0.815	0.779	0.745	5.87	6.6072
5	21	Acrylonitrile	0.053	0.059	0.066	0.075	0.065	0.067	0.066	0.064	0.062	0.064	9.27	6.7065
	22	tert-Butyl methyl ether (MTBE)	0.547	0.577	0.567	0.654	0.641	0.612	0.591	0.626	0.652	0.608	6.41	6.7924
	23	trans-1,2-Dichloroethene	0.516	0.510	0.505	0.519	0.512	0.490	0.496	0.510	0.486	0.505	2.29	7.0074
	24	Isopropyl ether (DIPE)	0.819	0.922	0.939	0.962	0.940	0.936	0.929	0.943	0.937	0.925	4.45	7.4655
	25	Vinyl acetate	0.492	0.525	0.553	0.585	0.556	0.549	0.546	0.532	0.537	0.542	4.72	7.6160
	26	1,1-Dichloroethane	0.524	0.553	0.568	0.584	0.562	0.547	0.551	0.570	0.542	0.556	3.20	7.6541
	27	tert-Butyl ethyl ether (ETBE)	0.599	0.684	0.637	0.749	0.731	0.706	0.679	0.730	0.777	0.699	8.00	8.0990
4	28	2-Butanone	0.102	0.103	0.118	0.129	0.109	0.113	0.108	0.098	0.095	0.108	9.77	8.2825
	29	2,2-Dichloropropane	0.387	0.426	0.392	0.464	0.498	0.477	0.472	0.515	------	0.454	10.43	8.5329
	30	cis-1,2-Dichloroethene	0.517	0.587	0.576	0.594	0.583	0.555	0.554	0.578	0.532	0.564	4.70	8.5967
	31	tert-Butyl formate (TBF)	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
	32	Chloroform	0.716	0.790	0.784	0.801	0.789	0.748	0.737	0.769	0.736	0.763	3.91	8.8481
	33	Bromochloromethane	0.205	0.221	0.241	0.242	0.236	0.224	0.225	0.226	0.216	0.226	5.35	9.1111
	34	Tetrahydrofuran	0.054	0.057	0.058	0.061	0.055	0.056	0.052	0.048	0.053	0.055	7.15	9.1971
	35	1,1,1-Trichloroethane	0.543	0.619	0.619	0.649	0.659	0.635	0.633	0.656	0.615	0.625	5.57	9.4997
	36	1,1-Dichloropropene	0.168	0.168	0.160	0.170	0.170	0.159	0.162	0.167	0.155	0.164	3.29	9.7511
	37	Cyclohexane	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
	38	tert-Amyl methyl ether (TAME)	0.596	0.614	0.603	0.644	0.640	0.619	0.595	0.633	0.688	0.626	4.75	9.9165
	39	1,2-Dichloroethane-d4	0.557	0.482	0.543	0.474	0.502	0.515	0.488	------	------	0.509	6.19	9.9781
	40	CHLOROBENZENE-D5	1	1	1	1	1	1	1	1	1	1	0	16.0670
	41	Carbon tetrachloride	0.312	0.387	0.413	0.450	0.497	0.467	0.468	0.512	0.492	0.444	14.35	9.9314
	42	1,2-Dichloroethane	0.550	0.585	0.606	0.624	0.595	0.565	0.540	0.498	0.451	0.557	9.86	10.1298
	43	Benzene	1.133	1.166	1.163	1.187	1.205	1.146	1.173	1.256	1.191	1.180	3.07	10.1910
	44	Trichloroethene	0.343	0.361	0.360	0.368	0.378	0.360	0.358	0.379	0.359	0.363	3.04	11.1899
	45	Methylcyclohexane	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
	46	1,2-Dichloropropane	0.288	0.302	0.309	0.313	0.315	0.308	0.307	0.315	0.305	0.307	2.71	11.4711
	47	Bromodichloromethane	0.435	0.522	0.572	0.620	0.645	0.620	0.600	0.645	0.620	0.587	11.71	11.8763
	48	Dibromomethane	0.233	0.247	0.259	0.282	0.262	0.233	0.223	0.201	0.181	0.236	13.25	11.9788
	49	2-Chloroethyl vinyl ether	------	0.066	0.079	0.095	0.104	0.094	0.100	0.089	------	0.090	14.78	12.3212
4	50	4-Methyl-2-pentanone	0.246	0.268	0.289	0.320	0.284	0.282	0.269	0.258	0.264	0.276	7.79	12.3840
	51	cis-1,3-Dichloropropene	0.357	0.437	0.477	0.528	0.536	0.513	0.512	0.532	0.525	0.491	12.10	12.7825

4-3-08

2013

	52	Toluene-d8	1.385	1.135	1.198	1.003	1.157	1.234	1.195	1.212	1.142	1.185	8.53	13.2539
	53	Toluene	1.269	1.300	1.292	1.290	1.328	1.267	1.263	1.340	1.222	1.286	2.78	13.3945
	54	Ethyl methacrylate	0.312	0.343	0.385	0.413	0.393	0.389	0.370	0.362	0.379	0.372	8.05	13.5913
	55	trans-1,3-Dichloropropene	0.305	0.349	0.404	0.468	0.496	0.484	0.468	0.497	0.501	0.441	16.29	13.6591
4	56	2-Hexanone	0.153	0.169	0.199	0.221	0.194	0.198	0.184	0.173	0.175	0.185	10.92	13.9270
	57	1,1,2-Trichloroethane	0.252	0.267	0.279	0.291	0.285	0.274	0.267	0.268	0.269	0.272	4.24	13.9650
	58	1,3-Dichloropropane	0.466	0.497	0.506	0.530	0.525	0.508	0.487	0.491	0.505	0.502	3.86	14.4198
	59	Tetrachloroethene	0.272	0.279	0.284	0.291	0.299	0.285	0.286	0.299	0.287	0.287	3.05	14.6084
	60	Dibromochloromethane	0.250	0.293	0.349	0.403	0.428	0.418	0.407	0.424	0.435	0.379	17.64	14.9689
	61	1,2-Dibromoethane	0.265	0.277	0.301	0.323	0.306	0.289	0.273	0.274	0.284	0.288	6.43	15.3509
	62	1-Chlorohexane	0.560	0.560	0.557	0.589	0.608	0.572	0.571	0.609	0.576	0.578	3.43	15.5792
	63	Chlorobenzene	0.886	0.876	0.889	0.911	0.932	0.880	0.881	0.918	0.889	0.896	2.20	16.1431
	64	1,1,1,2-Tetrachloroethane	0.257	0.290	0.317	0.342	0.361	0.352	0.343	0.361	0.359	0.331	11.00	16.2043
	65	Ethylbenzene	1.703	1.674	1.668	1.706	1.751	1.679	1.699	1.775	1.382	1.671	6.82	16.2159
2	66	m-Xylene & p-Xylene	1.370	1.356	1.343	1.376	1.414	1.347	1.359	1.168	------	1.342	5.49	16.3546
	67	o-Xylene	1.397	1.419	1.420	1.456	1.473	1.386	1.388	1.454	1.290	1.409	3.86	17.2181
	68	Styrene	0.951	0.940	0.964	0.995	1.009	0.951	0.947	0.996	0.970	0.969	2.58	17.2760
	69	1,2-DICHLOROBENZENE-D4	1	1	1	1	1	1	1	1	1	1	0	20.7903
	70	Isopropylbenzene	3.262	3.199	3.039	3.182	3.227	3.118	3.203	3.443	2.700	3.153	6.41	17.8945
	71	Bromoform	0.229	0.287	0.338	0.404	0.435	0.460	0.448	0.481	0.508	0.399	23.63	17.9689
	72	1,1,2,2-Tetrachloroethane	0.754	0.711	0.754	0.796	0.769	0.774	0.767	0.760	0.783	0.763	3.09	18.1856
	73	4-Bromofluorobenzene	------	1.121	1.147	1.000	1.127	1.185	1.155	1.144	1.128	1.126	4.85	18.3551
	74	1,2,3-Trichloropropane	0.137	0.147	0.155	0.159	0.146	0.145	0.138	0.139	0.142	0.145	5.15	18.4386
	75	trans-1,4-Dichloro-2-butene	------	0.145	0.157	0.193	0.210	0.219	0.213	0.233	0.260	0.204	18.66	18.5281
	76	n-Propylbenzene	4.363	4.249	4.110	4.375	4.495	4.405	4.527	4.049	------	4.322	3.99	18.5984
	77	Bromobenzene	0.861	0.833	0.800	0.834	0.857	0.828	0.836	0.861	0.848	0.840	2.32	18.7164
	78	1,3,5-Trimethylbenzene	2.743	2.620	2.529	2.673	2.762	2.639	2.702	2.862	2.360	2.654	5.47	18.8520
	79	2-Chlorotoluene	2.438	2.498	2.350	2.442	2.457	2.462	2.370	2.573	2.017	2.401	6.58	18.9149
	80	4-Chlorotoluene	2.792	2.594	2.706	2.611	2.767	2.516	2.737	2.706	2.158	2.621	7.45	18.9860
	81	tert-Butylbenzene	2.692	2.521	2.409	2.621	2.718	2.573	2.609	2.772	2.444	2.595	4.72	19.4176
	82	1,2,4-Trimethylbenzene	2.898	2.696	2.590	2.768	2.832	2.707	2.803	2.864	2.327	2.721	6.44	19.4805
	83	sec-Butylbenzene	3.820	3.443	3.297	3.672	3.864	3.718	3.747	3.517	------	3.635	5.43	19.7408
	84	p-Isopropyltoluene	3.017	2.741	2.668	2.985	3.115	2.908	2.984	3.104	2.267	2.865	9.44	19.9270
	85	1,3-Dichlorobenzene	1.656	1.602	1.569	1.638	1.678	1.615	1.642	1.738	1.666	1.645	2.96	20.1139
	86	1,4-Dichlorobenzene	1.611	1.549	1.548	1.607	1.667	1.589	1.618	1.709	1.651	1.617	3.28	20.2644
	87	n-Butylbenzene	3.324	2.887	2.652	3.163	3.335	3.206	3.278	3.306	2.409	3.062	10.98	20.5340
	88	1,2-Dichlorobenzene	1.516	1.444	1.436	1.494	1.525	1.457	1.473	1.532	1.493	1.486	2.37	20.8317
	89	1,2-Dibromo-3-chloropropane	------	0.098	0.113	0.132	0.140	0.145	0.142	0.145	0.153	0.133	14.12	21.9813
	90	1,2,4-Trichlorobenzene	0.755	0.759	0.728	0.851	0.909	0.859	0.903	0.925	0.879	0.841	8.83	23.3206
	91	Hexachlorobutadiene	0.479	0.415	0.410	0.520	0.565	0.529	0.546	0.583	0.538	0.509	12.18	23.5141
	92	Naphthalene	1.347	1.364	1.393	1.659	1.735	1.653	1.767	1.779	1.767	1.607	11.52	23.7688
	93	1,2,3-Trichlorobenzene	0.722	0.631	0.626	0.741	0.778	0.741	0.774	0.784	0.755	0.728	8.23	24.1690

Spike Amount = Nominal Amount * M

Ave_%RSD : 7.7 Max_%RSD : 23.6

Use Least Square Linear Regression with weighting factor of inverse concentration for comps with %_RSD > 15

Resp_Ratio = xo + x1 * Amt_Ratio

IDX	Parameter	x0	x1	CCF
6	Bromomethane	-0.00936	0.33450	0.9977
15	tert-Butyl alcohol	0.00152	0.01857	0.9847*
55	trans-1,3-Dichloropropene	-0.01103	0.49662	0.9997
60	Dibromochloromethane	-0.01009	0.42901	0.9997
71	Bromoform	-0.01750	0.48660	0.9985
75	trans-1,4-Dichloro-2-butene	-0.01602	0.24394	0.9969

Use Quadratic Regression of inv conc w.f. for comps of linear reg of inv conc w.f. with CCF < .995

Resp_Ratio = xo + x1 * Amt_Ratio + x2 * Amt_Ratio * Amt_Ratio

IDX	Parameter	x0	x1	x2	CCF2
15	tert-Butyl alcohol	-0.00205	0.02544	-0.00049	0.9993

PW 4-3-08

2014

SECOND SOURCE VERIFICATION

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08D02\RDB036.D Vial: 14
Acq On : 2 Apr 2008 6:06 pm Operator: CGM
Sample : IVO03D021 50ppb Inst : TO03
Misc : 200ppbKet-AA/50ppb8260/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	1,4-DIFLUOROBENZENE	50.000	50.000	0.0	121	0.01
2	T	Dichlorodifluoromethane	50.000	52.386	-4.8	129	0.00
3	T	Dichlorotetrafluoroethane	-1.000	0.000	0.0	0	0.00
4	P,T	Chloromethane	50.000	48.626	2.7	124	0.00
5	C,T	Vinyl chloride	50.000	52.995	-6.0	125	0.01
6	T	Bromomethane	50.000	49.277	1.4	135	0.00
7	T	Chloroethane	50.000	54.825	-9.7	133	0.00
8	T	Dichlorofluoromethane	50.000	49.878	0.2	117	0.00
9	T	Trichlorofluoromethane	50.000	53.031	-6.1	129	0.00
10	T	sec-Propyl alcohol	-1.000	0.000	0.0	0	0.00
11	T	Acrolein	200.000	208.839	-4.4	121	0.00
12	T	1,1,2-Trichloro-1,2,2-trifl	50.000	50.339	-0.7	118	0.01
13	T	Acetone	200.000	185.484	7.3	115	0.01
14	C,T	1,1-Dichloroethene	50.000	48.225	3.5	117	0.00
15	T	tert-Butyl alcohol	250.000	220.672	11.7	109	0.00
16	T	Acetonitrile	-1.000	0.000	0.0	0	0.00
17	T	Iodomethane	50.000	52.873	-5.7	114	0.00
18	T	Methyl acetate	-1.000	0.000	0.0	128	0.00
19	T	Methylene chloride	50.000	48.314	3.4	119	0.00
20	T	Carbon disulfide	50.000	51.901	-3.8	122	0.00
21	T	Acrylonitrile	250.000	252.108	-0.8	120	0.01
22	T	tert-Butyl methyl ether (MT	50.000	44.788	10.4	102	0.00
23	T	trans-1,2-Dichloroethene	50.000	50.255	-0.5	119	0.00
24	T	Isopropyl ether (DIPE)	50.000	51.156	-2.3	121	0.01
25	T	Vinyl acetate	50.000	49.275	1.5	116	0.01
26	P,T	1,1-Dichloroethane	50.000	49.760	0.5	119	0.00
27	T	tert-Butyl ethyl ether (ETB	50.000	44.949	10.1	104	0.00
28	T	2-Butanone	200.000	193.397	3.3	116	0.00
29	T	2,2-Dichloropropane	50.000	47.598	4.8	105	0.00
30	T	cis-1,2-Dichloroethene	50.000	49.807	0.4	116	0.01
31	T	tert-Butyl formate (TBF)	-1.000	0.000	0.0	0	0.00
32	C,T	Chloroform	50.000	49.476	1.0	115	0.01
33	T	Bromochloromethane	50.000	49.473	1.1	115	0.00
34	T	Tetrahydrofuran	50.000	49.510	1.0	120	0.01
35	T	1,1,1-Trichloroethane	50.000	50.728	-1.5	116	0.00
36	T	1,1-Dichloropropene	50.000	50.224	-0.4	117	0.00
37	T	Cyclohexane	-1.000	0.000	0.0	0	0.00
38	T	tert-Amyl methyl ether (TAM	50.000	43.955	12.1	104	0.00
39	S	1,2-Dichloroethane-d4	50.000	47.840	4.3	117	0.01
40	I	CHLOROBENZENE-D5	50.000	50.000	0.0	120	0.01

(#) = Out of Range

2016

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08D02\RDB036.D Vial: 14
Acq On : 2 Apr 2008 6:06 pm Operator: CGM
Sample : IVO03D021 50ppb Inst : TO03
Misc : 200ppbKet-AA/50ppb8260/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
41	T	Carbon tetrachloride	50.000	52.935	-5.9	113	0.00
42	T	1,2-Dichloroethane	50.000	51.006	-2.0	114	0.01
43	T	Benzene	50.000	50.897	-1.8	119	0.00
44	T	Trichloroethene	50.000	51.756	-3.5	119	0.00
45	T	Methylcyclohexane	-1.000	0.000	0.0	0	0.00
46	C,T	1,2-Dichloropropane	50.000	52.439	-4.9	122	0.00
47	T	Bromodichloromethane	50.000	53.295	-6.6	116	0.00
48	T	Dibromomethane	50.000	52.791	-5.6	114	0.00
49	T	2-Chloroethyl vinyl ether	50.000	42.681	14.6	88	0.00
50	T	4-Methyl-2-pentanone	200.000	197.912	1.0	115	0.00
51	T	cis-1,3-Dichloropropene	50.000	53.603	-7.2	118	0.00
52	S	Toluene-d8	50.000	50.204	-0.4	123	0.00
53	C,T	Toluene	50.000	51.506	-3.0	119	0.00
54	T	Ethyl methacrylate	50.000	52.498	-5.0	119	0.00
55	T	trans-1,3-Dichloropropene	50.000	48.109	3.8	113	0.01
56	T	2-Hexanone	200.000	202.767	-1.4	116	0.01
57	T	1,1,2-Trichloroethane	50.000	50.937	-1.9	117	0.00
58	T	1,3-Dichloropropane	50.000	50.839	-1.7	116	0.00
59	T	Tetrachloroethene	50.000	51.634	-3.3	119	0.01
60	T	Dibromochloromethane	50.000	48.839	2.3	114	0.01
61	T	1,2-Dibromoethane	50.000	49.808	0.4	112	0.00
62	T	1-Chlorohexane	50.000	51.729	-3.5	118	0.01
63	P	Chlorobenzene	50.000	51.270	-2.5	118	0.01
64	T	1,1,1,2-Tetrachloroethane	50.000	53.072	-6.1	117	0.01
65	C,T	Ethylbenzene	50.000	51.838	-3.7	118	0.00
66	T	m-Xylene & p-Xylene	100.000	103.779	-3.8	118	0.00
67	T	o-Xylene	50.000	50.995	-2.0	117	0.00
68	T	Styrene	50.000	50.938	-1.9	117	0.01
69	I	1,2-DICHLOROBENZENE-D4	50.000	50.000	0.0	114	0.00
70	T	Isopropylbenzene	50.000	52.190	-4.4	117	0.00
71	P,T	Bromoform	50.000	47.161	5.7	116	0.00
72	P,T	1,1,2,2-Tetrachloroethane	50.000	50.237	-0.5	114	0.00
73	S	4-Bromofluorobenzene	50.000	50.901	-1.8	116	0.00
74	T	1,2,3-Trichloropropane	50.000	49.105	1.8	112	0.00
75	T	trans-1,4-Dichloro-2-butene	50.000	44.496	11.0	110	0.00
76	T	n-Propylbenzene	50.000	53.292	-6.6	117	0.01
77	T	Bromobenzene	50.000	51.123	-2.2	115	0.01
78	T	1,3,5-Trimethylbenzene	50.000	52.185	-4.4	115	0.01
79	T	2-Chlorotoluene	50.000	51.390	-2.8	115	0.00
80	T	4-Chlorotoluene	50.000	54.244	-8.5	118	0.01

(#) = Out of Range

4-3-08

2017

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08D02\RDB036.D Vial: 14
Acq On : 2 Apr 2008 6:06 pm Operator: CGM
Sample : IVO03D021 50ppb Inst : TO03
Misc : 200ppbKet-AA/50ppb8260/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
81	T	tert-Butylbenzene	50.000	51.983	-4.0	114	0.01
82	T	1,2,4-Trimethylbenzene	50.000	51.427	-2.9	113	0.00
83	T	sec-Butylbenzene	50.000	53.329	-6.7	115	0.00
84	T	p-Isopropyltoluene	50.000	53.475	-7.0	113	0.00
85	T	1,3-Dichlorobenzene	50.000	50.885	-1.8	114	0.00
86	T	1,4-Dichlorobenzene	50.000	51.244	-2.5	114	0.00
87	T	n-Butylbenzene	50.000	53.378	-6.8	112	0.01
88	T	1,2-Dichlorobenzene	50.000	50.540	-1.1	113	0.01
89	T	1,2-Dibromo-3-chloropropane	50.000	48.566	2.9	106	0.00
90	T	1,2,4-Trichlorobenzene	50.000	50.962	-1.9	108	0.00
91	T	Hexachlorobutadiene	50.000	53.591	-7.2	111	0.00
92	T	Naphthalene	50.000	47.596	4.8	101	0.00
93	T	1,2,3-Trichlorobenzene	50.000	50.575	-1.2	108	0.00

4-3-08

2018

DAILY CALIBRATIONS

2019

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

BROMOFLUOROBENZENE (BFB)

Lab Name: EMAX Inc | Contract: LMC BEAUMONT SITE 2

Lab Code: EMXT Case No.: | SAS No.: SDG No.: 08E040

Lab File ID: REB089 | BFB Injection Date : 05/08/08

Instrument ID: T-003 | BFB Injection Time : 08:35

GC Column:RTX502.2ID:0.32mm (mm) | Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.72
75	30.0 - 60.0% of mass 95	53.02
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.54
173	Less than 2.0% of mass 174	0.00(0.0)1
174	Greater than 50% of mass 95	61.06
175	5.0 - 9.0% of mass 174	4.58(7.5)1
176	95.0 - 101.0% of mass 174	59.28(97.1)1
177	5.0 - 9.0% of mass 176	3.93(6.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD,BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	VSTD050	CV003D0263	REB090	05/08/08	09:06
2	MBLK1W	V003E14B	REB098	05/08/08	13:19
3	LCS1W	V003E14L	REB096	05/08/08	12:17
4	LCD1W	V003E14C	REB097	05/08/08	12:48
5	15B-59'	E040-02	REB101	05/08/08	14:52

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMAX Inc
Lab Code: EMXT
Lab File ID: RDB029
Instrument ID: T-003
GC Column: RTX502.2 ID: 0.32mm (mm)

Project: LMC BEAUMONT SITE 2
SDG No.: 08E040
Date Analyzed: 04/02/08
Time Analyzed: 14:23
Heated Purge: (Y/N) Y

		IS1(DBF)		IS2(CBZ)		IS3(DCB)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	2354819	10.58	2255516	16.06	1164917	20.79
	UPPER LIMIT	4709638	11.08	4511032	16.56	2329834	21.29
	LOWER LIMIT	1177410	10.08	1127758	15.56	582459	20.29
	SAMPLE ID						
1	VSTD050	2530355	10.60	2442165	16.08	1372145	20.79
2	MBLK1W	2839616	10.59	2925753	16.07	1505338	20.80
3	LCS1W	2852132	10.61	2807154	16.10	1497791	20.82
4	LCD1W	2742053	10.59	2781219	16.07	1485878	20.79
5	15B-59'	2802434	10.61	2799640	16.08	1360643	20.80

IS1 (DFB) = 1,4-Difluorobenzene
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DCB) = 1,2-Dichlorobenzene-d4

AREA UPPER LIMIT = + 100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
AREA UPPER LIMIT = + 50% of surrogate area
AREA LOWER LIMIT = - 50% of surrogate area

Column used to flag internal standard area values with an asterisk
* Values outside of QC limits.

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E08\REB090.D Vial: 2
Acq On : 8 May 2008 9:06 am Operator: CGM
Sample : CVO03D0263 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	1,4-DIFLUOROBENZENE	50.000	50.000	0.0	107	0.02
2	T	Dichlorodifluoromethane	50.000	49.317	1.4	108	0.00
3	T	Dichlorotetrafluoroethane	-1.000	0.000	0.0	0	0.00
4	P,T	Chloromethane	50.000	42.317	15.4	96	-0.01
5	C,T	Vinyl chloride	50.000	47.754	4.5	100	0.02
6	T	Bromomethane	50.000	46.820	6.4	114	0.02
7	T	Chloroethane	50.000	59.690	-19.4	129	0.02
8	T	Dichlorofluoromethane	50.000	49.515	1.0	103	0.02
9	T	Trichlorofluoromethane	50.000	61.435	-22.9#	133	0.02
10	T	sec-Propyl alcohol	-1.000	0.000	0.0	0	0.00
11	T	Acrolein	200.000	144.284	27.9#	74	0.02
12	T	1,1,2-Trichloro-1,2,2-trifl	50.000	46.552	6.9	97	0.02
13	T	Acetone	200.000	173.546	13.2	96	0.03
14	C,T	1,1-Dichloroethene	50.000	43.005	14.0	93	0.02
15	T	tert-Butyl alcohol	250.000	221.950	11.2	98	0.02
16	T	Acetonitrile	-1.000	0.000	0.0	0	0.00
17	T	Iodomethane	50.000	41.970	16.1	81	0.02
18	T	Methyl acetate	-1.000	0.000	0.0	183	0.02
19	T	Methylene chloride	50.000	50.934	-1.9	112	0.02
20	T	Carbon disulfide	50.000	45.846	8.3	96	0.02
21	T	Acrylonitrile	250.000	255.994	-2.4	108	0.02
22	T	tert-Butyl methyl ether (MT	50.000	41.960	16.1	85	0.02
23	T	trans-1,2-Dichloroethene	50.000	42.984	14.0	91	0.02
24	T	Isopropyl ether (DIPE)	50.000	54.255	-8.5	115	0.02
25	T	Vinyl acetate	50.000	49.415	1.2	103	0.02
26	P,T	1,1-Dichloroethane	50.000	51.860	-3.7	110	0.02
27	T	tert-Butyl ethyl ether (ETB	50.000	44.233	11.5	91	0.02
28	T	2-Butanone	200.000	188.312	5.8	100	0.02
29	T	2,2-Dichloropropane	50.000	49.061	1.9	96	0.02
30	T	cis-1,2-Dichloroethene	50.000	51.863	-3.7	108	0.02
31	T	tert-Butyl formate (TBF)	-1.000	0.000	0.0	0	0.00
32	C,T	Chloroform	50.000	53.049	-6.1	110	0.02
33	T	Bromochloromethane	50.000	56.185	-12.4	116	0.02
34	T	Tetrahydrofuran	50.000	59.400	-18.8	128	0.02
35	T	1,1,1-Trichloroethane	50.000	49.977	0.0	102	0.02
36	T	1,1-Dichloropropene	50.000	44.710	10.6	93	0.02
37	T	Cyclohexane	-1.000	0.000	0.0	0	0.00
38	T	tert-Amyl methyl ether (TAM	50.000	43.514	13.0	91	0.02
39	S	1,2-Dichloroethane-d4	50.000	47.312	5.4	103	0.02
40	I	CHLOROBENZENE-D5	50.000	50.000	0.0	108	0.02

(#) = Out of Range

2022

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E08\REB090.D Vial: 2
Acq On : 8 May 2008 9:06 am Operator: CGM
Sample : CVO03D0263 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
41	T	Carbon tetrachloride	50.000	50.495	-1.0	98	0.02
42	T	1,2-Dichloroethane	50.000	51.305	-2.6	104	0.02
43	T	Benzene	50.000	49.848	0.3	106	0.00
44	T	Trichloroethene	50.000	48.990	2.0	102	0.02
45	T	Methylcyclohexane	-1.000	0.000	0.0	0	0.00
46	C,T	1,2-Dichloropropane	50.000	58.046	-16.1	122	0.00
47	T	Bromodichloromethane	50.000	56.023	-12.0	110	0.02
48	T	Dibromomethane	50.000	54.084	-8.2	106	0.02
49	T	2-Chloroethyl vinyl ether	50.000	40.662	18.7	76	0.02
50	T	4-Methyl-2-pentanone	200.000	196.898	1.6	103	0.02
51	T	cis-1,3-Dichloropropene	50.000	56.280	-12.6	112	0.02
52	S	Toluene-d8	50.000	48.050	3.9	107	0.02
53	C,T	Toluene	50.000	50.902	-1.8	107	0.02
54	T	Ethyl methacrylate	50.000	57.396	-14.8	118	0.02
55	T	trans-1,3-Dichloropropene	50.000	50.726	-1.5	108	0.02
56	T	2-Hexanone	200.000	200.341	-0.2	104	0.02
57	T	1,1,2-Trichloroethane	50.000	56.686	-13.4	117	0.02
58	T	1,3-Dichloropropane	50.000	56.965	-13.9	118	0.02
59	T	Tetrachloroethene	50.000	45.956	8.1	96	0.02
60	T	Dibromochloromethane	50.000	53.192	-6.4	113	0.02
61	T	1,2-Dibromoethane	50.000	55.702	-11.4	114	0.02
62	T	1-Chlorohexane	50.000	52.587	-5.2	108	0.02
63	P	Chlorobenzene	50.000	54.477	-9.0	113	0.02
64	T	1,1,1,2-Tetrachloroethane	50.000	56.925	-13.8	113	0.02
65	C,T	Ethylbenzene	50.000	53.140	-6.3	110	0.02
66	T	m-Xylene & p-Xylene	100.000	102.803	-2.8	106	0.02
67	T	o-Xylene	50.000	51.525	-3.0	107	0.00
68	T	Styrene	50.000	56.205	-12.4	117	0.02
69	I	1,2-DICHLOROBENZENE-D4	50.000	50.000	0.0	118	0.00
70	T	Isopropylbenzene	50.000	49.240	1.5	113	0.02
71	P,T	Bromoform	50.000	46.389	7.2	118	0.02
72	P,T	1,1,2,2-Tetrachloroethane	50.000	54.424	-8.8	127	0.00
73	S	4-Bromofluorobenzene	50.000	46.484	7.0	109	0.02
74	T	1,2,3-Trichloropropane	50.000	54.415	-8.8	128	0.02
75	T	trans-1,4-Dichloro-2-butene	50.000	47.619	4.8	121	0.00
76	T	n-Propylbenzene	50.000	49.143	1.7	111	0.02
77	T	Bromobenzene	50.000	46.979	6.0	108	0.02
78	T	1,3,5-Trimethylbenzene	50.000	48.305	3.4	109	0.02
79	T	2-Chlorotoluene	50.000	46.020	8.0	106	0.02
80	T	4-Chlorotoluene	50.000	48.085	3.8	107	0.02

(#) = Out of Range

2023

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E08\REB090.D Vial: 2
Acq On : 8 May 2008 9:06 am Operator: CGM
Sample : CVO03D0263 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
81	T	tert-Butylbenzene	50.000	51.338	-2.7	115	0.02
82	T	1,2,4-Trimethylbenzene	50.000	48.172	3.7	109	0.00
83	T	sec-Butylbenzene	50.000	52.922	-5.8	117	0.02
84	T	p-Isopropyltoluene	50.000	51.464	-2.9	112	0.02
85	T	1,3-Dichlorobenzene	50.000	48.182	3.6	111	0.02
86	T	1,4-Dichlorobenzene	50.000	51.099	-2.2	117	0.02
87	T	n-Butylbenzene	50.000	52.496	-5.0	114	0.02
88	T	1,2-Dichlorobenzene	50.000	52.625	-5.3	121	0.02
89	T	1,2-Dibromo-3-chloropropane	50.000	54.214	-8.4	121	0.00
90	T	1,2,4-Trichlorobenzene	50.000	47.656	4.7	104	0.02
91	T	Hexachlorobutadiene	50.000	49.335	1.3	105	0.00
92	T	Naphthalene	50.000	49.235	1.5	107	0.02
93	T	1,2,3-Trichlorobenzene	50.000	48.575	2.8	107	0.00

2024

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E08\REB090.D Vial: 2
Acq On : 8 May 2008 9:06 am Operator: CGM
Sample : CVO03D0263 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	107	0.02
2	T	Dichlorodifluoromethane	0.390	0.384	1.5	108	0.00
3	T	Dichlorotetrafluoroethane	0.000	0.000	0.0	0#	0.00
4	P,T	Chloromethane	0.349	0.295	15.5	96	-0.01
5	C,T	Vinyl chloride	0.330	0.316	4.2	100	0.02
6	T	Bromomethane	0.288	0.304	-5.6	114	0.02
7	T	Chloroethane	0.177	0.212	-19.8	129	0.02
8	T	Dichlorofluoromethane	0.751	0.743	1.1	103	0.02
9	T	Trichlorofluoromethane	0.625	0.768	-22.9#	133	0.02
10	T	sec-Propyl alcohol	0.000	0.000	0.0	0#	0.00
11	T	Acrolein	0.031	0.022	29.0#	74	0.02
12	T	1,1,2-Trichloro-1,2,2-trifl	0.240	0.224	6.7	97	0.02
13	T	Acetone	0.088	0.076	13.6	96	0.03
14	C,T	1,1-Dichloroethene	0.580	0.499	14.0	93	0.02
15	T	tert-Butyl alcohol	0.020	0.020	0.0	98	0.02
16	T	Acetonitrile	0.000	0.000	0.0	0#	0.00
17	T	Iodomethane	0.460	0.386	16.1	81	0.02
18	T	Methyl acetate	0.000	0.000	0.0	183	0.02
19	T	Methylene chloride	0.362	0.369	-1.9	112	0.02
20	T	Carbon disulfide	0.745	0.683	8.3	96	0.02
21	T	Acrylonitrile	0.064	0.066	-3.1	108	0.02
22	T	tert-Butyl methyl ether (MT	0.608	0.510	16.1	85	0.02
23	T	trans-1,2-Dichloroethene	0.505	0.434	14.1	91	0.02
24	T	Isopropyl ether (DIPE)	0.925	1.004	-8.5	115	0.02
25	T	Vinyl acetate	0.542	0.535	1.3	103	0.02
26	P,T	1,1-Dichloroethane	0.556	0.576	-3.6	110	0.02
27	T	tert-Butyl ethyl ether (ETB	0.699	0.618	11.6	91	0.02
28	T	2-Butanone	0.108	0.102	5.6	100	0.02
29	T	2,2-Dichloropropane	0.454	0.445	2.0	96	0.02
30	T	cis-1,2-Dichloroethene	0.564	0.585	-3.7	108	0.02
31	T	tert-Butyl formate (TBF)	0.000	0.000	0.0	0#	0.00
32	C,T	Chloroform	0.763	0.810	-6.2	110	0.02
33	T	Bromochloromethane	0.226	0.254	-12.4	116	0.02
34	T	Tetrahydrofuran	0.055	0.065	-18.2	128	0.02
35	T	1,1,1-Trichloroethane	0.625	0.625	0.0	102	0.02
36	T	1,1-Dichloropropene	0.164	0.147	10.4	93	0.02
37	T	Cyclohexane	0.000	0.000	0.0	0#	0.00
38	T	tert-Amyl methyl ether (TAM	0.626	0.545	12.9	91	0.02
39	S	1,2-Dichloroethane-d4	0.509	0.482	5.3	103	0.02
40	I	CHLOROBENZENE-D5	1.000	1.000	0.0	108	0.02

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E08\REB090.D Vial: 2
Acq On : 8 May 2008 9:06 am Operator: CGM
Sample : CVO03D0263 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
41	T	Carbon tetrachloride	0.444	0.449	-1.1	98	0.02
42	T	1,2-Dichloroethane	0.557	0.572	-2.7	104	0.02
43	T	Benzene	1.180	1.176	0.3	106	0.00
44	T	Trichloroethene	0.363	0.356	1.9	102	0.02
45	T	Methylcyclohexane	0.000	0.000	0.0	0#	0.00
46	C,T	1,2-Dichloropropane	0.307	0.356	-16.0	122	0.00
47	T	Bromodichloromethane	0.587	0.657	-11.9	110	0.02
48	T	Dibromomethane	0.236	0.255	-8.1	106	0.02
49	T	2-Chloroethyl vinyl ether	0.090	0.073	18.9	76	0.02
50	T	4-Methyl-2-pentanone	0.276	0.271	1.8	103	0.02
51	T	cis-1,3-Dichloropropene	0.491	0.552	-12.4	112	0.02
52	S	Toluene-d8	1.185	1.138	4.0	107	0.02
53	C,T	Toluene	1.286	1.309	-1.8	107	0.02
54	T	Ethyl methacrylate	0.372	0.427	-14.8	118	0.02
55	T	trans-1,3-Dichloropropene	0.441	0.493	-11.8	108	0.02
56	T	2-Hexanone	0.185	0.186	-0.5	104	0.02
57	T	1,1,2-Trichloroethane	0.272	0.309	-13.6	117	0.02
58	T	1,3-Dichloropropane	0.502	0.572	-13.9	118	0.02
59	T	Tetrachloroethene	0.287	0.263	8.4	96	0.02
60	T	Dibromochloromethane	0.379	0.446	-17.7	113	0.02
61	T	1,2-Dibromoethane	0.288	0.321	-11.5	114	0.02
62	T	1-Chlorohexane	0.578	0.608	-5.2	108	0.02
63	P	Chlorobenzene	0.896	0.976	-8.9	113	0.02
64	T	1,1,1,2-Tetrachloroethane	0.331	0.377	-13.9	113	0.02
65	C,T	Ethylbenzene	1.671	1.776	-6.3	110	0.02
66	T	m-Xylene & p-Xylene	1.342	1.379	-2.8	106	0.02
67	T	o-Xylene	1.409	1.452	-3.1	107	0.00
68	T	Styrene	0.969	1.090	-12.5	117	0.02
69	I	1,2-DICHLOROBENZENE-D4	1.000	1.000	0.0	118	0.00
70	T	Isopropylbenzene	3.153	3.105	1.5	113	0.02
71	P,T	Bromoform	0.399	0.434	-8.8	118	0.02
72	P,T	1,1,2,2-Tetrachloroethane	0.763	0.831	-8.9	127	0.00
73	S	4-Bromofluorobenzene	1.126	1.047	7.0	109	0.02
74	T	1,2,3-Trichloropropane	0.145	0.158	-9.0	128	0.02
75	T	trans-1,4-Dichloro-2-butene	0.204	0.216	-5.9	121	0.00
76	T	n-Propylbenzene	4.322	4.247	1.7	111	0.02
77	T	Bromobenzene	0.840	0.789	6.1	108	0.02
78	T	1,3,5-Trimethylbenzene	2.654	2.564	3.4	109	0.02
79	T	2-Chlorotoluene	2.401	2.210	8.0	106	0.02
80	T	4-Chlorotoluene	2.621	2.520	3.9	107	0.02

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E08\REB090.D Vial: 2
Acq On : 8 May 2008 9:06 am Operator: CGM
Sample : CVO03D0263 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
81	T	tert-Butylbenzene	2.595	2.665	-2.7	115	0.02
82	T	1,2,4-Trimethylbenzene	2.721	2.621	3.7	109	0.00
83	T	sec-Butylbenzene	3.635	3.847	-5.8	117	0.02
84	T	p-Isopropyltoluene	2.865	2.949	-2.9	112	0.02
85	T	1,3-Dichlorobenzene	1.645	1.585	3.6	111	0.02
86	T	1,4-Dichlorobenzene	1.617	1.652	-2.2	117	0.02
87	T	n-Butylbenzene	3.062	3.215	-5.0	114	0.02
88	T	1,2-Dichlorobenzene	1.486	1.564	-5.2	121	0.02
89	T	1,2-Dibromo-3-chloropropane	0.133	0.145	-9.0	121	0.00
90	T	1,2,4-Trichlorobenzene	0.841	0.801	4.8	104	0.02
91	T	Hexachlorobutadiene	0.509	0.503	1.2	105	0.00
92	T	Naphthalene	1.607	1.583	1.5	107	0.02
93	T	1,2,3-Trichlorobenzene	0.728	0.707	2.9	107	0.00

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMAX Inc
Contract: LMC BEAUMONT SITE 2
Lab Code: EMXT Case No.:
SAS No.: SDG No.: 08E040
Lab File ID: REB137
BFB Injection Date : 05/09/08
Instrument ID: T-003
BFB Injection Time : 10:32
GC Column:RTX502.2ID:0.32mm (mm)
Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.55
75	30.0 - 60.0% of mass 95	52.96
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.66
173	Less than 2.0% of mass 174	0.00(0.0)1
174	Greater than 50% of mass 95	65.25
175	5.0 - 9.0% of mass 174	4.79(7.3)1
176	95.0 - 101.0% of mass 174	64.50(98.8)1
177	5.0 - 9.0% of mass 176	4.17(6.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD,BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	VSTD050	CV003D0267	REB138	05/09/08	11:36
2	MBLK2W	V003E18B	REB143	05/09/08	14:15
3	LCS2W	V003E18L	REB144	05/09/08	14:47
4	LCD2W	V003E18C	REB145	05/09/08	15:19
5	LTB-050508	E040-01R	REB146	05/09/08	15:50

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMAX Inc
Lab Code: EMXT
Lab File ID: RDB029
Instrument ID: T-003
GC Column: RTX502.2 ID: 0.32mm (mm)

Project: LMC BEAUMONT SITE 2
SDG No.: 08E040
Date Analyzed: 04/02/08
Time Analyzed: 14:23
Heated Purge: (Y/N) Y

		IS1(DBF)		IS2(CBZ)		IS3(DCB)	
		AREA	# RT #	AREA	# RT #	AREA	# RT #
	12 HOUR STD	2354819	10.58	2255516	16.06	1164917	20.79
	UPPER LIMIT	4709638	11.08	4511032	16.56	2329834	21.29
	LOWER LIMIT	1177410	10.08	1127758	15.56	582459	20.29
	SAMPLE ID						
1	VSTD050	2918645	10.61	2982284	16.09	1580344	20.80
2	MBLK2W	3216947	10.61	3242088	16.08	1644345	20.80
3	LCS2W	2947110	10.61	2994109	16.09	1724044	20.80
4	LCD2W	3035728	10.61	3101495	16.08	1689671	20.81
5	LTB-050508	2753233	10.61	2730814	16.08	1364090	20.80

IS1 (DFB) = 1,4-Difluorobenzene
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DCB) = 1,2-Dichlorobenzene-d4

AREA UPPER LIMIT = + 100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
AREA UPPER LIMIT = + 50% of surrogate area
AREA LOWER LIMIT = - 50% of surrogate area

Column used to flag internal standard area values with an asterisk
* Values outside of QC limits.

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E09\REB138.D Vial: 3
Acq On : 9 May 2008 11:36 am Operator: CGM
Sample : CVO03D0267 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	1,4-DIFLUOROBENZENE	50.000	50.000	0.0	124	0.03
2	T	Dichlorodifluoromethane	50.000	46.173	7.7	117	0.00
3	T	Dichlorotetrafluoroethane	-1.000	0.000	0.0	0	0.00
4	P,T	Chloromethane	50.000	41.154	17.7	108	-0.02
5	C,T	Vinyl chloride	50.000	45.441	9.1	110	0.01
6	T	Bromomethane	50.000	47.437	5.1	133	0.01
7	T	Chloroethane	50.000	61.629	-23.3#	154	0.01
8	T	Dichlorofluoromethane	50.000	49.941	0.1	120	0.01
9	T	Trichlorofluoromethane	50.000	58.020	-16.0	145	0.01
10	T	sec-Propyl alcohol	-1.000	0.000	0.0	0	0.00
11	T	Acrolein	200.000	163.124	18.4	97	0.01
12	T	1,1,2-Trichloro-1,2,2-trifl	50.000	45.131	9.7	109	0.03
13	T	Acetone	200.000	188.386	5.8	120	0.03
14	C,T	1,1-Dichloroethene	50.000	40.898	18.2	102	0.01
15	T	tert-Butyl alcohol	250.000	241.887	3.2	122	0.01
16	T	Acetonitrile	-1.000	0.000	0.0	0	0.00
17	T	Iodomethane	50.000	40.870	18.3	90	0.01
18	T	Methyl acetate	-1.000	0.000	0.0	237	0.01
19	T	Methylene chloride	50.000	49.825	0.3	126	0.01
20	T	Carbon disulfide	50.000	46.694	6.6	113	0.01
21	T	Acrylonitrile	250.000	271.978	-8.8	133	0.03
22	T	tert-Butyl methyl ether (MT	50.000	39.370	21.3#	92	0.01
23	T	trans-1,2-Dichloroethene	50.000	42.233	15.5	103	0.01
24	T	Isopropyl ether (DIPE)	50.000	57.668	-15.3	141	0.03
25	T	Vinyl acetate	50.000	49.788	0.4	120	0.03
26	P,T	1,1-Dichloroethane	50.000	52.458	-4.9	129	0.01
27	T	tert-Butyl ethyl ether (ETB	50.000	40.662	18.7	96	0.01
28	T	2-Butanone	200.000	204.734	-2.4	126	0.01
29	T	2,2-Dichloropropane	50.000	44.465	11.1	100	0.01
30	T	cis-1,2-Dichloroethene	50.000	50.085	-0.2	120	0.03
31	T	tert-Butyl formate (TBF)	-1.000	0.000	0.0	0	0.00
32	C,T	Chloroform	50.000	51.907	-3.8	125	0.03
33	T	Bromochloromethane	50.000	57.198	-14.4	136	0.01
34	T	Tetrahydrofuran	50.000	65.432	-30.9#	163	0.03
35	T	1,1,1-Trichloroethane	50.000	48.269	3.5	113	0.03
36	T	1,1-Dichloropropene	50.000	45.428	9.1	109	0.01
37	T	Cyclohexane	-1.000	0.000	0.0	0	0.00
38	T	tert-Amyl methyl ether (TAM	50.000	40.951	18.1	99	0.01
39	S	1,2-Dichloroethane-d4	50.000	45.729	8.5	115	0.03
40	I	CHLOROBENZENE-D5	50.000	50.000	0.0	132	0.03

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E09\REB138.D Vial: 3
Acq On : 9 May 2008 11:36 am Operator: CGM
Sample : CVO03D0267 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
41	T	Carbon tetrachloride	50.000	44.844	10.3	106	0.03
42	T	1,2-Dichloroethane	50.000	47.518	5.0	118	0.03
43	T	Benzene	50.000	48.519	3.0	126	0.01
44	T	Trichloroethene	50.000	47.492	5.0	121	0.01
45	T	Methylcyclohexane	-1.000	0.000	0.0	0	0.00
46	C,T	1,2-Dichloropropane	50.000	57.967	-15.9	149	0.01
47	T	Bromodichloromethane	50.000	53.201	-6.4	128	0.01
48	T	Dibromomethane	50.000	51.930	-3.9	124	0.01
49	T	2-Chloroethyl vinyl ether	50.000	40.913	18.2	93	0.01
50	T	4-Methyl-2-pentanone	200.000	208.399	-4.2	134	0.01
51	T	cis-1,3-Dichloropropene	50.000	54.949	-9.9	133	0.01
52	S	Toluene-d8	50.000	46.277	7.4	125	0.03
53	C,T	Toluene	50.000	50.906	-1.8	130	0.01
54	T	Ethyl methacrylate	50.000	59.994	-20.0	150	0.01
55	T	trans-1,3-Dichloropropene	50.000	48.432	3.1	125	0.03
56	T	2-Hexanone	200.000	215.459	-7.7	136	0.03
57	T	1,1,2-Trichloroethane	50.000	56.760	-13.5	144	0.03
58	T	1,3-Dichloropropane	50.000	55.845	-11.7	141	0.01
59	T	Tetrachloroethene	50.000	44.845	10.3	114	0.03
60	T	Dibromochloromethane	50.000	50.933	-1.9	132	0.03
61	T	1,2-Dibromoethane	50.000	52.490	-5.0	131	0.03
62	T	1-Chlorohexane	50.000	52.793	-5.6	133	0.03
63	P	Chlorobenzene	50.000	54.487	-9.0	138	0.03
64	T	1,1,1,2-Tetrachloroethane	50.000	54.473	-8.9	132	0.03
65	C,T	Ethylbenzene	50.000	51.918	-3.8	131	0.03
66	T	m-Xylene & p-Xylene	100.000	100.633	-0.6	126	0.01
67	T	o-Xylene	50.000	51.202	-2.4	130	0.01
68	T	Styrene	50.000	54.917	-9.8	139	0.03
69	I	1,2-DICHLOROBENZENE-D4	50.000	50.000	0.0	136	0.01
70	T	Isopropylbenzene	50.000	50.941	-1.9	135	0.01
71	P,T	Bromoform	50.000	45.946	8.1	134	0.03
72	P,T	1,1,2,2-Tetrachloroethane	50.000	59.906	-19.8	161	0.01
73	S	4-Bromofluorobenzene	50.000	47.778	4.4	130	0.01
74	T	1,2,3-Trichloropropane	50.000	56.724	-13.4	154	0.01
75	T	trans-1,4-Dichloro-2-butene	50.000	44.735	10.5	131	0.01
76	T	n-Propylbenzene	50.000	51.710	-3.4	135	0.03
77	T	Bromobenzene	50.000	49.662	0.7	132	0.03
78	T	1,3,5-Trimethylbenzene	50.000	50.477	-1.0	132	0.03
79	T	2-Chlorotoluene	50.000	50.371	-0.7	134	0.01
80	T	4-Chlorotoluene	50.000	52.810	-5.6	136	0.03

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E09\REB138.D Vial: 3
Acq On : 9 May 2008 11:36 am Operator: CGM
Sample : CVO03D0267 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
81	T	tert-Butylbenzene	50.000	53.587	-7.2	139	0.03
82	T	1,2,4-Trimethylbenzene	50.000	51.155	-2.3	133	0.01
83	T	sec-Butylbenzene	50.000	56.000	-12.0	143	0.01
84	T	p-Isopropyltoluene	50.000	55.338	-10.7	138	0.01
85	T	1,3-Dichlorobenzene	50.000	51.400	-2.8	137	0.01
86	T	1,4-Dichlorobenzene	50.000	51.791	-3.6	136	0.03
87	T	n-Butylbenzene	50.000	54.272	-8.5	135	0.03
88	T	1,2-Dichlorobenzene	50.000	52.982	-6.0	140	0.03
89	T	1,2-Dibromo-3-chloropropane	50.000	55.243	-10.5	143	0.01
90	T	1,2,4-Trichlorobenzene	50.000	52.134	-4.3	131	0.01
91	T	Hexachlorobutadiene	50.000	51.909	-3.8	127	0.01
92	T	Naphthalene	50.000	56.275	-12.5	141	0.01
93	T	1,2,3-Trichlorobenzene	50.000	53.197	-6.4	135	0.01

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E09\REB138.D Vial: 3
Acq On : 9 May 2008 11:36 am Operator: CGM
Sample : CVO03D0267 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	124	0.03
2	T	Dichlorodifluoromethane	0.390	0.360	7.7	117	0.00
3	T	Dichlorotetrafluoroethane	0.000	0.000	0.0	0#	0.00
4	P,T	Chloromethane	0.349	0.287	17.8	108	-0.02
5	C,T	Vinyl chloride	0.330	0.300	9.1	110	0.01
6	T	Bromomethane	0.288	0.308	-6.9	133	0.01
7	T	Chloroethane	0.177	0.219	-23.7#	154	0.01
8	T	Dichlorofluoromethane	0.751	0.750	0.1	120	0.01
9	T	Trichlorofluoromethane	0.625	0.725	-16.0	145	0.01
10	T	sec-Propyl alcohol	0.000	0.000	0.0	0#	0.00
11	T	Acrolein	0.031	0.025	19.4	97	0.01
12	T	1,1,2-Trichloro-1,2,2-trifl	0.240	0.217	9.6	109	0.03
13	T	Acetone	0.088	0.083	5.7	120	0.03
14	C,T	1,1-Dichloroethene	0.580	0.474	18.3	102	0.01
15	T	tert-Butyl alcohol	0.020	0.022	-10.0	122	0.01
16	T	Acetonitrile	0.000	0.000	0.0	0#	0.00
17	T	Iodomethane	0.460	0.376	18.3	90	0.01
18	T	Methyl acetate	0.000	0.000	0.0	237#	0.01
19	T	Methylene chloride	0.362	0.361	0.3	126	0.01
20	T	Carbon disulfide	0.745	0.696	6.6	113	0.01
21	T	Acrylonitrile	0.064	0.070	-9.4	133	0.03
22	T	tert-Butyl methyl ether (MT	0.608	0.478	21.4#	92	0.01
23	T	trans-1,2-Dichloroethene	0.505	0.426	15.6	103	0.01
24	T	Isopropyl ether (DIPE)	0.925	1.067	-15.4	141	0.03
25	T	Vinyl acetate	0.542	0.539	0.6	120	0.03
26	P,T	1,1-Dichloroethane	0.556	0.583	-4.9	129	0.01
27	T	tert-Butyl ethyl ether (ETB	0.699	0.568	18.7	96	0.01
28	T	2-Butanone	0.108	0.111	-2.8	126	0.01
29	T	2,2-Dichloropropane	0.454	0.404	11.0	100	0.01
30	T	cis-1,2-Dichloroethene	0.564	0.565	-0.2	120	0.03
31	T	tert-Butyl formate (TBF)	0.000	0.000	0.0	0#	0.00
32	C,T	Chloroform	0.763	0.792	-3.8	125	0.03
33	T	Bromochloromethane	0.226	0.259	-14.6	136	0.01
34	T	Tetrahydrofuran	0.055	0.072	-30.9#	163	0.03
35	T	1,1,1-Trichloroethane	0.625	0.604	3.4	113	0.03
36	T	1,1-Dichloropropene	0.164	0.149	9.1	109	0.01
37	T	Cyclohexane	0.000	0.000	0.0	0#	0.00
38	T	tert-Amyl methyl ether (TAM	0.626	0.512	18.2	99	0.01
39	S	1,2-Dichloroethane-d4	0.509	0.466	8.4	115	0.03
40	I	CHLOROBENZENE-D5	1.000	1.000	0.0	132	0.03

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E09\REB138.D Vial: 3
Acq On : 9 May 2008 11:36 am Operator: CGM
Sample : CVO03D0267 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
41	T	Carbon tetrachloride	0.444	0.398	10.4	106	0.03
42	T	1,2-Dichloroethane	0.557	0.529	5.0	118	0.03
43	T	Benzene	1.180	1.145	3.0	126	0.01
44	T	Trichloroethene	0.363	0.345	5.0	121	0.01
45	T	Methylcyclohexane	0.000	0.000	0.0	0#	0.00
46	C,T	1,2-Dichloropropane	0.307	0.356	-16.0	149	0.01
47	T	Bromodichloromethane	0.587	0.624	-6.3	128	0.01
48	T	Dibromomethane	0.236	0.245	-3.8	124	0.01
49	T	2-Chloroethyl vinyl ether	0.090	0.073	18.9	93	0.01
50	T	4-Methyl-2-pentanone	0.276	0.287	-4.0	134	0.01
51	T	cis-1,3-Dichloropropene	0.491	0.539	-9.8	133	0.01
52	S	Toluene-d8	1.185	1.096	7.5	125	0.03
53	C,T	Toluene	1.286	1.309	-1.8	130	0.01
54	T	Ethyl methacrylate	0.372	0.446	-19.9	150	0.01
55	T	trans-1,3-Dichloropropene	0.441	0.470	-6.6	125	0.03
56	T	2-Hexanone	0.185	0.200	-8.1	136	0.03
57	T	1,1,2-Trichloroethane	0.272	0.309	-13.6	144	0.03
58	T	1,3-Dichloropropane	0.502	0.560	-11.6	141	0.01
59	T	Tetrachloroethene	0.287	0.257	10.5	114	0.03
60	T	Dibromochloromethane	0.379	0.427	-12.7	132	0.03
61	T	1,2-Dibromoethane	0.288	0.302	-4.9	131	0.03
62	T	1-Chlorohexane	0.578	0.610	-5.5	133	0.03
63	P	Chlorobenzene	0.896	0.976	-8.9	138	0.03
64	T	1,1,1,2-Tetrachloroethane	0.331	0.361	-9.1	132	0.03
65	C,T	Ethylbenzene	1.671	1.735	-3.8	131	0.03
66	T	m-Xylene & p-Xylene	1.342	1.350	-0.6	126	0.01
67	T	o-Xylene	1.409	1.443	-2.4	130	0.01
68	T	Styrene	0.969	1.065	-9.9	139	0.03
69	I	1,2-DICHLOROBENZENE-D4	1.000	1.000	0.0	136	0.01
70	T	Isopropylbenzene	3.153	3.212	-1.9	135	0.01
71	P,T	Bromoform	0.399	0.430	-7.8	134	0.03
72	P,T	1,1,2,2-Tetrachloroethane	0.763	0.914	-19.8	161	0.01
73	S	4-Bromofluorobenzene	1.126	1.076	4.4	130	0.01
74	T	1,2,3-Trichloropropane	0.145	0.165	-13.8	154	0.01
75	T	trans-1,4-Dichloro-2-butene	0.204	0.202	1.0	131	0.01
76	T	n-Propylbenzene	4.322	4.469	-3.4	135	0.03
77	T	Bromobenzene	0.840	0.834	0.7	132	0.03
78	T	1,3,5-Trimethylbenzene	2.654	2.680	-1.0	132	0.03
79	T	2-Chlorotoluene	2.401	2.419	-0.7	134	0.01
80	T	4-Chlorotoluene	2.621	2.768	-5.6	136	0.03

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\08E09\REB138.D Vial: 3
Acq On : 9 May 2008 11:36 am Operator: CGM
Sample : CVO03D0267 50ppb Inst : TO03
Misc : 50ppb8260/200ppbKet-AA/250ppbTBA Multiplr: 1.00
MS Integration Params: 524INT.P

Method : D:\HPCHEM\1\METHODS\VO03D02.M (RTE Integrator)
Title : METHOD 8260 5mL
Last Update : Thu Apr 03 08:41:51 2008
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
81	T	tert-Butylbenzene	2.595	2.782	-7.2	139	0.03
82	T	1,2,4-Trimethylbenzene	2.721	2.783	-2.3	133	0.01
83	T	sec-Butylbenzene	3.635	4.071	-12.0	143	0.01
84	T	p-Isopropyltoluene	2.865	3.171	-10.7	138	0.01
85	T	1,3-Dichlorobenzene	1.645	1.691	-2.8	137	0.01
86	T	1,4-Dichlorobenzene	1.617	1.674	-3.5	136	0.03
87	T	n-Butylbenzene	3.062	3.324	-8.6	135	0.03
88	T	1,2-Dichlorobenzene	1.486	1.574	-5.9	140	0.03
89	T	1,2-Dibromo-3-chloropropane	0.133	0.147	-10.5	143	0.01
90	T	1,2,4-Trichlorobenzene	0.841	0.877	-4.3	131	0.01
91	T	Hexachlorobutadiene	0.509	0.529	-3.9	127	0.01
92	T	Naphthalene	1.607	1.809	-12.6	141	0.01
93	T	1,2,3-Trichlorobenzene	0.728	0.775	-6.5	135	0.01

ANALYTICAL LOGS

ANALYSIS LOG FOR VOLATILES

SOP ☑ EMAX-8260 Rev.No. 4 ☐ EMAX-524.2 Rev.No. 4 ☐ EMAX-CLP-VOA ☐ EMAX 624 Rev.No. 1 ☐

Start Date: 4/2/08 ☑ 5-ml Purge ☐ 25-ml Purge

Book # A03 -035

BATCH V0003D025

	Sample Prep. ID	Data File Name	Lab Sample ID	Sample Amount	DF	Matrix pH-W	Matrix S	Notes
01		RDB023	BFB03D02	2µL	NA	NA	NA	
02		024	↓ 03 -	↓				8260 Ket/AA TBA 12/8
03		025	V003D021 -	.8/1.2/1.6µL				2 8 10 ppb
04		026	2 -	.4/.5/.1µL				5 20 25
05		027	3 -	.8/1.1.2µL				10 40 50
06		028	4 -	1.6/2.4µL				20 80 100
07		029	5 -	4/5/1µL				50 200 250
08		030	6 -	6.4/8/12µL				80 320 400
09		031	7 -	8/10/12µL				100 400 500
10		032	8 -	16/20/4µL				200 800 1000
11		033	9 -	24/30/6µL				300 1200 1500
12		034	IS/SS Check					
13		035	V003D03B					
14		036	V003D021 -	4/5/1µL				50 200 250
15		037	↓ 2	4/5/1µL				50 200 250
16		038	Rinse					2013
17								
18								
19								
20								
21								
22								
23								
24								
25								CGM 4/2/08

Instrument No.	03
INITIAL CALIBRATION REFERENCE	
DATE	4/2/08
ICAL ID	V003D02

STANDARDS

NAME	ID	CONC. (mg/L)
DCC Ket/AA	SV1-13-43-3	250
DCC 8260	SV1-13-44-2	50/250
DCC Gases	SV1-13-43-1	250
BFB	SV1-13-48-1	50
IS/SURR.	SV1-13-37-3	250
LCS Ket/AA	SV1-13-51-3	250
LCS 8260	SV1-13-43-2	50/250
LCS Gases	SV1-13-44-1	250
SOLVENT IS	SV1.13.42.2 ID	250
METHANOL SS	SV1.13.42.3	250
DATA FILE	C8BD02 CGM 4/2/08	

Electronic Data Archival

Location	Date
HPCHEM_VOA/TO03	

Comments:

Analyzed By: CGM

Date Disposed: 4/3/08

Disposed By: CGM

ANALYSIS LOG FOR VOLATILES

SOP ☑ EMAX-8260 Rev.No. 4 ☐ EMAX-524.2 Rev.No. 4 ☐ EMAX-CLP-VOA ☐ EMAX 624 Rev.No. 1 ☐

Start Date: 5/8/08 ☑ 5-ml Purge ☐ 25-ml Purge

Book # A03 -035

BATCH CV003D0263

Sample Prep. ID	Data File Name	Lab Sample ID	Sample Amount	DF	Matrix pH-W	Matrix S	Notes
01	REB089	BFB03E13 ✓	2µL				0835
02	090	CV003~~B05~~D02 63 ✓	4/5/1µL				
03	091	CV003D0264 ✓ CGM 5/8/08	↓				
04	092	V003E13L ✓	1.6/2/.4µL	1.0			
05	093	C ✓	↓				
06	094	B ✓	5.0g				
07	095	Q	↓				
08	096	V003E14L ✓	1.6/2/.4µL				
09	097	C ✓	↓				
10	098	B ✓	5.0mL				
11	099	Q					
12	100	08E040-01			<2		
13	101	-02 ✓	↓	↓	↓		
14	102	08E054-01 ✓	5.5g	0.91		✓	
15	103	-02 ✓	5.5g	0.91		✓	
16	104	-03 ✓	5.4g	0.93		✓	
17	105	-04 ✓	5.3g	0.94		✓	
18	106	-05 ✓	5.6g	0.89		✓	
19	107	-06 ✓	5.0g	1.0		✓	
20	108	-07 ✓	6.3g	0.79 ~~0.81~~ CGM 5/8		✓	
21	109	-08 ✓	4.7g	1.1		✓	
22	110	-09 ✓	5.9g	0.85		✓	
23	111	-10 ✓	5.7g	0.88		✓	2014
24	112	Rinse					
25							CGM 5/8/08

Instrument No.	03
INITIAL CALIBRATION REFERENCE	
DATE	4/2/08
ICAL ID	V003D02

STANDARDS

NAME	ID	CONC. (mg/L)
DCC	SM-13-43-3	
DCC	-44-2	
DCC	-43-1	
BFB	-48-1	50/250
IS/SURR.	-37-3	
LCS	-59-3	
LCS	-43-2	
LCS	-44-1	

SOLVENT	ID
METHANOL	
DATA FILE	08E08

Electronic Data Archival

Location	Date
HPCHEM_VOA/TO03	

Comments:

Analyzed By: CGM

Date Disposed: 5/9/08

Disposed By: CGM

2038

ANALYSIS LOG FOR VOLATILES

SOP ☑ EMAX-8260 Rev.No. 4 ☐ EMAX-524.2 Rev.No. 4 ☐ EMAX-CLP-VOA ☐ EMAX 624 Rev.No. 1 ☐

Start Date: 5/9/08 ☑ 5-ml Purge ☐ 25-ml Purge

Book # A03 -035

BATCH CV003D0267

Sample Prep. ID	Data File Name	Lab Sample ID	Sample Amount	DF	Matrix pH-W	Matrix S	Notes
01	REB137	BFB03E17	2µL				1032
02	138	CV003D0267	4/5/1µL				
03	139	68					
04	140	V003E17L	1.6/2/.4µL	1.0			
05	141	C					
06	142	B	5.0g				
07	143	V003E18B	5.0mL				
08	144	L	1.6/2/.4µL				
09	145	C					
10	146	08E040-01R	5.0mL		☑		
11	147	08E057-20R	5.3g	.94		☑	
12	148	-20U	5.4g	.93		☑	
13	149	-20V	5.3g	.94		☑	
14	150	-17R	5.6g	.89		☑	
15	151	-18R	5.4g	.93		☑	
16	152	-19R	5.1g	.98		☑	
17	153	-21R	5.1g	.98		☑	
18	154	-22R	5.2g	.96		☑	
19	155	-23R	5.3g	.94		☑	
20	156	-24R	5.3g	.94		☑	
21	157	-25R	5.2g	.96		☑	
22	158	08E081-01	5.0g	1.0		☑	2114
23	159	Rinse					
24							
25							CGM 5/9/08

Instrument No.	03
INITIAL CALIBRATION REFERENCE	
DATE	4/2/08
ICAL ID	V003D02

STANDARDS

NAME	ID	CONC. (mg/L)
DCC	SV1-13-43-3	
DCC	-44-2	
DCC	-43-1	
BFB	-48-1	50/250
IS/SURR.	-37-3	
LCS	-59-3	
LCS	-43-2	
LCS	-44-1	

SOLVENT	ID
METHANOL	
DATA FILE	08E09

Electronic Data Archival

Location	Date
HPCHEM_VOA/TO03	

Comments:

Analyzed By: CGM

Date Disposed: 5/12/08

Disposed By: CGM

2933

LABORATORY REPORT FOR

TETRA TECH, INC.

LMC BEAUMONT SITE 2

METHOD 314.0
PERCHLORATE

SDG#: 08E040

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E040

METHOD 314.0
PERCHLORATE

One (1) water sample was received on 05/06/08 for Perchlorate analysis by Method 314.0 in accordance with "Method for Determination of Perchlorate by Ion Chromatography", EPA 600/98-118.

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control sample results were within QC limits.

4. **Duplicate**

   Duplicate sample was not designated in this SDG.

5. **Matrix Spike**

   MS/MSD sample was not designated in this SDG.

6. **Sample Analysis**

   Sample was analyzed according to the prescribed QC procedures. All criteria were met.

SAMPLE

METHOD 314.0
PERCHLORATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E040

Matrix : WATER
Instrument ID : I57

SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/L)	DLF	MOIST	RL (ug/L)	MDL (ug/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	PCE008WB	ND	1	NA	2.00	0.500	05/12/0814:01	NA	JE12002	JE12001	PCE008W	NA	NA
LCS1W	PCE008WL	24.2	1	NA	2.00	0.500	05/12/0814:43	NA	JE12004	JE12001	PCE008W	NA	NA
LCD1W	PCE008WC	24.1	1	NA	2.00	0.500	05/12/0815:04	NA	JE12005	JE12001	PCE008W	NA	NA
15B-59'	E040-02	157000	10000	NA	20000	5000	05/12/0816:31	NA	JE12009	JE12008	PCE008W	05/05/0813:17	05/06/08

QC SUMMARY

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E040
METHOD: METHOD 314.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	PCE008WB	PCE008WL	PCE008WC		
LAB FILE ID:	JE12002	JE12004	JE12005		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	05/12/0814:01	05/12/0814:43	05/12/0815:04	DATE RECEIVED:	NA
PREP. BATCH:	PCE008W	PCE008W	PCE008W		
CALIB. REF:	JE12001	JE12001	JE12001		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Perchlorate	ND	25.0	24.2	97	25.0	24.1	96	0	85-115	20

0005

INITIAL CALIBRATION

IC RESULT FORM CalVersion: PCHLO314.A25

LFID	LSID	SELCOMP	PERCHLORATE	DateTime	Df
JA25001	IB	P	.000	01/25/0815:37	1
JA25002	S-0	P	.0000	01/25/0815:58	1
JA25003	S-1	P	2	01/25/0816:19	1
JA25004	S-2	P	4	01/25/0816:40	1
JA25005	S-3	P	10	01/25/0817:01	1
JA25006	S-4	P	25	01/25/0817:22	1
JA25007	S-5	P	30	01/25/0817:43	1
JA25008	ICV	P	104%	01/25/0818:05	1
JA25009	ICB	P	.000	01/25/0818:26	1

1-30-08

Method : c:\ezchrom\methods\ic57a25.met * - Replicate Not Used
Printed : Jan 28, 2008 10:18:46
Channel : A
Peak : PERCHLORATE

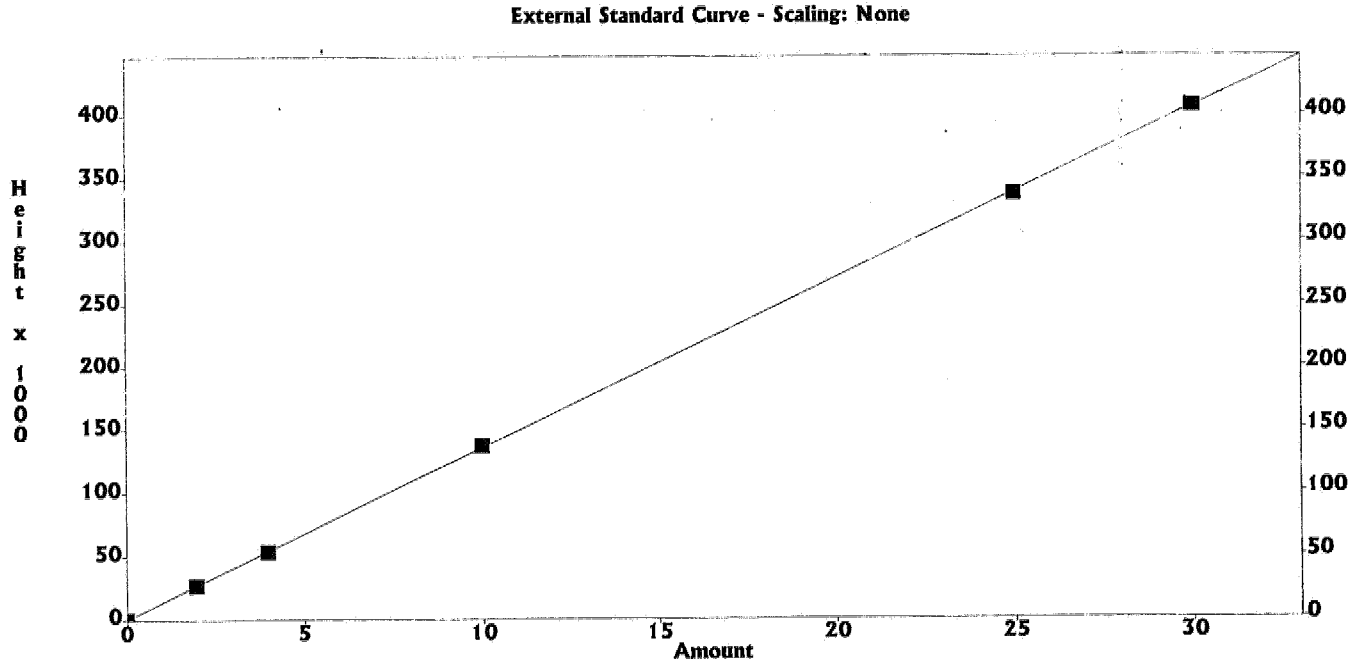
Level	Height	Amount	RF	Rep Hgt 1	Rep Hgt 2	Rep Hgt 3	Rep Hgt 4	Rep Hgt 5	Replic STD	Replic %RSD	Old Height
2	26911	2	13455.50	26911							0
3	53679	4	13419.75	53679							0
4	137051	10	13705.10	137051							0
5	336919	25	13476.76	336919							0
6	406525	30	13550.83	406525							0

Calib Flag: Replace

Average RF: 13521.6
RF StdDev: 113.225
RF %RSD: 0.837

RF Definition: Height / Amount
Weighting Method: None
Fit Through Zero: No

Linear Fit: Amount = 7.3954e-005 x Height - 0.0152094
R^2 = 0.999954



1-30-08

8008

SECOND SOURCE

IC RESULT FORM CalVersion: PCHLO314.A25

LFID	LSID	SELCOMP	PERCHLORATE	DateTime	Df
JA25001	IB	P	.000	01/25/0815:37	1
JA25002	S-0	P	.0000	01/25/0815:58	1
JA25003	S-1	P	2	01/25/0816:19	1
JA25004	S-2	P	4	01/25/0816:40	1
JA25005	S-3	P	10	01/25/0817:01	1
JA25006	S-4	P	25	01/25/0817:22	1
JA25007	S-5	P	30	01/25/0817:43	1
JA25008	ICV	P	104%	01/25/0818:05	1
JA25009	ICB	P	.000	01/25/0818:26	1

1-30-08

DAILY CALIBRATION

IC RESULT FORM CalVersion: PCHLO314.A25

LFID	LSID	SELCOMP	PERCHLORATE	DateTime	Df
JE12001	IPCS	P	80.1%	05/12/0813:17	1
JE12002	PCE008WB	P	.000	05/12/0814:01	1
JE12003	MRL	P	120%	05/12/0814:22	1
JE12004	PCE008WL	P	24.2	05/12/0814:43	1
JE12005	PCE008WC	P	24.1	05/12/0815:04	1
JE12006	E040-02	*	156000E	05/12/0815:25	5000
JE12007	RINSE	P	.000	05/12/0815:46	1
JE12008	CCV179-30	P	95.3%	05/12/0816:07	1
JE12009	E040-02	P	157000	05/12/0816:31	10000
JE12010	CCV180-15	P	101%	05/12/0816:52	1

IC SEQ FORM (ESD)

LFID	LSID	SELCOMP	METHOD	DateTime	DF
JE12001	IPCS	P	IC57A25	05/12/0813:17	1
JE12002	PCE008WB	P	IC57A25	05/12/0814:01	1
JE12003	MRL	P	IC57A25	05/12/0814:22	1
JE12004	PCE008WL	P	IC57A25	05/12/0814:43	1
JE12005	PCE008WC	P	IC57A25	05/12/0815:04	1
JE12006	E040-02	*	IC57A25	05/12/0815:25	5000
JE12007	RINSE	P	IC57A25	05/12/0815:46	1
JE12008	CCV179-30	P	IC57A25	05/12/0816:07	1
JE12009	E040-02	P	IC57A25	05/12/0816:31	10000
JE12010	CCV180-15	P	IC57A25	05/12/0816:52	1

ANALYTICAL LOG

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

NaOH: SW9A - 03-013

Book #:	**A57-016**
Instrument No.:	**57**
Analytical Sequence:	JE12
Method File:	IC57a25
Analytical Batch:	PCE008W

SOP #	Rev. #
☐ EMAX-300.0	3
☐ EMAX-300.0M	0
☑ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

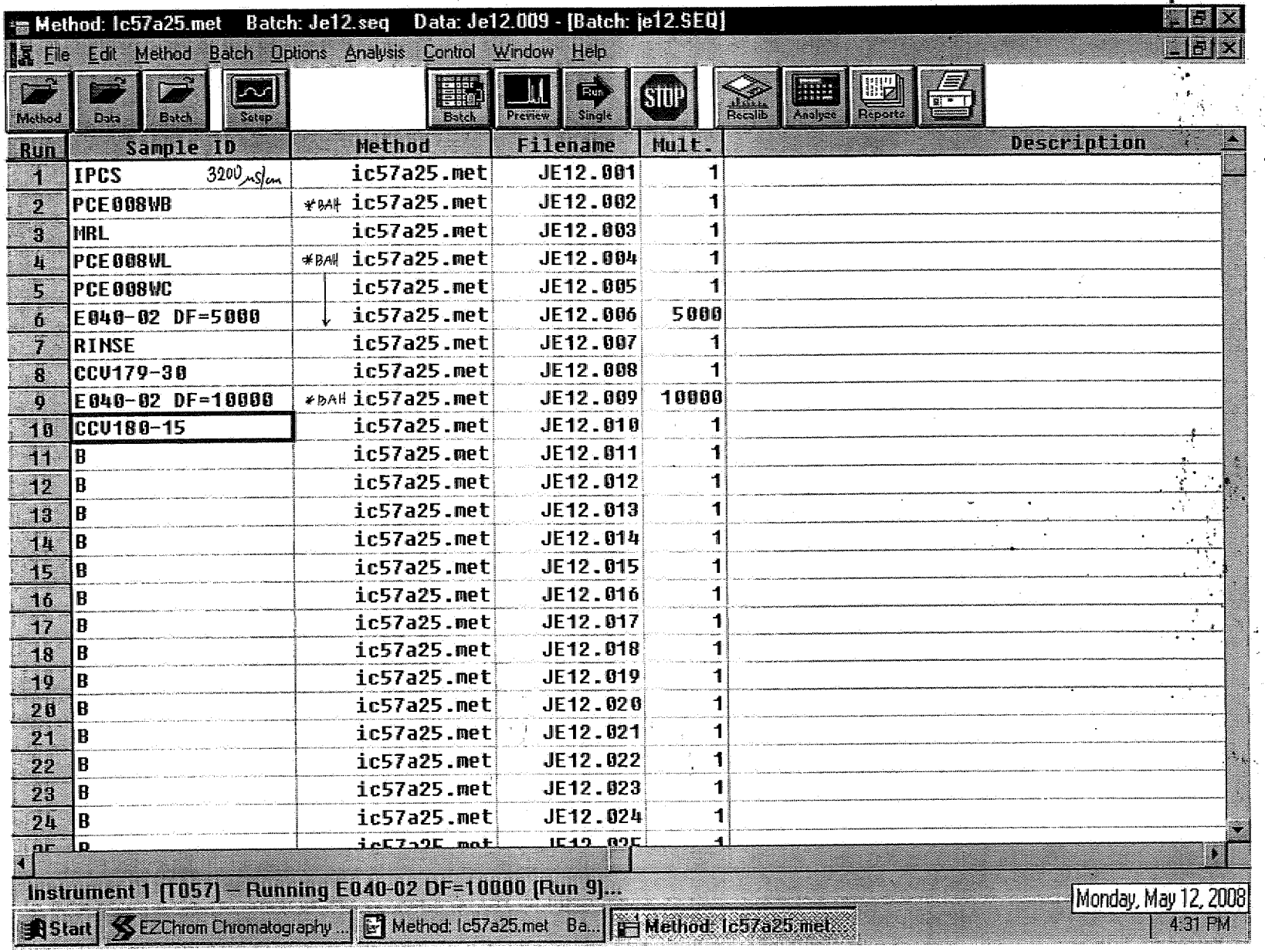
STANDARDS ID	
ICAL	SW8B - 02 - 1063
ICV	1064
CCV-15	1045 95 al 05/12/08
CCV-30	1044
LCS	1046
MS	1040
IPC	1047
CMC	SWPI - 01 - 127
MRL	SW8B - 02 - 1041

CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
146.2	(±) 30	20°C

ELECTRONIC DATA ARCHIVAL	
Location	Date
☑ EZ-CHROM	
☐	

Analyzed By: al

Date: 05 | 12 | 08


Method: Ic57a25.met Batch: Je12.seq Data: Je12.009 - [Batch: je12.SEQ]
File Edit Method Batch Options Analysis Control Window Help
Method Data Batch Setup Batch Preview Single STOP Recallib Analyse Reports
Run | Sample ID | Method | Filename | Mult. | Description
1 | IPCS 3200 ms/cm | ic57a25.met | JE12.001 | 1
2 | PCE008WB | *BAH ic57a25.met | JE12.002 | 1
3 | MRL | ic57a25.met | JE12.003 | 1
4 | PCE008WL | *BAH ic57a25.met | JE12.004 | 1
5 | PCE008WC | ic57a25.met | JE12.005 | 1
6 | E040-02 DF=5000 | ic57a25.met | JE12.006 | 5000
7 | RINSE | ic57a25.met | JE12.007 | 1
8 | CCV179-30 | ic57a25.met | JE12.008 | 1
9 | E040-02 DF=10000 | *BAH ic57a25.met | JE12.009 | 10000
10 | CCV180-15 | ic57a25.met | JE12.010 | 1
11 | B | ic57a25.met | JE12.011 | 1
12 | B | ic57a25.met | JE12.012 | 1
13 | B | ic57a25.met | JE12.013 | 1
14 | B | ic57a25.met | JE12.014 | 1
15 | B | ic57a25.met | JE12.015 | 1
16 | B | ic57a25.met | JE12.016 | 1
17 | B | ic57a25.met | JE12.017 | 1
18 | B | ic57a25.met | JE12.018 | 1
19 | B | ic57a25.met | JE12.019 | 1
20 | B | ic57a25.met | JE12.020 | 1
21 | B | ic57a25.met | JE12.021 | 1
22 | B | ic57a25.met | JE12.022 | 1
23 | B | ic57a25.met | JE12.023 | 1
24 | B | ic57a25.met | JE12.024 | 1
Instrument 1 [T057] – Running E040-02 DF=10000 (Run 9)...
Monday, May 12, 2008
4:31 PM
Start EZChrom Chromatography ... Method: Ic57a25.met Ba... Method: Ic57a25.met...

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

NaOH : SW9A-03-013

Book #:	A57-016
Instrument No.:	57
Analytical Sequence:	5A25
Method File:	IC57A25
Analytical Batch:	N/A

SOP #	Rev. #
☐ EMAX-300.0	3
☐ EMAX-300.0M	0
☑ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

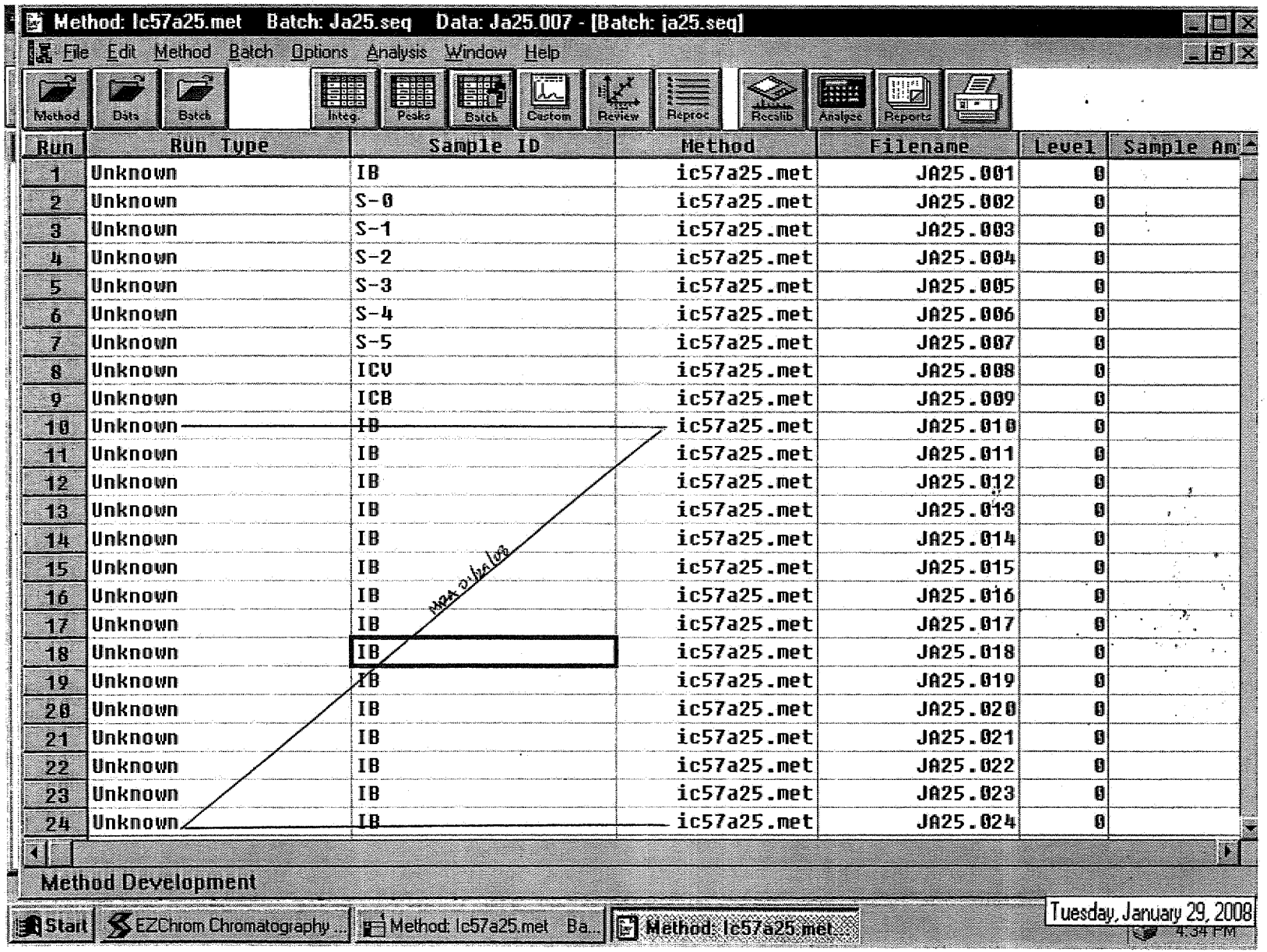
STANDARDS ID	
ICAL	SW8B-02-1063
ICV	↓ -1064
CCV-15	N/A
CCV-30	
LCS	
MS	
IPC	
CMC	
MRL	

CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
	(±) 30	

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ EZ-CHROM	
☐	

Analyzed By: MBA /ad

Date: 01/25/08



MBA 01/29/08

8919

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CLIENT: **TETRA TECH, INC.**

PROJECT: **LMC BEAUMONT SITE 2**

SDG: **08E041**

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GC/MS-SVOA	**	3000 –
GC-VOA	**	4000 –
GC-SVOA	**	5000 –
HPLC	**	6000 –
METALS	METHOD 3050B/6010B	7000 – 7025
WET	METHOD 300.0	8000 – 8020
	METHOD 314.0	8021 – 8045
	METHOD 351.3	8046 – 8053
	METHOD 365.2	8054 – 8060
	METHOD 365.2	8061 – 8067
	METHOD 376.1	8068 – 8074
	METHOD 415.1	8075 – 8085
	METHOD 9045C	8086 – 8091
OTHERS	**	9000 –

** - Not Requested

EMAX
LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889
Fax:(310) 618-0818

Date: 05-27-2008
EMAX Batch No.: 08E041

Attn: Michael Wilson

TETRA TECH, INC.
348 W Hospitality Lane, Ste 100
San Bernardino CA 92408

Subject: Laboratory Report
Project: LMC BEAUMONT SITE 2

Enclosed is the Laboratory report for samples received on 05/06/08.
The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
15B-5'	E041-01	05/05/08	SOIL	PERCHLORATE BY IC
15B-10'	E041-02	05/05/08	SOIL	PERCHLORATE BY IC
15B-15'	E041-03	05/05/08	SOIL	PERCHLORATE BY IC
15B-20'	E041-04	05/05/08	SOIL	PERCHLORATE BY IC
				PH
				TKN
				SULFIDE
				TOTAL ORGANIC CARBON
				PHOSPHORUS, TOTAL
				ANIONS BY IC
				METALS BY ICP
				ORTHOPHOSPHATE-P
15B-25'	E041-05	05/05/08	SOIL	PERCHLORATE BY IC
15B-30'	E041-06	05/05/08	SOIL	PERCHLORATE BY IC
15B-35'	E041-07	05/05/08	SOIL	PERCHLORATE BY IC
15B-40'	E041-08	05/05/08	SOIL	PERCHLORATE BY IC
15B-45'	E041-09	05/05/08	SOIL	PERCHLORATE BY IC
15B-50'	E041-10	05/05/08	SOIL	PERCHLORATE BY IC
15B-55'	E041-11	05/05/08	SOIL	PERCHLORATE BY IC

Sample ID	Control #	Col Date	Matrix	Analysis
15B-60'	E041-12	05/05/08	SOIL	PERCHLORATE BY IC
15B-60'-DUP	E041-13	05/05/08	SOIL	PERCHLORATE BY IC
15B-65'	E041-14	05/05/08	SOIL	HOLD
15B-70'	E041-15	05/05/08	SOIL	PERCHLORATE BY IC
				PH
				TKN
				SULFIDE
				TOTAL ORGANIC CARBON
				PHOSPHORUS, TOTAL
				ANIONS BY IC
				METALS BY ICP
				ORTHOPHOSPHATE-P

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Caspar J. Pang
Acting Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that the results included in this report meet all NELAC requirements unless noted in the Case Narrative.

TF-0610

08E041

CHAIN OF CUSTODY RECORD

TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: EMax

DATE 5-5-08 PAGE 1 OF 2

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures): D. Bertollacci

LINE ITEM	SAMPLE NO.	DATE	TIME	Arsenic	Iron	Manganese	Phosphours (P)	Perchlorate (314.0)	pH	Sulfate/Sulfide	Total Kjeldal Nitrogen TKN	Total organic carbon TOC	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	15B-5'	5-5-05	1005					X					UnS	S	G	1	None	
2.	15B-10'		1009					X								1		
3.	15B-15'		1015					X								1		
4.	15B-20'		1020	X	X	X	X	X	X	X	X	X				2		
5.	15B-25'		1029					X								1		
6.	15B-30'		1033					X								1		
7.	15B-35'		1040					X								1		
8.	15B-40'		1047					X								1		
9.	15B-45'		1053					X								1		
10.	15B-50'	↓	1059					X					↓	↓	↓	1	↓	

TURN-AROUND TIME: Standard

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SS - Stainless Steel Sleeve; SB - Brass Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NR (None required); NaOH; H_2SO_4

RELINQUISHED BY: David Bertolacci	SIGNATURE	TETRA TECH, INC.	DATE 05/05/2008	TIME 1730	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 11 out of 17
RECEIVED BY: Carlos Morales	SIGNATURE	COMPANY: Tte Lire	DATE 5/6/08	TIME 8:36	METHOD OF SHIPMENT/SHIPMENT NO.: Courier
RELINQUISHED BY: Carlos Morales	SIGNATURE	COMPANY: Tte Lire	DATE 5/6/08	TIME 10:00	Special Shipping/Handling/Storage Requirements: T = 3.3° C
RECEIVED BY: INDRA PATEL	SIGNATURE	COMPANY: EMAX	DATE 5/6/08	TIME 10:40	

DISTRIBUTION: White and Pink = Tetra Tech, Inc. Canary = Laboratory

1002

X:\GIS\ATT-MISC\COCR.CDR

08E041

CHAIN OF CUSTODY RECORD

TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: EMax

DATE 5-5-08 PAGE 2 OF 2

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures): D. Bertolacci

TURN-AROUND TIME: Standard

OBSERVATIONS/COMMENTS

LINE ITEM	SAMPLE NO.	DATE	TIME	Arsenic	Iron	Manganese	Phosphours(P)	Perchlorate (314.0)	PH	Sulfate/Sulfide	Total Kjeldal Nitrogen (TKN)	Total Organic carbon (TOC)	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	15B-55'	5-5-08	1103					X					U	S	G	1	NC	NC
2.	15B-60'	↓	1116					X					↓	↓	↓	1	↓	
3.	15B-60'-DUP		1119					X								1		
4.	15B-65'		1128					X								1		Hold
5.	15B-70'	↓	1330	X	X	X	X	X	X	X	X	X	↓	↓	↓	2	↓	
6.																		
7.																		
8.																		
9.																		
10.																		

FILTERING:
☐ FILTERED ☒ UNFILTERED

MATRIX TYPE:
S - Soil
M - Sediment
W - Water

CONTAINER TYPE:
G - Glass Bottle/Jar
SS - Stainless Steel Sleeve
SB - Brass Sleeve
P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only)
HCL
NR (None required)
NaOH
H_2SO_4

RELINQUISHED BY	SIGNATURE		DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY:
David Bertolacci		TETRA TECH, INC.	5-5-08	1730	6/17
RECEIVED BY: Carlos Morales	SIGNATURE	COMPANY: Top Line	DATE: 5/6/08	TIME: 8:36	METHOD OF SHIPMENT/SHIPMENT NO.: Carrier
RELINQUISHED BY: Carlos Morales	SIGNATURE	COMPANY: Top Line	DATE: 5/6/08	TIME: 10:00	Special Shipping/Handling/Storage Requirements:
RECEIVED BY: INDRA PATEL	SIGNATURE	COMPANY: EMAX	DATE: 5/6/08	TIME: 10:00	

DISTRIBUTION: White and Pink = Tetra Tech, Inc. Canary = Laboratory

X:\GIS\ATT-MISC\COCR.CDR

1 of 3

LABORATORIES, INC.

SAMPLE RECEIPT FORM 1

Type of Delivery	Delivered By/Airbill	ECN 08E041
☐ EMAX Courier		Recepient I PATEL
☐ Client Delivery		Date 5-6-08
☑ Third Party Top Line Courier		Time 10:00 A

COC Inspection

☑ Client Name ☐ Client PM/FC ☑ Sampler Name ☐ Sampling Date/Time/Location ☑ Sample ID ☐ Matrix

☑ Address ☐ Tel # / Fax # ☑ Courier Signature ☑ Analysis Required ☐ Preservative (if any) ☑ TAT

Safety Issues

☑ None ☐ High concentrations expected ☐ Superfund Site samples ☐ Rad screening required

Comments:

Packaging Inspection

Container	☑ Cooler	☐ Box	☐ Other		
Condition	☐ Custody Seal	☑ Intact	☐ Damaged		
Packaging	☐ Bubble Pack	☐ Styrofoam	☐ Popcorn	☑ Sufficient	☐ plastic bag
Temperatures	☑ Cooler 1 3.3 °C	☐ Cooler 2 ____ °C	☐ Cooler 3 ____ °C	☐ Cooler 4 ____ °C	☐ Cooler 5 ____ °C
	☐ Cooler 6 ____ °C	☐ Cooler 7 ____ °C	☐ Cooler 8 ____ °C	☐ Cooler 9 ____ °C	☐ Cooler 10 ____ °C

Comments: ☐ PM was informed on non-compliant coolers imediately.

DISCREPANCIES

LSID	LSCID	Sample Label ID/COC ID	Discrepancy Code	Corrective Action Code

REVIEWS

Sample Labeling [signature] Date 5/6/08

SRF [signature] Date 5/6/08

PM Cuonglush for Y Date 5/6/08

LEGEND:

Code	Description- Sample Management	Code	Description-Sample Management	Code	Description-Project Management
A1	Analysis is not indicated in COC	E1	Preservative needed; sample has no preservative	R1	Hold sample(s); wait for further instructions
A2	Analysis is not indicated in label	E2	Preservative not needed but sample is preserved	R2	Proceed as indicated in COC
A3	Analysis is inconsistent in COC vis-à-vis label	F1	Not enough quantity of samples	R3	Refer to attached instruction
B1	Sample ID is not indicated in COC	F2	Bubble is> 6mm	R4	Cancel the analysis
B2	Sample ID is not indicated in label	G1	Temperature is out of range (4 +_ 2°C)	R5	
B3	Sample ID is inconsistent in COC vis-à-vis label	G2	Out of Holding Time	R6	
C1	Wrong container	G3	>20 % solid particle		
C2	Broken container	H1			
C3	Leaking container	H2			
D1	Date and/or time is not indicated in COC				
D2	Date and/or time is not indicated in label				
D3	Date and/or time is inconsistent in COC vis-à-vis label				

Pick-up + Delivery: 310-235-290
Fax: 310-235-2197
New Accounts: 310-235-2190



top line courier

Date	
Ref. No.	
Invoice No.	28209
Order No. 1	
Order No. 2	

Ref. No: G260200682

DUPLITEXT PRINTING & GRAPHICS (310) 559-9944

Serving Southern California

CALL IN TIME:

CHARGE TO:	ADDRESS:	ACCOUNT NO.

PICK-UP FROM: Tetra tech	DELIVER FROM (PLEASE CIRCLE ONE) Emax
ADDRESS: 348 W. Hospitality Ln	ADDRESS: 1835 205th St
CITY: San Bernardino 92408	CITY: Torrance Zip:
SENDER'S NAME: EXT. NO./DEPT.	RECEIVER'S NAME: TEL. NO. /DEPT.

30 MIN.: (30 MIN.) ☐	SUPER RUSH: (1 HOUR) ☐	RUSH (2 HOUR) ☐	REGULAR: (4 HOURS) ☐	DELIVER TO NO. 2: 08E040 } 5/6/08
RETURN: ☐	WAIT TIME: ☐	NEXT DR: ☐ 8:30 ☐ 10:00 ☐ 12:00		ADDRESS: 08E041 } 10:00
FILING: ☐	DEPT.: ☐	WINDOW ☐		CITY: ZIP:
DRIVER # →	→	→		RECEIVER'S NAME: TEL. NO. /DEPT.

NO. PKG.	DESCRIPTION AND SPECIAL INSTRUCTIONS

SIGNATURE ON RETURN X Mep Aug 05/06/08	DEL. TIME 10:00	print name	RELEASE SIGNATURE: *Sign to authorize delivery without obtaining signature*
SIGNATURE ON DELIVERY X	DEL. TIME	print name	By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

1005

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TETRA TECH, INC.

LMC BEAUMONT SITE 2

METHOD 3050B/6010B
METALS BY TRACE ICP

SDG#: 08E041

7000

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E041

METHOD 3050B/6010B
METALS BY TRACE ICP

Two (2) soil samples were received on 05/06/08 for Metals analysis by Method 3050B/6010B in accordance with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW846, 3rd edition.

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Serial Dilution/Post-Analytical Spike**

   Sample E041-04 was analyzed for serial dilution and post-analytical spike. All QC requirements were met.

5. **Matrix Spike/Matrix Spike Duplicate**

   No MS/MSD sample was designated in this SDG.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

LAB CHRONICLE
METALS BY TRACE ICP

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
SDG NO. : 08E041
Instrument ID : T-ID8

SOIL

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1S	IPE017SB	1	NA	05/08/0819:34	05/08/0813:25	ID8E006049	ID8E006047	IPE017S	Method Blank
LCS1S	IPE017SL	1	NA	05/08/0819:39	05/08/0813:25	ID8E006050	ID8E006047	IPE017S	Lab Control Sample (LCS)
LCD1S	IPE017SC	1	NA	05/08/0819:44	05/08/0813:25	ID8E006051	ID8E006047	IPE017S	LCS Duplicate
15B-20'AS	E041-04A	1	6.4	05/08/0819:49	05/08/0813:25	ID8E006052	ID8E006047	IPE017S	Analytical Spike Sample
15B-20'	E041-04	1	6.4	05/08/0819:54	05/08/0813:25	ID8E006053	ID8E006047	IPE017S	Field Sample
15B-20'DL	E041-04J	5	6.4	05/08/0819:59	05/08/0813:25	ID8E006054	ID8E006047	IPE017S	Diluted Sample
15B-70'	E041-15	1	13.7	05/08/0820:04	05/08/0813:25	ID8E006055	ID8E006047	IPE017S	Field Sample

FN - Filename
% Moist - Percent Moisture

2992

METHOD 3050B/6010B
METALS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	05/05/08 10:20
Project	: LMC BEAUMONT SITE 2	Date Received:	05/06/08
SDG NO.	: 08E041	Date Extracted:	05/08/08 13:25
Sample ID:	15B-20'	Date Analyzed:	05/08/08 19:54
Lab Samp ID:	E041-04	Dilution Factor:	1
Lab File ID:	ID8E006053	Matrix :	SOIL
Ext Btch ID:	IPE017S	% Moisture :	6.4
Calib. Ref.:	ID8E006047	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	ND	10.7	4.27
Iron	20700	21.4	5.34
Manganese	369	1.07	0.214

METHOD 3050B/6010B
METALS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	05/05/08 13:30
Project	: LMC BEAUMONT SITE 2	Date Received:	05/06/08
SDG NO.	: 08E041	Date Extracted:	05/08/08 13:25
Sample ID:	15B-70'	Date Analyzed:	05/08/08 20:04
Lab Samp ID:	E041-15	Dilution Factor:	1
Lab File ID:	ID8E006055	Matrix :	SOIL
Ext Btch ID:	IPE017S	% Moisture :	13.7
Calib. Ref.:	ID8E006047	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	ND	11.6	4.63
Iron	22300	23.2	5.79
Manganese	417	1.16	0.232

METHOD 3050B/6010B
METALS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	NA
Project	: LMC BEAUMONT SITE 2	Date Received:	05/08/08
SDG NO.	: 08E041	Date Extracted:	05/08/08 13:25
Sample ID:	MBLK1S	Date Analyzed:	05/08/08 19:34
Lab Samp ID:	IPE017SB	Dilution Factor:	1
Lab File ID:	ID8E006049	Matrix :	SOIL
Ext Btch ID:	IPE017S	% Moisture :	NA
Calib. Ref.:	ID8E006047	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	ND	10.0	4.00
Iron	ND	20.0	5.00
Manganese	ND	1.00	0.200

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
SDG NO.: 08E041
METHOD: METHOD 3050B/6010B

MATRIX:	SOIL			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1S				
CONTROL NO.:	IPE017SB	IPE017SL	IPE017SC		
LAB FILE ID:	ID8E006049	ID8E006050	ID8E006051		
DATIME EXTRCTD:	05/08/0813:25	05/08/0813:25	05/08/0813:25	DATE COLLECTED:	NA
DATIME ANALYZD:	05/08/0819:34	05/08/0819:39	05/08/0819:44	DATE RECEIVED:	05/08/08
PREP. BATCH:	IPE017S	IPE017S	IPE017S		
CALIB. REF:	ID8E006047	ID8E006047	ID8E006047		

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Arsenic	ND	100	104	104	100	106	106	2	80-120	20
Iron	ND	1000	991	99	1000	1000	100	1	80-120	20
Manganese	ND	100	93.6	94	100	94.7	95	1	80-120	20

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E041
METHOD: METHOD 3050B/6010B

MATRIX:	SOIL		% MOISTURE:	6.4
DILUTION FACTOR:	1	5		
SAMPLE ID:	15B-20'	15B-20'DL		
EMAX SAMP ID:	E041-04	E041-04J		
LAB FILE ID:	ID8E006053	ID8E006054		
DATE EXTRACTED:	05/08/0813:25	05/08/0813:25	DATE COLLECTED:	05/05/08 10:20
DATE ANALYZED:	05/08/0819:54	05/08/0819:59	DATE RECEIVED:	05/06/08
PREP. BATCH:	IPE017S	IPE017S		
CALIB. REF:	ID8E006047	ID8E006047		

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SERIAL DIL RSLT (mg/kg)	DIF RSLT %	QC LIMIT (%)
Arsenic	ND	ND	0	10
Iron	20700	21400	3	10
Manganese	369	384	4	10

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
SDG NO.: 08E041
METHOD: METHOD 3050B/6010B

MATRIX:	SOIL		% MOISTURE:	6.4
DILTN FACTR:	1	1		
SAMPLE ID:	15B-20'			
CONTROL NO.:	E041-04	E041-04A		
LAB FILE ID:	ID8E006053	ID8E006052		
DATIME EXTRCTD:	05/08/0813:25	05/08/0813:25	DATE COLLECTED:	05/05/08 10:20
DATIME ANALYZD:	05/08/0819:54	05/08/0819:49	DATE RECEIVED:	05/06/08
PREP. BATCH:	IPE017S	IPE017S		
CALIB. REF:	ID8E006047	ID8E006047		

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	AS RSLT (mg/kg)	AS % REC	QC LIMIT (%)
Arsenic	ND	107	120	112	75-125
Iron	20700	1070	21600	86	75-125
Manganese	369	107	455	80	75-125

TRACE-LOW ICP QC CHECK TABLE

QC	ICV HIGH	ICV	CCV	ICSAB	ICSA
Limit%	95-105	90-110	90-110	80-120	80-120
Comp	mg/L	mg/L	mg/L	mg/L	mg/L
Al	10	5	5	500	500
Sb	1	0.5	0.5	1	0
As	1	0.5	0.5	1	0
Ba	1	0.5	0.5	0.5	0
Be	1	0.5	0.5	0.5	0
B	1	0.5	0.5	0.5	0
Cd	1	0.5	0.5	1	0
Ca	100	50	50	500	500
Cr	1	0.5	0.5	0.5	0
Co	1	0.5	0.5	0.5	0
Cu	1	0.5	0.5	0.5	0
Fe	10	5	5	200	200
Pb	1	0.5	0.5	1	0
Li	1	0.5	0.5	0.5	0
Mg	100	50	50	500	500
Mn	1	0.5	0.5	0.5	0
Mo	1	0.5	0.5	1	0
Ni	1	0.5	0.5	1	0
K	100	50	50	75	0
Se	1	0.5	0.5	1	0
Si	1	0.5	0.5	1	0
Ag	1	0.5	0.5	1	0
Na	100	50	50	75	0
Sr	1	0.5	0.5	0.5	0
Tl	1	0.5	0.5	1	0
Sn	1	0.5	0.5	1	0
Ti	1	0.5	0.5	1	0
U	10	5	5	1	0
V	1	0.5	0.5	0.5	0
Zn	1	0.5	0.5	1	0

ANALYSIS RUN LOG
for
ICP

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Start Date: 5/8/08 15:26

End Date: 5/8/08 21:44

Comments:

QC ok

Book #: AD8-005

Instrument No.: D8

Analytical Batch: 1D8E006

Analytical Sequence: S-086010E(v16)

Method File: 086010E(v16)

SOP #	Rev. #
☑ EMAX-6010	5
☐ EMAX-200.7	0
☐ EMAX-	

STANDARDS ID	
S0	SM1B11.27.02
S1	NA
S2	SM1B11.19.05
S3	NA
S4	NA
S5	SM1B11.19.06
S6	NA
S7	NA
S8	SM1B11.28.02
S9	NA
S_{11}	SM1B11.18.05
S_{12}	SM1B11.18.06
ICV	SM1B11.28.03
CCV	SM1B11.28.01
ICSA	SM1B11.27.01
ICSAB	SM1B11.18.07
CRI/MRL Bomp Low MRL1A	JL 5/9/08 ~~SM1B11~~ SM1B11.25.01
CAM3 MRL1B	SM1B11.08.06

Analyzed By: JC / [signature]

Date: 5/8/08

7010

SEQUENCE FILE : ID8E006

4-18	19-33	34-43	44-53	54-63
LFID	LSID	TIME	DATE	DF
ID8E006001	Blank	15:26	05/08/08	1.000
ID8E006002	S2	15:31	05/08/08	1.000
ID8E006003	S5	15:36	05/08/08	1.000
ID8E006004	S8	15:41	05/08/08	1.000
ID8E006005	S11	15:46	05/08/08	1.000
ID8E006006	S17	15:51	05/08/08	1.000
ID8E006007	ICV	15:56	05/08/08	1.000
ID8E006008	ICB	16:01	05/08/08	1.000
ID8E006009	MRL1A	16:06	05/08/08	1.000
ID8E006010	MRL1B	16:11	05/08/08	1.000
ID8E006011	ICSA1	16:16	05/08/08	1.000
ID8E006012	ICSAB1	16:21	05/08/08	1.000
ID8E006013	CCV1	16:26	05/08/08	1.000
ID8E006014	CCB1	16:31	05/08/08	1.000
ID8E006015	IPE015WB	16:36	05/08/08	1.000
ID8E006016	IPE015WL	16:41	05/08/08	1.000
ID8E006017	IPE015WC	16:46	05/08/08	1.000
ID8E006018	E043-04M	16:51	05/08/08	1.000
ID8E006019	E043-04A	16:56	05/08/08	1.000
ID8E006020	E043-04	17:00	05/08/08	1.000
ID8E006021	E043-04D	17:05	05/08/08	1.000
ID8E006022	E043-04J	17:10	05/08/08	5.000
ID8E006023	E043-05	17:15	05/08/08	1.000
ID8E006024	BLANK	17:20	05/08/08	1.000
ID8E006025	CCV2	17:25	05/08/08	1.000
ID8E006026	CCB2	17:30	05/08/08	1.000
ID8E006027	E043-02	17:35	05/08/08	1.000
ID8E006028	E043-03	17:40	05/08/08	1.000
ID8E006029	E049-01	17:45	05/08/08	1.000
ID8E006030	E049-02	17:50	05/08/08	1.000
ID8E006031	E049-03	17:56	05/08/08	1.000
ID8E006032	E049-04	18:01	05/08/08	1.000
ID8E006033	E049-05	18:06	05/08/08	1.000
ID8E006034	E049-06	18:11	05/08/08	1.000
ID8E006035	BLANK	18:23	05/08/08	1.000
ID8E006036	CCV3	18:28	05/08/08	1.000
ID8E006037	CCB3	18:33	05/08/08	1.000
ID8E006038	E059-01	18:38	05/08/08	1.000
ID8E006039	E059-02	18:43	05/08/08	1.000
ID8E006040	E059-03	18:49	05/08/08	1.000
ID8E006041	E059-04	18:53	05/08/08	1.000
ID8E006042	E059-05	18:59	05/08/08	1.000
ID8E006043	E059-06	19:04	05/08/08	1.000
ID8E006044	E059-07	19:09	05/08/08	1.000
ID8E006045	E059-08	19:14	05/08/08	1.000
ID8E006046	BLANK	19:19	05/08/08	1.000
ID8E006047	CCV4	19:24	05/08/08	1.000
ID8E006048	CCB4	19:29	05/08/08	1.000
ID8E006049	IPE017SB	19:34	05/08/08	1.000
ID8E006050	IPE017SL	19:39	05/08/08	1.000
ID8E006051	IPE017SC	19:44	05/08/08	1.000
ID8E006052	E041-04A	19:49	05/08/08	1.000
ID8E006053	E041-04	19:54	05/08/08	1.000

ID8E006054	E041-04J	19:59	05/08/08	5.000
ID8E006055	E041-15	20:04	05/08/08	1.000
ID8E006056	BLANK	20:09	05/08/08	1.000
ID8E006057	CCV5	20:14	05/08/08	1.000
ID8E006058	CCB5	20:19	05/08/08	1.000
ID8E006059	IPE011WB	20:24	05/08/08	1.000
ID8E006060	IPE011WL	20:29	05/08/08	1.000
ID8E006061	IPE011WC	20:34	05/08/08	1.000
ID8E006062	E010-01A	20:39	05/08/08	1.000
ID8E006063	E010-01	20:44	05/08/08	1.000
ID8E006064	E010-01J	20:49	05/08/08	5.000
ID8E006065	E416-01	20:54	05/08/08	1.000
ID8E006066	BLANK	20:59	05/08/08	1.000
ID8E006067	CCV6	21:04	05/08/08	1.000
ID8E006068	CCB6	21:09	05/08/08	1.000
ID8E006069	E016-01	21:14	05/08/08	1.000
ID8E006070	E016-03	21:19	05/08/08	1.000
ID8E006071	E016-02	21:24	05/08/08	1.000
ID8E006072	E016-04	21:29	05/08/08	1.000
ID8E006073	BLANK	21:34	05/08/08	1.000
ID8E006074	CCV7	21:39	05/08/08	1.000
ID8E006075	CCB7	21:44	05/08/08	1.000

SDG : 08E041 UNIT : % SUMMARY of ICV and CCV : ID8E006 DATE : 05/08/08 I

ANALYTE	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	Tl	V	Zn
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICV	101	97	102	95	98	109	101	99	96	100	95	95	98	98	94	103	100	99	99	97	99	95	97	104
ICB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MRL1A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MRL1B	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA1	92	----	----	----	----	----	----	97	----	----	----	89	----	104	----	----	----	----	----	----	----	----	----	----
ICSAB1	94	90	110	106	99	110	108	96	98	103	102	91	100	104	94	114	103	109	108	110	108	92	103	110
CCV1	101	102	106	98	101	107	106	102	100	103	96	97	100	102	97	109	103	101	105	100	101	97	103	108
CCB1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE015WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE015WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE015WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-04M	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-04A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-04D	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-04J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV2	100	102	105	98	100	107	102	100	98	99	96	96	97	99	96	107	100	99	104	99	99	95	102	104
CCB2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV3	99	102	104	99	101	107	102	100	99	98	97	96	97	99	96	106	99	99	104	99	100	94	101	104
CCB3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-08	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV4	98	102	105	98	99	109	103	99	99	99	96	96	97	98	94	106	100	100	105	98	100	94	102	105
CCB4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE017SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE017SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE017SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E041-04A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E041-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

E041-04J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E041-15	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV5	96	102	105	99	100	107	103	100	99	99	96	96	97	98	95	106	100	100	105	98	100	94	101	105	
CCB5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE011WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE011WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE011WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E010-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E010-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E010-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E416-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV6	96	104	106	99	99	107	102	99	100	97	96	98	95	97	93	105	98	100	105	99	100	92	102	104	
CCB6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E016-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E016-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E016-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E016-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV7	96	105	107	99	99	109	101	100	101	97	95	99	95	97	93	104	97	100	106	99	100	92	102	104	
CCB7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

QC limit of each parameter are listed in a table attached next to all the ICP check forms
* : Out of QC Limit

SDG : 08E041 UNIT : UG/L SUMMARY of CALIBRATION BLANKS : ID8E006 (SOIL) DATE : 05/08/08

ANALYTE	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	Tl	V	Zn
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICV	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICB	3.56	-.350	-.370	.220	-.020	1.07	.060	52.0	.010	-.060	.170	-3.79	-.090	6.48	.320	.110	.010	39.9	.270	.140	-13.2	-.060	.010	2.87
MRL1A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MRL1B	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA1	----	.410	-2.99	.050	.000	-10.5	-.020	----	-.070	-1.19	2.64	----	12.2	----	.490	-2.46	-.410	-38.7	3.28	.470	103	-5.62	.000	6.33
ICSAB1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB1	12.6	-.030	-1.36	.240	.010	.960	.050	67.0	-.050	.100	.220	2.60	.480	3.40	.330	.220	.050	42.3	-.300	.250	-6.52	.760	.130	3.62
IPE015WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE015WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE015WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-04M	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-04A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-04D	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-04J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB2	-.720	.540	-1.21	.310	.050	.290	.050	8.34	.160	.120	.270	-3.90	.500	-6.53	.280	.090	.010	27.4	.010	.040	-21.1	.540	.150	.250
E043-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E043-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E049-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB3	-.300	-.460	-1.59	.210	.030	2.41	.020	5.19	.140	.090	-.090	-4.45	.040	-6.44	.120	.320	.120	57.9	1.23	.190	56.1	.420	-.090	.350
E059-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E059-08	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB4	-2.33	-.080	-1.23	.140	-.030	7.63	.080	11.6	.010	.140	.280	.440	.370	11.9	.230	.160	.090	88.1	.400	.120	178	.550	-.120	.330
IPE017SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE017SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE017SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E041-04A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E041-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

E041-04J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E041-15	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB5	-3.00	1.09	-1.21	.130	-.030	2.13	.090	7.21	-.070	.070	.120	-1.93	.590	1.21	.230	.300	.140	61.4	.070	.050	-7.93	.670	-.010	.260
IPE011WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE011WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE011WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E010-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E010-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E010-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E416-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB6	-6.88	.860	-2.15	.340	-.010	2.13	.080	8.49	.080	.100	-.010	-1.50	.330	8.77	.440	.260	.060	52.6	-.180	.030	35.8	.010	-.270	.430
E016-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E016-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E016-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E016-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB7	-4.64	.060	-1.46	.170	.010	6.53	.100	8.20	-.010	.040	.050	-2.33	.480	7.48	.120	.490	.110	65.3	-.290	.290	143	1.24	-.180	.260

QC limit of each parameter are listed in a table attached next to all the ICP check forms
* : Out of QC Limit

	Pos ID	Type	Samplename	Comment	Data File	Type*	Dilu Factor	CorrFact	Check	Check Table	Fail Action
1	0	Unk	S0		ID8E006001			1	☐		Continue
2	0	Unk	S2		ID8E006002			1	☐		Continue
3	0	Unk	S5		ID8E006003			1	☐		Continue
4	0	Unk	S8		ID8E006004			1	☐		Continue
5	0	Unk	S11		ID8E006005			1	☐		Continue
6	0	Unk	S17		ID8E006006			1	☐		Continue
7	1	QC	ICV		ID8E006007			1	☒	ICV	Continue
8	2	QC	ICB		ID8E006008			1	☒	CCB1	Continue
9	3	Unk	MRL1A	BGMP LOW	ID8E006009			1	☐		Continue
10	4	Unk	MRL1B	CAM3	ID8E006010			1	☐		Continue
11	5	QC	ICSA1		ID8E006011			1	☒	ICSA	Continue
12	6	QC	ICSAB1		ID8E006012			1	☒	ICSAB	Continue
13	7	QC	CCV1		ID8E006013			1	☒	CCV	Continue
14	8	QC	CCB1		ID8E006014			1	☒	CCB1	Continue
15	19	QC	IPE015WB		ID8E006015			1	☒	CCB1	Continue
16	20	QC	IPE015WL		ID8E006016			1	☒	LCS	Continue
17	21	QC	IPE015WC		ID8E006017			1	☒	LCS	Continue
18	22	Unk	E043-04M		ID8E006018			1	☐		Continue
19	23	Unk	E043-04A		ID8E006019			1	☐		Continue
20	24	Unk	E043-04		ID8E006020			1	☐		Continue
21	25	Unk	E043-04D		ID8E006021			1	☐		Continue
22	26	Unk	E043-04J		ID8E006022			1	☐		Continue
23	27	Unk	E043-05		ID8E006023			1	☐		Continue
24	28	Unk	BLANK		ID8E006024			1	☐		Continue
25	29	QC	CCV2		ID8E006025			1	☒	CCV	Continue
26	30	QC	CCB2		ID8E006026			1	☒	CCB1	Continue
27	31	Unk	E043-02		ID8E006027			1	☐		Continue
28	32	Unk	E043-03		ID8E006028			1	☐		Continue
29	33	Unk	E049-01		ID8E006029			1	☐		Continue
30	34	Unk	E049-02		ID8E006030			1	☐		Continue
31	35	Unk	E049-03		ID8E006031			1	☐		Continue
32	36	Unk	E049-04		ID8E006032			1	☐		Continue
33	37	Unk	E049-05		ID8E006033			1	☐		Continue
34	38	Unk	E049-06		ID8E006034			1	☐		Continue
35	39	Unk	BLANK		ID8E006035			1	☐		Continue
36	40	QC	CCV3		ID8E006036			1	☒	CCV	Continue
37	41	QC	CCB3		ID8E006037			1	☒	CCB1	Continue
38	42	Unk	E059-01		ID8E006038			1	☐		Continue
39	43	Unk	E059-02		ID8E006039			1	☐		Continue
40	44	Unk	E059-03		ID8E006040			1	☐		Continue
41	45	Unk	E059-04		ID8E006041			1	☐		Continue
42	46	Unk	E059-05		ID8E006042			1	☐		Continue
43	47	Unk	E059-06		ID8E006043			1	☐		Continue
44	48	Unk	E059-07		ID8E006044			1	☐		Continue
45	49	Unk	E059-08		ID8E006045			1	☐		Continue
46	50	Unk	BLANK		ID8E006046			1	☐		Continue

	Pos ID	Type	Samplename	Comment	Data File	Type*	Diln Factor	CorrFact	Check	Check Table	Fail Action
47	51	QC	CCV4		ID8E006047			1	☒	CCV	Continue
48	52	QC	CCB4	Na 0.1	ID8E006048			1	☒	CCB1	Continue
49	9	QC	IPE017SB	Na 0.145	ID8E006049			1	☒	CCB1	Continue
50	10	QC	IPE017SL		ID8E006050			1	☒	LCS	Continue
51	11	QC	IPE017SC		ID8E006051			1	☒	LCS	Continue
52	12	Unk	E041-04A		ID8E006052			1	☐		Continue
53	13	Unk	E041-04		ID8E006053			1	☐		Continue
54	14	Unk	E041-04J		ID8E006054			1	☐		Continue
55	15	Unk	E041-15		ID8E006055			1	☐		Continue
56	16	Unk	BLANK		ID8E006056			1	☐		Continue
57	17	QC	CCV5		ID8E006057			1	☒	CCV	Continue
58	18	QC	CCB5		ID8E006058			1	☒	CCB1	Continue
59	53	QC	IPE011WB		ID8E006059			1	☒	CCB1	Continue
60	54	QC	IPE011WL		ID8E006060			1	☒	LCS	Continue
61	55	QC	IPE011WC		ID8E006061			1	☒	LCS	Continue
62	56	Unk	E010-01A		ID8E006062			1	☐		Continue
63	57	Unk	E010-01		ID8E006063			1	☐		Continue
64	58	Unk	E010-01J		ID8E006064			1	☐		Continue
65	59	Unk	E416-01		ID8E006065			1	☐		Continue
66	60	Unk	BLANK		ID8E006066			1	☐		Continue
67	61	QC	CCV6		ID8E006067			1	☒	CCV	Continue
68	62	QC	CCB6		ID8E006068			1	☒	CCB1	Continue
69	63	Unk	E016-01	TOT	ID8E006069			1	☐		Continue
70	64	Unk	E016-03	TOT	ID8E006070			1	☐		Continue
71	65	Unk	E016-02	DISS	ID8E006071			1	☐		Continue
72	66	Unk	E016-04	DISS	ID8E006072			1	☐		Continue
73	67	Unk	BLANK		ID8E006073			1	☐		Continue
74	68	QC	CCV7		ID8E006074			1	☒	CCV	Continue
75	69	QC	CCB7	Na 0.14	ID8E006075			1	☒	CCB1	Continue

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INDX	LSID	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	LSID
1	Blank	.00153	.00003	-.00002	.00004	-.00007	.00019	-.00107	.00034	-.00001	-.00144	Blank
2	S2				.54029	.94145	.09143	3.8127		.15898	1.0947	S2
3	S5		.00590	.00361								S5
4	S8								1.9344			S8
5	S11											S11
6	S17	.19563										S17
7	ICV	5.0439	.48710	.51120	.47713	.48891	.54353	.50541	49.496	.48121	.49944	ICV
8	ICB	.00356	-.00035	-.00037	.00022	-.00002	.00107	.00006	.05196	.00001	-.00006	ICB
9	MRL1A	.21008	.10223	.00931	.00536	.00406	.01076	.00517	.60176	.01054	.01536	MRL1A
10	MRL1B	.00276	.00882	.00925	.01086	.01048	.00988	.01033	.10361	.01051	.01030	MRL1B
11	ICSA1	457.74	.00041	-.00299	.00005	.00000	-.01049	-.00002	484.01	-.00007	-.00119	ICSA1
12	ICSAB1	469.84	.89859	1.0970	.53003	.49673	.55149	1.0809	478.57	.48765	.51390	ICSAB1
13	CCV1	5.0327	.50809	.53003	.49148	.50347	.53480	.53147	50.788	.49859	.51506	CCV1
14	CCB1	.01265	-.00003	-.00136	.00024	.00001	.00096	.00005	.06697	-.00005	.00010	CCB1
15	IPE015WB	.00569	.00023	-.00226	.00021	.00004	-.00018	.00004	.01981	.00008	.00003	IPE015WB
16	IPE015WL	9.7073	4.8995	1.0262	.99286	1.0340	1.0317	1.0763	51.591	.99022	1.0537	IPE015WL
17	IPE015WC	9.8089	4.9719	1.0347	.97579	1.0160	1.0442	1.0618	51.278	.99318	1.0395	IPE015WC
18	E043-04M	11.007	5.6294	1.1600	1.0903	1.0458	1.3535	1.0618	111.87	1.0358	1.0158	E043-04M
19	E043-04A	10.944	5.4799	1.1509	1.0796	1.0387	1.2979	1.0455	107.77	1.0237	1.0033	E043-04A
20	E043-04	.02051	.00448	.00425	.08496	.00016	.06916	.00024	58.910	.01216	-.00014	E043-04
21	E043-04D	.01732	.00151	.00594	.08643	.00006	.06902	.00022	58.216	.01191	-.00025	E043-04D
22	E043-04J	.00476	.00100	.00085	.01756	.00003	.01218	.00006	11.823	.00229	.00006	E043-04J
23	E043-05	.01543	.00042	.00660	.07952	.00003	.07012	.00015	58.225	.01079	-.00025	E043-05
24	BLANK	.04739	.00085	-.00011	.00020	-.00003	.00063	.00003	.12905	.00022	.00001	BLANK
25	CCV2	5.0006	.51045	.52316	.49115	.50084	.53281	.51203	49.866	.49078	.49638	CCV2
26	CCB2	-.00072	.00054	-.00121	.00031	.00005	.00029	.00005	.00834	.00016	.00012	CCB2
27	E043-02	.02150	-.00303	.00534	.06501	.00004	.07901	.00016	60.030	.02111	-.00020	E043-02
28	E043-03	.01878	-.00187	.00397	.08473	-.00002	.06481	.00017	57.645	.01168	-.00035	E043-03
29	E049-01	.02837	-.00145	.00167	.07230	-.00020	2.4248	.00020	61.437	.00107	.00023	E049-01
30	E049-02	.02927	-.00237	.00401	.04445	-.00029	3.1343	.00020	39.189	.00070	-.00012	E049-02
31	E049-03	.04246	-.00048	.00367	.04267	-.00022	3.8190	.00027	26.124	.00043	.00032	E049-03
32	E049-04	.02098	-.00271	.02221	.38315	-.00018	2.0219	-.00003	206.36	.00088	-.00011	E049-04
33	E049-05	.03494	-.00034	.03277	.08647	-.00051	5.4598	.00008	41.208	.00059	-.00013	E049-05
34	E049-06	.04076	-.00162	-.00104	.09250	-.00021	2.3537	-.00001	129.28	.00078	-.00031	E049-06
35	BLANK	.00417	-.00052	-.00033	.00020	.00004	.00484	.00002	.07357	.00003	.00010	BLANK
36	CCV3	4.9467	.51121	.52137	.49395	.50382	.53535	.50940	49.982	.49458	.49199	CCV3
37	CCB3	-.00030	-.00046	-.00159	.00021	.00003	.00241	.00002	.00519	.00014	.00009	CCB3
38	E059-01	.04747	-.00117	.00574	.04912	-.00051	6.0169	.00006	25.520	.00041	-.00008	E059-01
39	E059-02	.03246	-.00364	.00134	.06041	-.00009	.97575	.00015	73.942	.00093	-.00024	E059-02
40	E059-03	.03696	-.00343	.02487	.12750	-.00032	4.1476	-.00434	118.16	.00026	-.01509	E059-03
41	E059-04	.02498	-.00249	.00491	.03681	-.00009	1.0812	.00017	44.692	.00055	-.00010	E059-04
42	E059-05	.03709	-.00312	.00446	.03158	-.00061	6.4177	.00012	32.596	.00053	.00006	E059-05
43	E059-06	.02986	-.00170	.00214	.11361	-.00015	1.5261	.00020	89.848	.00065	-.00031	E059-06
44	E059-07	.03680	-.00312	.00307	.04388	-.00056	5.4468	.00013	36.553	.00056	-.00029	E059-07
45	E059-08	.05923	-.00318	-.00022	.07086	-.00060	6.2518	.00006	71.465	.00085	-.00033	E059-08
46	BLANK	.00341	-.00057	-.00185	.00047	-.00009	.02038	.00002	.14286	-.00005	.00005	BLANK
47	CCV4	4.8962	.51103	.52657	.49044	.49560	.54393	.51476	49.689	.49373	.49683	CCV4
48	CCB4	-.00233	-.00008	-.00123	.00014	-.00003	.00763	.00008	.01163	.00001	.00014	CCB4
49	IPE017SB	-.00131	-.00045	-.00180	.00026	.00000	.00507	.00004	.02917	-.00006	.00014	IPE017SB
50	IPE017SL	9.6781	5.0191	1.0416	.97508	1.0018	1.0457	1.0401	50.831	.99757	1.0144	IPE017SL
51	IPE017SC	9.7620	5.1356	1.0624	.98403	1.0139	1.0633	1.0458	51.353	1.0093	1.0183	IPE017SC
52	E041-04A	121.97	5.0900	1.1198	1.7682	1.0100	1.1010	1.0549	300.55	1.2553	1.1244	E041-04A
53	E041-04	114.51	-.00185	.02875	.80664	.00418	.00327	.00112	258.40	.25883	.10172	E041-04

INDX	LSID	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	LSID
54	E041-04J	22.912	.00066	.00622	.16238	.00088	.00337	-.00031	54.019	.05266	.01980	E041-04J
55	E041-15	112.46	-.01152	.03844	.86933	.00433	.00496	-.00081	142.64	.56983	.09338	E041-15
56	BLANK	.00103	.00063	-.00116	.00020	.00002	.00289	.00001	.05233	.00012	.00010	BLANK
57	CCV5	4.7882	.51131	.52713	.49628	.50007	.53315	.51439	49.765	.49594	.49472	CCV5
58	CCB5	-.00300	.00109	-.00121	.00013	-.00003	.00213	.00009	.00721	-.00007	.00007	CCB5
59	IPE011WB	-.00166	.00001	.00066	.00026	.00003	.00160	.00001	.02097	.00002	.00015	IPE011WB
60	IPE011WL	9.9450	5.2158	1.0647	1.0096	1.0362	1.0757	1.0430	51.474	1.0120	1.0155	IPE011WL
61	IPE011WC	9.7484	5.1822	1.0666	.99597	1.0258	1.0678	1.0429	51.412	1.0134	1.0113	IPE011WC
62	E010-01A	10.330	5.6965	1.2106	1.1754	1.0223	2.1990	1.0817	221.39	1.0127	1.0384	E010-01A
63	E010-01	.04263	.00435	.00266	.15355	.00007	1.0345	.00018	174.21	.00151	.00170	E010-01
64	E010-01J	.01843	.00387	.00061	.03050	.00000	.20602	.00000	36.184	.00046	.00033	E010-01J
65	E416-01	.03004	-.00142	.00102	.00997	.00000	.06687	.00051	3.5442	.00415	.00017	E416-01
66	BLANK	.01223	.00638	.02599	.00025	.00002	.00342	-.00324	.05682	-.00038	-.01046	BLANK
67	CCV6	4.8214	.51978	.53195	.49326	.49315	.53673	.50773	49.707	.50035	.48729	CCV6
68	CCB6	-.00688	.00086	-.00215	.00034	-.00001	.00213	.00008	.00849	.00008	.00010	CCB6
69	E016-01	20.076	-.01035	.03739	.11898	.00215	4.3874	.00052	81.960	.03303	.02748	E016-01
70	E016-03	16.947	-.00961	.00923	.19312	.00267	3.3971	.00292	336.41	.04739	.00742	E016-03
71	E016-02	.10553	-.01970	.01906	.04511	-.00051	4.2699	.00000	12.850	.00075	-.00355	E016-02
72	E016-04	.27662	-.02339	.00373	.04865	-.00039	3.2000	.00017	7.7385	.00093	-.00547	E016-04
73	BLANK	-.00418	-.00054	-.00218	.00024	-.00003	.01427	.00003	.23710	-.00003	.00000	BLANK
74	CCV7	4.8244	.52296	.53523	.49426	.49481	.54415	.50472	49.931	.50335	.48313	CCV7
75	CCB7	-.00464	.00006	-.00146	.00017	.00001	.00653	.00010	.00820	-.00001	.00004	CCB7

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INDX	LSID	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	LSID
1	Blank	.00095	.00003	.00029	.00000	.00003	.00008	-.00083	-.00096	.00001	.00021	Blank
2	S2	.21666		.28888		.11614		.97392			.20428	S2
3	S5						.95412			.00390		S5
4	S8				.25636				.80701			S8
5	S11		.05458									S11
6	S17											S17
7	ICV	.47375	4.7442	.49039	49.188	.47166	.51667	.50038	49.324	.49597	.48631	ICV
8	ICB	.00017	-.00379	-.00009	.00648	.00032	.00011	.00001	.03990	.00027	.00014	ICB
9	MRL1A	.01088	.17527	.00355	.22338	.00609	.01557	.02048	1.0588	.01039	.01036	MRL1A
10	MRL1B	.01068	.00257	.01038	.11580	.01133	.01008	.01046	.00524	.01024	.01043	MRL1B
11	ICSA1	.00264	177.78	.01224	519.84	.00049	-.00246	-.00041	-.03869	.00328	.00047	ICSA1
12	ICSAB1	.51199	181.76	1.0046	518.75	.46907	1.1381	1.0254	81.593	1.0771	1.1026	ICSAB1
13	CCV1	.48179	4.8468	.50234	51.001	.48737	.54474	.51710	50.476	.52707	.49843	CCV1
14	CCB1	.00022	.00260	.00048	.00340	.00033	.00022	.00005	.04234	-.00030	.00025	CCB1
15	IPE015WB	-.00016	.00027	.00046	-.00706	.00051	.00008	-.00012	.01345	-.00022	.00024	IPE015WB
16	IPE015WL	.96783	9.6309	1.0210	50.909	.99087	1.0916	1.0599	50.889	.97111	.95594	IPE015WL
17	IPE015WC	.96505	9.7580	1.0072	50.535	.96629	1.0799	1.0435	50.357	.98373	.95833	IPE015WC
18	E043-04M	1.0131	10.304	1.0145	64.913	.99661	1.0630	1.0259	55.743	1.1406	1.0578	E043-04M
19	E043-04A	1.0135	10.200	.99999	61.916	.99181	1.0329	1.0098	53.270	1.1447	.91590	E043-04A
20	E043-04	.00116	.00384	.00274	11.478	.00084	.00363	.00104	2.3933	-.00025	.00051	E043-04
21	E043-04D	.00116	-.00211	.00325	11.194	.00057	.00334	.00054	2.3847	.00035	-.00002	E043-04D
22	E043-04J	.00051	-.00014	.00057	2.2691	.00042	.00076	.00012	.49271	.00001	.00019	E043-04J
23	E043-05	.00075	.37565	.00273	11.573	.00479	.00801	.00064	2.4218	.00004	-.00002	E043-05
24	BLANK	.00037	-.00206	-.00061	-.00228	.00029	.00012	.00012	.03627	-.00031	.00003	BLANK
25	CCV2	.48101	4.7935	.48384	49.456	.48128	.53253	.49839	49.575	.52234	.49467	CCV2
26	CCB2	.00027	-.00390	.00050	-.00653	.00028	.00009	.00001	.02736	.00001	.00004	CCB2
27	E043-02	.00105	.00400	.00288	12.015	.00056	.01600	.00051	2.3002	.00009	.00002	E043-02
28	E043-03	.00092	-.00393	.00272	11.235	.00049	.00329	.00064	2.3564	.00013	-.00008	E043-03
29	E049-01	.00249	.00503	.00173	54.167	.01608	.01080	.00239	52.589	-.00177	-.00001	E049-01
30	E049-02	.00276	-.01164	.00187	47.708	.01370	.02912	.00386	62.529	-.00068	-.00005	E049-02
31	E049-03	.00377	-.00892	.00268	46.747	.00883	.04176	.00198	66.263	-.00035	.00000	E049-03
32	E049-04	.00189	48.461	.00322	91.732	.91304	-.00045	.00370	82.297	-.00184	.00002	E049-04
33	E049-05	.00179	1.8675	.00231	132.45	.21665	.00055	.00110	97.801	.00046	.00028	E049-05
34	E049-06	.00171	.27281	.00358	70.778	.16204	.00746	.00425	57.134	-.00218	.00001	E049-06
35	BLANK	.00034	-.00089	.00026	.00109	.00015	-.00001	.00022	.04673	-.00119	.00018	BLANK
36	CCV3	.48423	4.8154	.48256	49.356	.48221	.52951	.49435	49.726	.51907	.49404	CCV3
37	CCB3	-.00009	-.00445	.00004	-.00644	.00012	.00032	.00012	.05790	.00123	.00019	CCB3
38	E059-01	.00189	.49127	.00127	70.479	.08942	.04418	.00243	83.511	-.00092	.00025	E059-01
39	E059-02	.00102	.45383	.00289	30.442	.13655	.03733	.01421	31.124	-.00085	.00011	E059-02
40	E059-03	.00203	1.0610	-.01712	204.33	.05455	.00439	.01009	130.94	-.04805	.00020	E059-03
41	E059-04	.00142	.60492	.00232	21.321	.06835	.03094	.00263	27.904	-.00162	-.00004	E059-04
42	E059-05	.00171	.13706	.00306	77.961	.05600	.04031	.00137	75.700	-.00099	.00014	E059-05
43	E059-06	.00160	-.00822	.00268	38.513	.03684	.03151	.00535	35.214	-.00014	-.00016	E059-06
44	E059-07	.00199	-.01142	.00175	89.823	.02021	.03577	.00202	81.807	.00161	.00045	E059-07
45	E059-08	.00206	.27526	.00214	84.671	.03518	.03071	.00123	87.578	-.00066	.00026	E059-08
46	BLANK	.00019	-.00349	.00034	.01229	.00058	.00004	.00019	.16940	.00017	.00014	BLANK
47	CCV4	.48061	4.7923	.48575	48.838	.46865	.53200	.49915	49.829	.52614	.49247	CCV4
48	CCB4	.00028	.00044	.00037	.01190	.00023	.00016	.00009	.08813	.00040	.00012	CCB4
49	IPE017SB	.00019	-.00345	-.00030	.00745	.00040	.00010	.00015	.07220	-.00101	.00002	IPE017SB
50	IPE017SL	.95243	9.9102	.98536	49.447	.93632	1.0569	1.0195	50.274	.98852	.95528	IPE017SL
51	IPE017SC	.97237	10.017	.98894	49.662	.94686	1.0648	1.0231	50.588	1.0085	.96649	IPE017SC
52	E041-04A	1.1574	201.93	1.0354	122.50	4.2545	1.0856	1.1924	74.208	1.0399	.94625	E041-04A
53	E041-04	.15026	193.37	.05083	74.963	3.4539	.00764	.17232	23.889	-.00195	-.00264	E041-04

INDX	LSID	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	LSID
54	E041-04J	.03239	40.020	.01049	15.502	.71883	.00151	.03376	4.7551	-.00224	-.00056	E041-04J
55	E041-15	.14385	192.05	.04752	70.017	3.5998	.04380	.16613	21.857	-.00067	-.00238	E041-15
56	BLANK	.00003	.00817	.00049	-.00025	.00056	.00014	.00011	.02691	-.00143	.00004	BLANK
57	CCV5	.48074	4.8085	.48420	48.872	.47291	.52998	.49828	50.035	.52732	.49095	CCV5
58	CCB5	.00012	-.00193	.00059	.00121	.00023	.00030	.00014	.06141	.00007	.00005	CCB5
59	IPE011WB	.00026	.00245	.00064	.01068	.00039	.00012	.00014	.02430	-.00131	-.00006	IPE011WB
60	IPE011WL	1.0017	10.111	.98590	49.365	.96385	1.0662	1.0222	51.096	1.0175	.98022	IPE011WL
61	IPE011WC	.98082	10.124	.98286	49.427	.95417	1.0605	1.0191	50.728	1.0131	.96942	IPE011WC
62	E010-01A	1.0476	10.001	1.0004	209.77	1.4152	1.1107	1.0436	95.236	1.1592	.83378	E010-01A
63	E010-01	.00531	-.00971	.00519	162.24	.46051	.01806	.00423	43.642	.00311	.00262	E010-01
64	E010-01J	.00153	-.00448	.00092	32.295	.09281	.00382	.00091	8.2655	.00065	.00091	E010-01J
65	E416-01	.06589	.36541	.00724	.31030	.00507	.02657	.01069	13.731	-.00104	.00036	E416-01
66	BLANK	.00023	-.01225	-.01483	.01281	.00034	-.00640	.00275	.03813	-.03351	.00004	BLANK
67	CCV6	.47812	4.9093	.47665	48.659	.46412	.52517	.49022	49.841	.52625	.49281	CCV6
68	CCB6	-.00001	-.00150	.00033	.00877	.00044	.00026	.00006	.05255	-.00018	.00003	CCB6
69	E016-01	.05100	17.271	.01322	21.378	8.1193	1.1663	.11075	10.876	.00845	-.00112	E016-01
70	E016-03	.00929	25.804	.01311	33.497	2.8445	.94326	.03618	10.197	.00132	-.00099	E016-03
71	E016-02	.00953	.10779	.00468	11.477	.41913	1.8460	.02883	6.6214	.01067	-.00013	E016-02
72	E016-04	.02198	.49523	.00682	7.6784	.05475	2.2009	.00558	5.6633	.00803	.00015	E016-04
73	BLANK	.00014	-.00382	-.00003	.01313	.00045	.00168	.00028	.09339	.00113	.00010	BLANK
74	CCV7	.47584	4.9662	.47403	48.661	.46318	.52087	.48691	49.940	.52961	.49280	CCV7
75	CCB7	.00005	-.00233	.00048	.00748	.00012	.00049	.00011	.06527	-.00029	.00029	CCB7

ID8E006 Section 2 of 3

J22J

ID8E006 Section 3 of 3

INDX	LSID	Na	Tl	V	Zn	LSID
1	Blank	.00111	-.00092	-.00029	.00224	Blank
2	S2		.17832	.14439		S2
3	S5				1.0902	S5
4	S8	2.6232				S8
5	S11					S11
6	S17					S17
7	ICV	49.296	.47496	.48703	.52011	ICV
8	ICB	-.01322	-.00006	.00001	.00287	ICB
9	MRL1A	.51346	.01024	.01040	.02591	MRL1A
10	MRL1B	.10219	.01005	.00969	.01682	MRL1B
11	ICSA1	.10303	-.00562	.00000	.00633	ICSA1
12	ICSAB1	81.212	.91876	.51381	1.1011	ICSAB1
13	CCV1	50.748	.48538	.51730	.54103	CCV1
14	CCB1	-.00652	.00076	.00013	.00362	CCB1
15	IPE015WB	-.01347	.00035	.00001	.00203	IPE015WB
16	IPE015WL	51.080	.97509	1.0330	1.1443	IPE015WL
17	IPE015WC	50.649	.96447	1.0353	1.1095	IPE015WC
18	E043-04M	94.537	.97881	1.0673	1.1361	E043-04M
19	E043-04A	91.012	.97010	1.0509	1.1063	E043-04A
20	E043-04	41.941	.00206	.00619	.03602	E043-04
21	E043-04D	41.865	.00178	.00625	.02439	E043-04D
22	E043-04J	8.4164	.00010	.00116	.00859	E043-04J
23	E043-05	45.439	.00143	.00623	.01647	E043-05
24	BLANK	-.00488	.00032	.00002	.02357	BLANK
25	CCV2	49.621	.47293	.50944	.51872	CCV2
26	CCB2	-.02114	.00054	.00015	.00025	CCB2
27	E043-02	49.900	.00173	.00731	.03105	E043-02
28	E043-03	41.223	.00172	.00600	.03120	E043-03
29	E049-01	678.55	.00055	.00546	.02684	E049-01
30	E049-02	870.47	.00112	.01603	.02975	E049-02
31	E049-03	1197.9	.00129	.02517	.03068	E049-03
32	E049-04	447.19	.00263	.00023	.01303	E049-04
33	E049-05	1193.6	.00120	.00004	.01799	E049-05
34	E049-06	703.83	.00152	-.00012	.03619	E049-06
35	BLANK	.10096	.00008	-.00005	.00408	BLANK
36	CCV3	49.960	.46947	.50730	.51825	CCV3
37	CCB3	.05609	.00042	-.00009	.00035	CCB3
38	E059-01	1526.4	.00068	-.00050	.05174	E059-01
39	E059-02	329.28	.00115	.00033	.02516	E059-02
40	E059-03	1599.6	.06032	-.00120	.04075	E059-03
41	E059-04	171.07	.00194	.00082	.03034	E059-04
42	E059-05	1310.8	.00199	-.00073	.02694	E059-05
43	E059-06	497.54	.00192	.00428	.02657	E059-06
44	E059-07	839.67	.00110	.01455	.01276	E059-07
45	E059-08	1115.7	.00073	.00016	.02062	E059-08
46	BLANK	.61944	.00052	.00021	.01093	BLANK
47	CCV4	49.891	.47044	.50784	.52265	CCV4
48	CCB4	.17789*	.00055	-.00012	.00033	CCB4
49	IPE017SB	.14563*	.00046	.00004	.00207	IPE017SB
50	IPE017SL	50.485	.94272	1.0303	1.0836	IPE017SL
51	IPE017SC	50.832	.94750	1.0368	1.0938	IPE017SC
52	E041-04A	53.084	.94407	1.4533	1.6085	E041-04A
53	E041-04	2.1993	.01227	.42224	.53500	E041-04

54	E041-04J	.44050	.00346	.08341	.10620	E041-04J
55	E041-15	3.1959	.01082	.40047	.46140	E041-15
56	BLANK	-.01444	.00033	-.00004	.00160	BLANK
57	CCV5	50.080	.46755	.50718	.52385	CCV5
58	CCB5	-.00793	.00067	-.00001	.00026	CCB5
59	IPE011WB	-.02214	.00062	-.00017	.00115	IPE011WB
60	IPE011WL	51.288	.95012	1.0349	1.0778	IPE011WL
61	IPE011WC	50.816	.94278	1.0339	1.0853	IPE011WC
62	E010-01A	1095.3	.91129	1.0671	1.2008	E010-01A
63	E010-01	1068.1	.00183	.02056	.07719	E010-01
64	E010-01J	248.72	.00093	.00395	.01780	E010-01J
65	E416-01	26.250	.00258	.00617	.11130	E416-01
66	BLANK	.05438	.04005	-.00035	.01094	BLANK
67	CCV6	49.786	.46201	.50924	.51882	CCV6
68	CCB6	.03576	.00001	-.00027	.00043	CCB6
69	E016-01	1402.7	.01053	.27469	.10721	E016-01
70	E016-03	1105.2	.00410	.10777	.08013	E016-03
71	E016-02	1261.3	.00201	.08837	.00944	E016-02
72	E016-04	996.83	.00233	.01598	.01428	E016-04
73	BLANK	.46349	.00024	-.00008	.01149	BLANK
74	CCV7	49.815	.45847	.51024	.51751	CCV7
75	CCB7	.14273*	.00124	-.00018	.00026	CCB7
INDX	LSID	Na	Tl	V	Zn	LSID

ID8E006 Section 3 of 3

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DIGESTION LOG FOR ICP METALS

SOP ☐ EMAX-3005 Rev. No.4 ☐ EMAX-3010 Rev. No. 3 ☐ EMAX-3050 Rev. No. 3 ☐ EMAX-CLP-TAL ☐ Book # EIP-068

Matrix: SOIL Start Date: 5-8-8 Time: 13:25 Temp: 90 °C Ending Date: 5-8-08 Time: 17:25 Temp.: 90 °C

BATCH: IPE017-S

Sample Prep ID	Lab Sample ID	Matrix Description: Color	Matrix Description: Texture / Clarity	Matrix Description: Artifacts	Turbidity <1 NTU	Sample Amount (g ~~/ml~~)	pH	Extract Volume (ml)	Digestate Description: Color	Digestate Description: Clarity
01	IPE017-SB					—	N/A	100		
02	-SL					—		100		
03	-SC					—		100		
04	E041-04					1.001		100		
05	-15					1.002		100		
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										

5-8-8 MC

Standards	ID	Amount Added (ml)
LCS -1	SM1A - 11 - 20	1.0
LCS -2	SM1A - 11 - 21	1.0
LCS -3	SM1A - 11 - 22	1.0
MS	N/A	
Reagent	**Lot# / ID**	**Amount Added (ml)**
HNO_3	SW1A -03 - 721	10.0
HCl	SW1A -03 - 671	10.0
H_2O_2	SW1A -03 - 622	10.0
HNO3 (1:1)	SM5B-02 -80	10.0
Digestate Location	ICP	
Extract Location		

Legend:

Texture	Cs = Coarse	Md = Medium	Fn = Fine
Clarity	Cr = Clear	Cy = Cloudy	Td = Turbid
Artifacts	Rk = rocks	Sl = Shale	Vg=Vegetation
Color	Bu = blue	Bk = Black	Bn = Brown
	Gn = Green	Og = Orange	Rd = Red
	Yw = Yellow	Cl = Colorless	

Comments: Samples for Methods 200.7 or 200.8 Analyses

If turbidity ≤ 1 NTU no digestion is required unless otherwise required by the project

Prepared By: MC Standard Added By: MC

Witnessed By: TH Extracts Rcvd. By: TH 5/8/8

Checked By: TH

Date Disposed: Disposed by:

7025

LABORATORY REPORT FOR

TETRA TECH, INC.

LMC BEAUMONT SITE 2

WET CHEMICAL ANALYSES

SDG#: 08E041

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E041

METHOD 300.0
SULFATE

Two (2) soil samples were received on 05/06/08 for Sulfate analysis by method 300.0 in accordance with "Method for Determination of Inorganic Anions by Ion Chromatography", EPA 600/84-017.

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at MDL level.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limits.

4. **Duplicate**

   Duplicate sample was not designated in this SDG.

5. **Matrix Spike**

   MS sample was not designated in this SDG.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

SAMPLE RESULTS

METHOD 300.0
SULFATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E041

Matrix : SOIL
Instrument ID : I107

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)		DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	ICE026SB	ND		1	NA	5.00	2.50	05/10/0819:33	05/09/0811:30	AE14-112	AE14-110	ICE026S	NA	05/09/08
LCS1S	ICE026SL	48.8		1	NA	5.00	2.50	05/10/0819:50	05/09/0811:30	AE14-113	AE14-110	ICE026S	NA	05/09/08
LCD1S	ICE026SC	49.0		1	NA	5.00	2.50	05/10/0820:08	05/09/0811:30	AE14-114	AE14-110	ICE026S	NA	05/09/08
15B-20'	E041-04	5.28J	✓	1	6.4	5.34	2.67	05/10/0820:25	05/09/0811:30	AE14-115	AE14-110	ICE026S	05/05/0810:20	05/06/08
15B-70'	E041-15	18.7		1	13.7	5.79	2.90	05/10/0820:42	05/09/0811:30	AE14-116	AE14-110	ICE026S	05/05/0813:30	05/06/08

QC SUMMARIES

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E041
METHOD: METHOD 300.0

MATRIX:	SOIL			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1S				
LAB SAMP ID:	ICE026SB	ICE026SL	ICE026SC		
LAB FILE ID:	AE14-112	AE14-113	AE14-114		
DATE EXTRACTED:	05/09/0811:30	05/09/0811:30	05/09/0811:30	DATE COLLECTED:	NA
DATE ANALYZED:	05/10/0819:33	05/10/0819:50	05/10/0820:08	DATE RECEIVED:	05/09/08
PREP. BATCH:	ICE026S	ICE026S	ICE026S		
CALIB. REF:	AE14-110	AE14-110	AE14-110		

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Sulfate	ND	50.0	48.8	98	50.0	49.0	98	0	90-110	20

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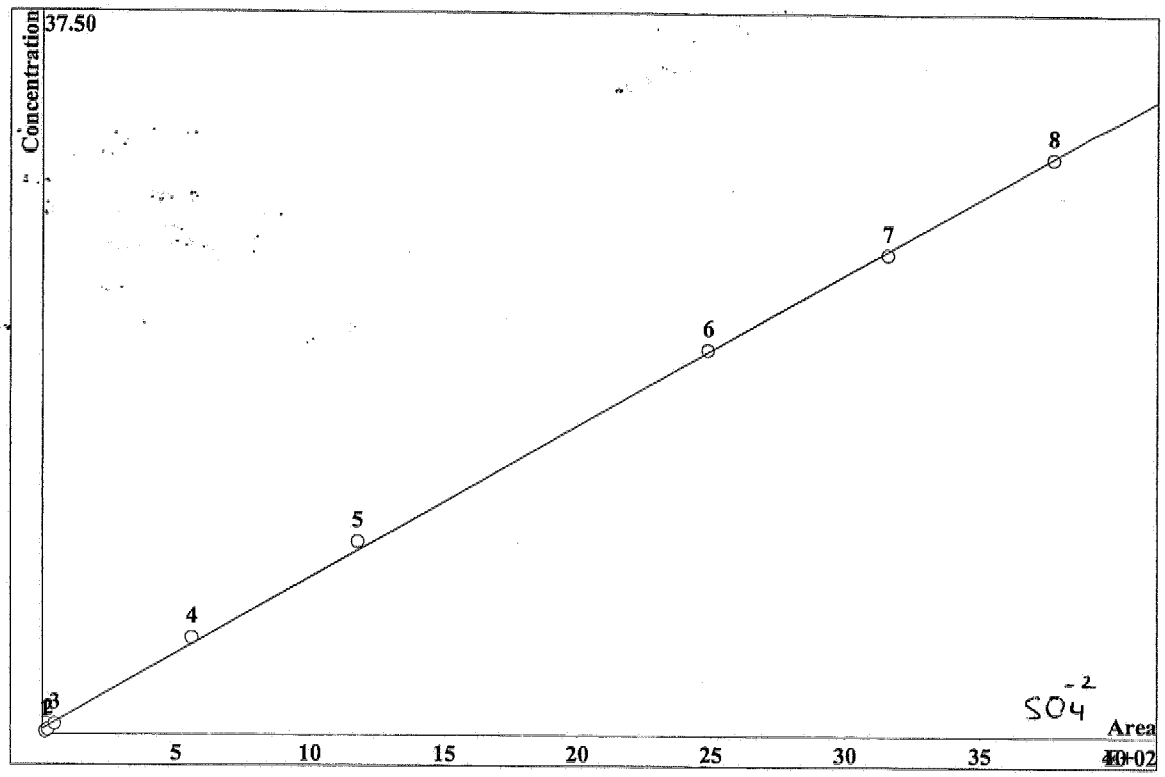
INITIAL CALIBRATION

CALIBRATION OF COMPONENT sulfate

Method: IC107-E12.mtw
Equation: Q = 0.00789618·A + 0.254322
RSD: 2.480 %
Correlation coefficient: 0.999767

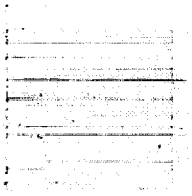


K3 = 0 K2 = 0 K1 = 0.00789618 K0 = 0.254322
Base: Area
Ref.channel: ch1
ISTD:
Formula: Linear
Weight: 1

Level	Height	Area	Conc.	Vol/Dil	Retention	Used	File
1	0.5065	11.44	0.1	1	12.94	Yes	s5081623.chw
2	0.9749	20.66	0.2	1	12.94	Yes	s5081640.chw
3	2.477	46.72	0.5	1	12.94	Yes	s5081657.chw
4	31.38	559.4	5	1	12.94	Yes	s5081715.chw
5	66.14	1178	10	1	12.94	Yes	s5081732.chw
6	137.6	2489	20	1	12.94	Yes	s5081749.chw
7	172.9	3158	25	1	12.94	Yes	s5081807.chw
8	207.6	3777	30	1	12.94	Yes	s5081824.chw

5-15-08

SECOND SOURCE



IC Result Check FormVersion : 8E3/AE12

LFID	LSID	Selection	phosphate	chloride	nitrate	fluoride	nitrite	bromide	sulfate	RawNetID	DF
AE12-11	ICV	PCNFIBS	90.3%	95.1%	98.7%	102.5%	105.4%	91.4%	93.8%	s5081841	1
AE12-12	ICB	PCNFIBS	0	0	0	0	0	0	0	s5081858	1
AE12-23	CCV2	PCNFIBS	90.5%	93.9%	95.7%	100.4%	100.6%	93.4%	93.9%	s5082209	1
AE12-24	CCB2	PCNFIBS	0	0	0	0	0	0	0	s5082226	1
AE12-28	CCV4	PCNFIBS	92.4%	93.4%	95.3%	101.2%	99.9%	92.6%	93.5%	s5082335	1
AE12-29	CCB4	PCNFIBS	0	0	0	0	0	0	0	s5082352	1
AE12-30	CCV6	PCNFIBS	90.6%	94.3%	95.2%	101.8%	99.5%	92.9%	93.8%	s5090010	1
AE12-31	CCB6	PCNFIBS	0	0	0	0	0	0	0	s5090027	1
AE12-35	CCV8	PCNFIBS	91%	94%	95.8%	101.5%	100.6%	93.3%	93.5%	s5090136	1
AE12-36	CCB8	PCNFIBS	0	0	0	0	0	0	0	s5090153	1

RL 5-15-08

DAILY CALIBRATION

IC Result Check FormVersion : 8E3/AE12

LFID	LSID	Selection	phosphate	chloride	nitrate	fluoride	nitrite	bromide	sulfate	RawNetID	DF
AE12-11	ICV	PCNFIBS	90.3%	95.1%	98.7%	102.5%	105.4%	91.4%	93.8%	s5081841	1
AE12-12	ICB	PCNFIBS	0	0	0	0	0	0	0	s5081858	1
AE12-23	CCV2	PCNFIBS	90.5%	93.9%	95.7%	100.4%	100.6%	93.4%	93.9%	s5082209	1
AE12-24	CCB2	PCNFIBS	0	0	0	0	0	0	0	s5082226	1
AE12-28	CCV4	PCNFIBS	92.4%	93.4%	95.3%	101.2%	99.9%	92.6%	93.5%	s5082335	1
AE12-29	CCB4	PCNFIBS	0	0	0	0	0	0	0	s5082352	1
AE12-30	CCV6	PCNFIBS	90.6%	94.3%	95.2%	101.8%	99.5%	92.9%	93.8%	s5090010	1
AE12-31	CCB6	PCNFIBS	0	0	0	0	0	0	0	s5090027	1
AE12-35	CCV8	PCNFIBS	91%	94%	95.8%	101.5%	100.6%	93.3%	93.5%	s5090136	1
AE12-36	CCB8	PCNFIBS	0	0	0	0	0	0	0	s5090153	1

ANALYTICAL LOG

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

IC Eluent: SW4-01-57 (550mm Na_2CO_3/100mm $NaHCO_3$)
SW4-01-~~53~~ 59 09 5/14/08 (100mm $NaHCO_3$)
IC Regenerant: SW4-01-~~56~~ 59 09 5/14/08 (1000mm H_2SO_4)

Book #: A107-005
Instrument No.: 107
Analytical Sequence: AE14
Method File: IC107 - E12.mtw
Analytical Batch: ICE020W, ICE022W, ICE024W, ICE026S

SOP #	Rev. #
☑ EMAX-300.0	4
☐ EMAX-300.0M	0
☐ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

STANDARDS ID	
ICAL	SI1B-09-28-2
ICV	SI1B-09-28-3
CCV	SI1B-09-30-2
CCV-15	N/A
CCV-30	↓
LCS	SI1B-09-30-3
MS	ACCUSPEC: Br^-, SO_4^{2-} (5ppm) F, Cl^-, NO_2, NO_3, PO_4 (2ppm)
IPC	N/A
CMC	↓
MRL	↓

CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
—	(±) 30	—

ELECTRONIC DATA ARCHIVAL	
Location	Date
☑ METROHM	5/14/08
☐	

Analyzed By: YP

Date: 5/9/08

F1

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s5091124.chw	IC107-E12.mtw	AE14-01 CCV10	1	1.0	1.0	1.0	100.0	0		
s5091141.chw	IC107-E12.mtw	AE14-02 CCB10	2	1.0	1.0	1.0	100.0	0		
s5091159.chw	IC107-E12.mtw	AE14-03 ICE020WB	3	1.0	1.0	1.0	100.0	0		
s5091216.chw	IC107-E12.mtw	AE14-04 ICE020WL	4	1.0	1.0	1.0	100.0	0		
s5091233.chw	IC107-E12.mtw	AE14-05 ICE020WC	5	1.0	1.0	1.0	100.0	0		
s5091259.chw	IC107-E12.mtw	AE14-06 E078-10	6	1.0	1.0	1.0	100.0	0		
s5091316.chw	IC107-E12.mtw	AE14-07 E078-09	7	1.0	1.0	1.0	100.0	0		
s5091334.chw	IC107-E12.mtw	AE14-08 E078-09D	8	1.0	1.0	1.0	100.0	0		
s5091351.chw	IC107-E12.mtw	AE14-09 E078-09M	9	1.0	1.0	1.0	100.0	0		
s5091408.chw	IC107-E12.mtw	AE14-10 E078-09S	10	1.0	1.0	1.0	100.0	0		
s5091425.chw	IC107-E12.mtw	AE14-11 E078-10R	11	1.0	1.0	1.0	100.0	0		
s5091443.chw	IC107-E12.mtw	AE14-12 RINSE	12	1.0	1.0	1.0	100.0	0		
s5091500.chw	IC107-E12.mtw	AE14-13 CCV12	13	1.0	1.0	1.0	100.0	0		
s5091517.chw	IC107-E12.mtw	AE14-14 CCB12	14	1.0	1.0	1.0	100.0	0		
s5091535.chw	IC107-E12.mtw	AE14-15 E043-02 DF=10	15	1.0	10.0	1.0	100.0	0		
s5091552.chw	IC107-E12.mtw	AE14-16 E439-01	16	1.0	1.0	1.0	100.0	0		
s5091609.chw	IC107-E12.mtw	AE14-17 E043-03 DF=10	17	1.0	10.0	1.0	100.0	0		
s5091626.chw	IC107-E12.mtw	AE14-18 E043-04 DF=10	18	1.0	10.0	1.0	100.0	0		
s5091644.chw	IC107-E12.mtw	AE14-19 E043-04D DF=10	19	1.0	10.0	1.0	100.0	0		
s5091701.chw	IC107-E12.mtw	AE14-20 E043-04M DF=10	20	1.0	10.0	1.0	100.0	0		
s5091718.chw	IC107-E12.mtw	AE14-21 E043-04S DF=10	21	1.0	10.0	1.0	100.0	0		
s5091736.chw	IC107-E12.mtw	AE14-22 E439-01 DF=5	22	1.0	5.0	1.0	100.0	0		
s5091754.chw	IC107-E12.mtw	AE14-23 E095-01	23	1.0	1.0	1.0	100.0	0		
s5091811.chw	IC107-E12.mtw	AE14-24 RINSE	24	1.0	1.0	1.0	100.0	0		
s5091829.chw	IC107-E12.mtw	AE14-25 CCV14	25	1.0	1.0	1.0	100.0	0		
s5091846.chw	IC107-E12.mtw	AE14-26 CCB14	26	1.0	1.0	1.0	100.0	0		
s5091903.chw	IC107-E12.mtw	AE14-27 E043-05 DF=10	27	1.0	10.0	1.0	100.0	0		
s5091921.chw	IC107-E12.mtw	AE14-28 E052-02 DF=5	28	1.0	5.0	1.0	100.0	0		
s5091938.chw	IC107-E12.mtw	AE14-29 E052-02D DF=5	29	1.0	5.0	1.0	100.0	0		
s5091955.chw	IC107-E12.mtw	AE14-30 E052-02M DF=5	30	1.0	5.0	1.0	100.0	0		
s5092013.chw	IC107-E12.mtw	AE14-31 E052-02S DF=5	31	1.0	5.0	1.0	100.0	0		
s5092030.chw	IC107-E12.mtw	AE14-32 E059-01 DF=40	32	1.0	40.0	1.0	100.0	0		
s5092047.chw	IC107-E12.mtw	AE14-33 E059-02 DF=40	33	1.0	40.0	1.0	100.0	0		
s5092104.chw	IC107-E12.mtw	AE14-34 E059-03 DF=40	34	1.0	40.0	1.0	100.0	0		
s5092122.chw	IC107-E12.mtw	AE14-35 E059-04 DF=40	35	1.0	40.0	1.0	100.0	0		
s5092139.chw	IC107-E12.mtw	AE14-36 RINSE	36	1.0	1.0	1.0	100.0	0		
s5092156.chw	IC107-E12.mtw	AE14-37 CCV16	37	1.0	1.0	1.0	100.0	0		
s5092214.chw	IC107-E12.mtw	AE14-38 CCB16	38	1.0	1.0	1.0	100.0	0		
s5092231.chw	IC107-E12.mtw	AE14-39 E059-05 DF=40	39	1.0	40.0	1.0	100.0	0		
s5092248.chw	IC107-E12.mtw	AE14-40 E059-06 DF=40	40	1.0	40.0	1.0	100.0	0		
s5092305.chw	IC107-E12.mtw	AE14-41 E059-07 DF=40	41	1.0	40.0	1.0	100.0	0		
s5092323.chw	IC107-E12.mtw	AE14-42 E059-08 DF=40	42	1.0	40.0	1.0	100.0	0		
s5092340.chw	IC107-E12.mtw	AE14-43 RINSE	43	1.0	1.0	1.0	100.0	0		
s5092357.chw	IC107-E12.mtw	AE14-44 ICE022WB	44	1.0	1.0	1.0	100.0	0		
s5100015.chw	IC107-E12.mtw	AE14-45 ICE022WL	45	1.0	1.0	1.0	100.0	0		
s5100032.chw	IC107-E12.mtw	AE14-46 ICE022WC	46	1.0	1.0	1.0	100.0	0		
s5100049.chw	IC107-E12.mtw	AE14-47 CCV18	47	1.0	1.0	1.0	100.0	0		
s5100106.chw	IC107-E12.mtw	AE14-48 CCB18	48	1.0	1.0	1.0	100.0	0		
s5100124.chw	IC107-E12.mtw	AE14-49 E083-01 DF=40	49	1.0	40.0	1.0	100.0	0		
s5100141.chw	IC107-E12.mtw	AE14-50 E083-02 DF=40	50	1.0	40.0	1.0	100.0	0		
s5100158.chw	IC107-E12.mtw	AE14-51 E083-03 DF=40	51	1.0	40.0	1.0	100.0	0		
s5100216.chw	IC107-E12.mtw	AE14-52 E079-01 DF=40	52	1.0	40.0	1.0	100.0	0		
s5100233.chw	IC107-E12.mtw	AE14-53 E079-02 DF=40	53	1.0	40.0	1.0	100.0	0		
s5100250.chw	IC107-E12.mtw	AE14-54 E079-03 DF=40	54	1.0	40.0	1.0	100.0	0		
s5100307.chw	IC107-E12.mtw	AE14-55 E079-04 DF=40	55	1.0	40.0	1.0	100.0	0		
s5100325.chw	IC107-E12.mtw	AE14-56 E079-05 DF=40	56	1.0	40.0	1.0	100.0	0		
s5100342.chw	IC107-E12.mtw	AE14-57 RINSE	57	1.0	1.0	1.0	100.0	0		
s5100359.chw	IC107-E12.mtw	AE14-58 CCV20	58	1.0	1.0	1.0	100.0	0		
s5100417.chw	IC107-E12.mtw	AE14-59 CCB20	59	1.0	1.0	1.0	100.0	0		

FINAL

F2

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s5100434.chw	IC107-E12.mtw	AE14-60 E078-09 DF=2	60	1.0	2.0	1.0	100.0	0		
s5100451.chw	IC107-E12.mtw	AE14-61 E078-09D DF=2	61	1.0	2.0	1.0	100.0	0		
s5100509.chw	IC107-E12.mtw	AE14-62 E078-09M DF=2	62	1.0	2.0	1.0	100.0	0		
s5100526.chw	IC107-E12.mtw	AE14-63 E078-09S DF=2	63	1.0	2.0	1.0	100.0	0		
s5100543.chw	IC107-E12.mtw	AE14-64 E078-10 DF=2	64	1.0	2.0	1.0	100.0	0		
s5100600.chw	IC107-E12.mtw	AE14-65 E073-01 DF=40	65	1.0	40.0	1.0	100.0	0		
s5100618.chw	IC107-E12.mtw	AE14-66 E073-02 DF=40	66	1.0	40.0	1.0	100.0	0		
s5100635.chw	IC107-E12.mtw	AE14-67 E073-03 DF=40	67	1.0	40.0	1.0	100.0	0		
s5100652.chw	IC107-E12.mtw	AE14-68 E073-04 DF=40	68	1.0	40.0	1.0	100.0	0		
s5100710.chw	IC107-E12.mtw	AE14-69 RINSE	69	1.0	1.0	1.0	100.0	0		
s5100727.chw	IC107-E12.mtw	AE14-70 CCV22	70	1.0	1.0	1.0	100.0	0		
s5100744.chw	IC107-E12.mtw	AE14-71 CCB22	71	1.0	1.0	1.0	100.0	0		
s5100801.chw	IC107-E12.mtw	AE14-72 E073-05 DF=40	72	1.0	40.0	1.0	100.0	0		
s5100819.chw	IC107-E12.mtw	AE14-73 E073-06 DF=40	73	1.0	40.0	1.0	100.0	0		
s5100836.chw	IC107-E12.mtw	AE14-74 E073-07 DF=40	74	1.0	40.0	1.0	100.0	0		
s5100853.chw	IC107-E12.mtw	AE14-75 E073-08 DF=40	75	1.0	40.0	1.0	100.0	0		
s5100911.chw	IC107-E12.mtw	AE14-76 E073-09 DF=40	76	1.0	40.0	1.0	100.0	0		
s5100928.chw	IC107-E12.mtw	AE14-77 RINSE	77	1.0	40.0	1.0	100.0	0		
s5100945.chw	IC107-E12.mtw	AE14-78 ICE024WB	78	1.0	40.0	1.0	100.0	0		
s5101002.chw	IC107-E12.mtw	AE14-79 ICE024WL	79	1.0	1.0	1.0	100.0	0		
s5101020.chw	IC107-E12.mtw	AE14-80 ICE024WC	80	1.0	1.0	1.0	100.0	0		
s5101037.chw	IC107-E12.mtw	AE14-81 CCV24	81	1.0	1.0	1.0	100.0	0		
s5101054.chw	IC107-E12.mtw	AE14-82 CCB24	82	1.0	1.0	1.0	100.0	0		
s5101112.chw	IC107-E12.mtw	AE14-83 E091-01 DF=40	83	1.0	40.0	1.0	100.0	0		
s5101129.chw	IC107-E12.mtw	AE14-84 E091-02 DF=40	84	1.0	40.0	1.0	100.0	0		
s5101146.chw	IC107-E12.mtw	AE14-85 E091-03 DF=40	85	1.0	40.0	1.0	100.0	0		
s5101203.chw	IC107-E12.mtw	AE14-86 E091-04 DF=40	86	1.0	40.0	1.0	100.0	0		
s5101221.chw	IC107-E12.mtw	AE14-87 E091-05 DF=40	87	1.0	40.0	1.0	100.0	0		
s5101238.chw	IC107-E12.mtw	AE14-88 E091-06 DF=40	88	1.0	40.0	1.0	100.0	0		
s5101255.chw	IC107-E12.mtw	AE14-89 E091-07 DF=40	89	1.0	40.0	1.0	100.0	0		
s5101313.chw	IC107-E12.mtw	AE14-90 E091-08 DF=40	90	1.0	40.0	1.0	100.0	0		
s5101330.chw	IC107-E12.mtw	AE14-91 E091-10 DF=40	91	1.0	40.0	1.0	100.0	0		
s5101347.chw	IC107-E12.mtw	AE14-92 RINSE	92	1.0	1.0	1.0	100.0	0		
s5101404.chw	IC107-E12.mtw	AE14-93 CCV26	93	1.0	1.0	1.0	100.0	0		
s5101422.chw	IC107-E12.mtw	AE14-94 CCB26	94	1.0	1.0	1.0	100.0	0		
s5101439.chw	IC107-E12.mtw	AE14-95 E091-11 DF=40	95	1.0	40.0	1.0	100.0	0		
s5101456.chw	IC107-E12.mtw	AE14-96 E091-12 DF=40	96	1.0	40.0	1.0	100.0	0		
s5101514.chw	IC107-E12.mtw	AE14-97 E051-01 DF=40	97	1.0	40.0	1.0	100.0	0		
s5101531.chw	IC107-E12.mtw	AE14-98 E051-02 DF=40	98	1.0	40.0	1.0	100.0	0		
s5101548.chw	IC107-E12.mtw	AE14-99 E051-03 DF=40	99	1.0	40.0	1.0	100.0	0		
s5101606.chw	IC107-E12.mtw	AE14-100 E051-04 DF=40	100	1.0	40.0	1.0	100.0	0		
s5101623.chw	IC107-E12.mtw	AE14-101 E051-04D DF=40	101	1.0	40.0	1.0	100.0	0		
s5101640.chw	IC107-E12.mtw	AE14-102 E051-04M DF=40	102	1.0	40.0	1.0	100.0	0		
s5101657.chw	IC107-E12.mtw	AE14-103 E051-04S DF=40	103	1.0	40.0	1.0	100.0	0		
s5101715.chw	IC107-E12.mtw	AE14-104 RINSE	104	1.0	1.0	1.0	100.0	0		
s5101732.chw	IC107-E12.mtw	AE14-105 CCV28	105	1.0	1.0	1.0	100.0	0		
s5101749.chw	IC107-E12.mtw	AE14-106 CCB28	106	1.0	1.0	1.0	100.0	0		
s5101807.chw	IC107-E12.mtw	AE14-107 E051-05 DF=40	107	1.0	40.0	1.0	100.0	0		
s5101824.chw	IC107-E12.mtw	AE14-108 E095-01 DF=5	108	1.0	5.0	1.0	100.0	0		
s5101841.chw	IC107-E12.mtw	AE14-109 RINSE	109	1.0	1.0	1.0	100.0	0		
s5101858.chw	IC107-E12.mtw	AE14-110 CCV30	110	1.0	1.0	1.0	100.0	0		
s5101916.chw	IC107-E12.mtw	AE14-111 CCB30	111	1.0	1.0	1.0	100.0	0		
s5101933.chw	IC107-E12.mtw	AE14-112 ICE026SB	112	1.0	1.0	1.0	100.0	0		
s5101950.chw	IC107-E12.mtw	AE14-113 ICE026SL	113	1.0	1.0	1.0	100.0	0		
s5102008.chw	IC107-E12.mtw	AE14-114 ICE026SC	114	1.0	1.0	1.0	100.0	0		
s5102025.chw	IC107-E12.mtw	AE14-115 E041-04	115	1.0	1.0	1.0	100.0	0		
s5102042.chw	IC107-E12.mtw	AE14-116 E041-15	116	1.0	1.0	1.0	100.0	0		
s5102059.chw	IC107-E12.mtw	AE14-117 RINSE	117	1.0	1.0	1.0	100.0	0		
s5102117.chw	IC107-E12.mtw	AE14-118 CCV32	118	1.0	1.0	1.0	100.0	0		

FINAL

8015

F3

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s5102134.chw	IC107-E12.mtw	AE14-119 CCB32	119	1.0	1.0	1.0	100.0	0		

FINAL

8916

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

concentration of:

S1 — 0.1 ppm
S2 — 0.2 ppm
S3 — 0.5 ppm
S4 — 5.0 ppm
S5 — 10.0 ppm
S6 — 20.0 ppm
S7 — 25.0 ppm
S8 — 30.0 ppm

Linearity (ppm)

F^- — 10✓
Cl^- — 30✓
NO_2N — 10✓
Br^- — 25✓
NO_3N — 10✓
PO_4P — 25✓
SO_4^{2-} — 30✓
~~I~~ — not used [illegible] 5/9/08

IC Eluent. SW4-01-57/350mM Na_2CO_3/100mM $NaHCO_3$
SW4-01-~~53~~ 57 59 5/14/08 (100mM $NaHCO_3$)
IC Regenerant. SW4-01-~~56~~ 58 59 5/14/08 (1000mM H_2SO_4)

Book #: A107-005
Instrument No.: 107
Analytical Sequence: AE12
Method File: IC107-E12.MTW
Analytical Batch: ICE018W

SOP #	Rev. #
☑ EMAX-300.0	4
☐ EMAX-300.0M	0
☐ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

STANDARDS ID	
ICAL	SI1B-09-28-2
ICV	SI1B-09-28-3
CCV	SI1B-09-25-3
CCV-15	N/A
CCV-30	↓
LCS	SI1B-09-26-1
MS	ACCUSPEC - Br^-, SO_4^{2-} (5ppm) F^-, Cl^-, NO_2N, NO_3N, PO_4P (2ppm)
IPC	N/A
CMC	↓
MRL	

CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
—	(±) 30	—

ELECTRONIC DATA ARCHIVAL	
Location	Date
☑ METROHM	5/14/08
☐	

Analyzed By: YD

Date: 5/8/08

8017

F1

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s5081545.chw	IC107-E12.mtw	AE12-01 IB	1	1.0	1.0	1.0	100.0	0		
s5081603.chw	IC107-E12.mtw	AE12-02 S0	2	1.0	1.0	1.0	100.0	0		
s5081623.chw	IC107-E12.mtw	AE12-03 S1	3	1.0	1.0	1.0	100.0	1		
s5081640.chw	IC107-E12.mtw	AE12-04 S2	4	1.0	1.0	1.0	100.0	2		
s5081657.chw	IC107-E12.mtw	AE12-05 S3	5	1.0	1.0	1.0	100.0	3		
s5081715.chw	IC107-E12.mtw	AE12-06 S4	6	1.0	1.0	1.0	100.0	4		
s5081732.chw	IC107-E12.mtw	AE12-07 S5	7	1.0	1.0	1.0	100.0	5		
s5081749.chw	IC107-E12.mtw	AE12-08 S6	8	1.0	1.0	1.0	100.0	6		
s5081807.chw	IC107-E12.mtw	AE12-09 S7	9	1.0	1.0	1.0	100.0	7		
s5081824.chw	IC107-E12.mtw	AE12-10 S8	10	1.0	1.0	1.0	100.0	8		
s5081841.chw	IC107-E12.mtw	AE12-11 ICV	11	1.0	1.0	1.0	100.0	0		
s5081858.chw	IC107-E12.mtw	AE12-12 ICB	12	1.0	1.0	1.0	100.0	0		
s5081916.chw	IC107-E12.mtw	AE12-13 ICE018WB	13	1.0	1.0	1.0	100.0	0		
s5081933.chw	IC107-E12.mtw	AE12-14 ICE018WL	14	1.0	1.0	1.0	100.0	0	FINAL	
s5081950.chw	IC107-E12.mtw	AE12-15 ICE018WC	15	1.0	1.0	1.0	100.0	0		
s5082008.chw	IC107-E12.mtw	AE12-16 E811-01	16	1.0	1.0	1.0	100.0	0		
s5082025.chw	IC107-E12.mtw	AE12-17 E811-02	17	1.0	1.0	1.0	100.0	0		
s5082042.chw	IC107-E12.mtw	AE12-18 E811-03	18	1.0	1.0	1.0	100.0	0		
s5082059.chw	IC107-E12.mtw	AE12-19 E811-04	19	1.0	1.0	1.0	100.0	0		
s5082117.chw	IC107-E12.mtw	AE12-20 E811-05	20	1.0	1.0	1.0	100.0	0		
s5082134.chw	IC107-E12.mtw	AE12-21 E811-06	21	1.0	1.0	1.0	100.0	0		
s5082151.chw	IC107-E12.mtw	AE12-22 RINSE	22	1.0	1.0	1.0	100.0	0		
s5082209.chw	IC107-E12.mtw	AE12-23 CCV2	23	1.0	1.0	1.0	100.0	0		
s5082226.chw	IC107-E12.mtw	AE12-24 CCB2	24	1.0	1.0	1.0	100.0	0		
s5082243.chw	IC107-E12.mtw	AE12-25 E811-07	25	1.0	1.0	1.0	100.0	0		
s5082301.chw	IC107-E12.mtw	AE12-26 E811-08	26	1.0	1.0	1.0	100.0	0		
s5082318.chw	IC107-E12.mtw	AE12-27 RINSE	27	1.0	1.0	1.0	100.0	0		
s5082335.chw	IC107-E12.mtw	AE12-28 CCV4	28	1.0	1.0	1.0	100.0	0		
s5082352.chw	IC107-E12.mtw	AE12-29 CCB4	29	1.0	1.0	1.0	100.0	0		
s5090010.chw	IC107-E12.mtw	AE12-30 CCV6	30	1.0	1.0	1.0	100.0	0		
s5090027.chw	IC107-E12.mtw	AE12-31 CCB6	31	1.0	1.0	1.0	100.0	0		
s5090044.chw	IC107-E12.mtw	AE12-32 ICE018WQ	32	1.0	1.0	1.0	100.0	0		
s5090102.chw	IC107-E12.mtw	AE12-33 ICE018WX	33	1.0	1.0	1.0	100.0	0		
s5090119.chw	IC107-E12.mtw	AE12-34 ICE018WY	34	1.0	1.0	1.0	100.0	0		
s5090136.chw	IC107-E12.mtw	AE12-35 CCV8	35	1.0	1.0	1.0	100.0	0		
s5090153.chw	IC107-E12.mtw	AE12-36 CCB8	36	1.0	1.0	1.0	100.0	0		

8918

5-15-08

EXTRACTION LOG

SAMPLE PREPARATION LOG FOR IC/ANIONS

EMAX LABORATORIES, INC.

SOP ☐ EMAX-9056 ☑ EMAX-300.0 Book # EIC-003

Matrix Start Date 5/9/08 Time 11:30 End Date 5/9/08 Time 14:05

PREPARATION BATCH # ICE026W

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Dilution Volume (ml)	Extract Volume (ml)	Notes
*01	ICE026 SBB YP 5/9/08	10.0g	100ml	100ml	
*02	ICE026SL	↓	↓	↓	
*03	ICE026SC				
*04	E041-4				
*05	E041-15				
*06					
*07					YP 5/9/08
*08					
*09					
*10					
*11					
*12					
*13					
*14					
*15					
*16					
*17					
*18					
*19					
*20					
*21					
*22					
*23					
*24					
*25					

Standards	ID	Amount Added (ml)
Chloride	SW3-01-26	
Fluoride	SW3-01-34	
NO_2	-27	
NO_3-N	-35	
PO_4-P	-36	
SO_4	-16	
Br^-	↓ -28	

Reagent	Lot # / ID*
H_2SO_4	N/A
HCl	↓

Legend:

Color	Texture	Clarity	Artifacts
Bu = Blue Bl = Black	Cs = Coarse	Cr = Clear	Rk = Rocks
Bn = Brown Gn = Green	Md = Medium	Cy = Cloudy	Sl = Shale
Og = Orange Rd = Red	Fn = Fine	Td = turbid	Vg= Vegetation
Yw = Yellow			

Comments:

Prepared By: YP

Standard Added By: YP

Checked By:

8220

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E041

METHOD 314.0
PERCHLORATE

Fourteen (14) soil samples were received on 05/06/08 for Perchlorate analysis by Method 314.0 in accordance with "Method for Determination of Perchlorate by Ion Chromatography", EPA 600/98-118.

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at half of reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control sample results were within QC limits.

4. **Duplicate**

   Sample E041-03 was analyzed for duplicate. %RPD was within QC limit.

5. **Matrix Spike**

   Sample E041-03 was spiked. %Recovery was within QC limit.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

SAMPLE

METHOD 314.0
PERCHLORATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E041

Matrix : SOIL
Instrument ID : I57

SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/kg)	DLF	MOIST	RL (ug/kg)	MDL (ug/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	PCE006SB	ND	1	NA	20.0	10.0	05/08/0820:35	05/07/0817:35	JE08014	JE08013	PCE006S	NA	05/07/08
LCS1S	PCE006SL	243	1	NA	20.0	10.0	05/08/0821:17	05/07/0817:35	JE08016	JE08013	PCE006S	NA	05/07/08
LCD1S	PCE006SC	229	1	NA	20.0	10.0	05/08/0821:38	05/07/0817:35	JE08017	JE08013	PCE006S	NA	05/07/08
15B-5'	E041-01	ND	1	5.6	21.2	10.6	05/08/0823:44	05/07/0817:35	JE08023	JE08022	PCE006S	05/05/0810:05	05/06/08
15B-10'	E041-02	ND	1	6.1	21.3	10.6	05/09/0800:05	05/07/0817:35	JE08024	JE08022	PCE006S	05/05/0810:09	05/06/08
15B-15'	E041-03	ND	1	4.4	20.9	10.5	05/09/0800:26	05/07/0817:35	JE08025	JE08022	PCE006S	05/05/0810:15	05/06/08
15B-15'DUP	E041-03D	ND	1	4.4	20.9	10.5	05/09/0800:47	05/07/0817:35	JE08026	JE08022	PCE006S	05/05/0810:15	05/06/08
15B-15'MS	E041-03M	104	1	4.4	20.9	10.5	05/09/0801:08	05/07/0817:35	JE08027	JE08022	PCE006S	05/05/0810:15	05/06/08
15B-20'	E041-04	ND	1	6.4	21.4	10.7	05/09/0801:29	05/07/0817:35	JE08028	JE08022	PCE006S	05/05/0810:20	05/06/08
15B-25'	E041-05	ND	1	4.7	21.0	10.5	05/09/0801:50	05/07/0817:35	JE08029	JE08022	PCE006S	05/05/0810:29	05/06/08
15B-30'	E041-06	ND	1	4.1	20.9	10.4	05/09/0802:11	05/07/0817:35	JE08030	JE08022	PCE006S	05/05/0810:33	05/06/08
15B-35'	E041-07	ND	1	5.8	21.2	10.6	05/09/0802:32	05/07/0817:35	JE08031	JE08022	PCE006S	05/05/0810:40	05/06/08
15B-40'	E041-08	ND	1	6.7	21.4	10.7	05/09/0803:35	05/07/0817:35	JE08034	JE08033	PCE006S	05/05/0810:47	05/06/08
15B-45'	E041-09	62.9	1	5.6	21.2	10.6	05/09/0803:56	05/07/0817:35	JE08035	JE08033	PCE006S	05/05/0810:53	05/06/08
15B-50'	E041-10	73.7	1	4.9	21.0	10.5	05/09/0804:17	05/07/0817:35	JE08036	JE08033	PCE006S	05/05/0810:59	05/06/08
15B-55'	E041-11	78.6	1	6.9	21.5	10.7	05/09/0804:38	05/07/0817:35	JE08037	JE08033	PCE006S	05/05/0811:03	05/06/08
15B-60'	E041-12	15700	100	11.6	2260	1130	05/09/0818:00	05/07/0817:35	JE09009	JE09001	PCE006S	05/05/0811:16	05/06/08
15B-60'-DUP	E041-13	9660	100	7.5	2160	1080	05/09/0818:21	05/07/0817:35	JE09010	JE09001	PCE006S	05/05/0811:19	05/06/08
15B-70'	E041-15	18000	100	13.7	2320	1160	05/09/0818:42	05/07/0817:35	JE09011	JE09001	PCE006S	05/05/0813:30	05/06/08

QC SUMMARY

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E041
METHOD: METHOD 314.0

MATRIX:	SOIL			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1S				
LAB SAMP ID:	PCE006SB	PCE006SL	PCE006SC		
LAB FILE ID:	JE08014	JE08016	JE08017		
DATE EXTRACTED:	05/07/0817:35	05/07/0817:35	05/07/0817:35	DATE COLLECTED:	NA
DATE ANALYZED:	05/08/0820:35	05/08/0821:17	05/08/0821:38	DATE RECEIVED:	05/07/08
PREP. BATCH:	PCE006S	PCE006S	PCE006S		
CALIB. REF:	JE08013	JE08013	JE08013		

ACCESSION:

PARAMETER	BLNK RSLT (ug/kg)	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Perchlorate	ND	250	243	97	250	229	92	6	85-115	20

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E041
METHOD: METHOD 314.0

MATRIX:	SOIL		% MOISTURE:	4.4
DILUTION FACTOR:	1	1		
SAMPLE ID:	15B-15'			
LAB SAMP ID:	E041-03	E041-03M		
LAB FILE ID:	JE08025	JE08027		
DATE EXTRACTED:	05/07/0817:35	05/07/0817:35	DATE COLLECTED:	05/05/08 10:15
DATE ANALYZED:	05/09/0800:26	05/09/0801:08	DATE RECEIVED:	05/06/08
PREP. BATCH:	PCE006S	PCE006S		
CALIB. REF:	JE08022	JE08022		

ACCESSION:

PARAMETER	SMPL RSLT (ug/kg)	SPIKE AMT (ug/kg)	MS RSLT (ug/kg)	MS % REC	QC LIMIT (%)
Perchlorate	ND	105	104	100	80-120

8820

EMAX QUALITY CONTROL DATA
DUPLICATE SAMPLE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E041
METHOD: METHOD 314.0

MATRIX:	SOIL		% MOISTURE:	4.4
DILUTION FACTOR:	1	1		
SAMPLE ID:	15B-15'			
EMAX SAMP ID:	E041-03	E041-03D		
LAB FILE ID:	JE08025	JE08026		
DATE EXTRACTED:	05/07/0817:35	05/07/0817:35	DATE COLLECTED:	05/05/08 10:15
DATE ANALYZED:	05/09/0800:26	05/09/0800:47	DATE RECEIVED:	05/06/08
PREP. BATCH:	PCE006S	PCE006S		
CALIB. REF:	JE08022	JE08022		

ACCESSION:

PARAMETER	SMPL RSLT (ug/kg)	DUPL RSLT (ug/kg)	RPD RSLT %	QC LIMIT (%)
Perchlorate	ND	ND	0	20

INITIAL CALIBRATION

IC SEQ FORM (ESD)

LFID	LSID	SELCOMP	METHOD	DateTime	DF
JA25001	IB	P	IC57A25	01/25/0815:37	1
JA25002	S-0	P	IC57A25	01/25/0815:58	1
JA25003	S-1	P	IC57A25	01/25/0816:19	1
JA25004	S-2	P	IC57A25	01/25/0816:40	1
JA25005	S-3	P	IC57A25	01/25/0817:01	1
JA25006	S-4	P	IC57A25	01/25/0817:22	1
JA25007	S-5	P	IC57A25	01/25/0817:43	1
JA25008	ICV	P	IC57A25	01/25/0818:05	1
JA25009	ICB	P	IC57A25	01/25/0818:26	1

1-30-08

Method : c:\ezchrom\methods\ic57a25.met
Printed : Jan 28, 2008 10:18:46
Channel : A
Peak : PERCHLORATE

* - Replicate Not Used

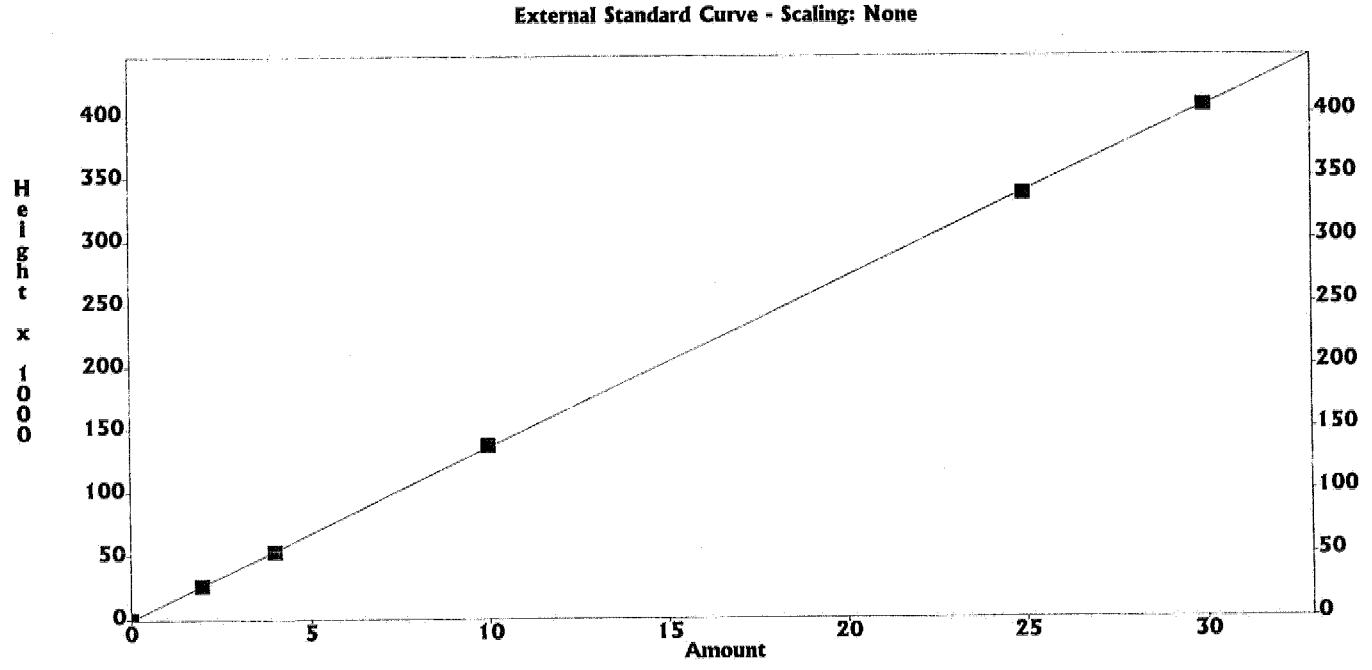
Level	Height	Amount	RF	Rep Hgt 1	Rep Hgt 2	Rep Hgt 3	Rep Hgt 4	Rep Hgt 5	Replic STD	Replic %RSD	Old Height
2	26911	2	13455.50	26911							0
3	53679	4	13419.75	53679							0
4	137051	10	13705.10	137051							0
5	336919	25	13476.76	336919							0
6	406525	30	13550.83	406525							0

Calib Flag: Replace

Average RF: 13521.6
RF StdDev: 113.225
RF %RSD: 0.837

RF Definition: Height / Amount
Weighting Method: None
Fit Through Zero: No

Linear Fit: Amount = 7.3954e-005 x Height - 0.0152094
R^2 = 0.999954



1-30-08

8030

SECOND SOURCE

IC RESULT FORM CalVersion: PCHL0314.A25

LFID	LSID	SELCOMP	PERCHLORATE	DateTime	Df
JA25001	IB	P	.000	01/25/0815:37	1
JA25002	S-0	P	.0000	01/25/0815:58	1
JA25003	S-1	P	2	01/25/0816:19	1
JA25004	S-2	P	4	01/25/0816:40	1
JA25005	S-3	P	10	01/25/0817:01	1
JA25006	S-4	P	25	01/25/0817:22	1
JA25007	S-5	P	30	01/25/0817:43	1
JA25008	ICV	P	104%	01/25/0818:05	1
JA25009	ICB	P	.000	01/25/0818:26	1

1-30-08

DAILY CALIBRATION

IC RESULT FORM CalVersion: PCHLO314.A25

LFID	LSID	SELCOMP		PERCHLORATE	DateTime	Df
JE08001	IPCS	P		80.4%	05/08/0814:40	1
JE08002	PCE005WB	P		.000	05/08/0816:11	1
JE08003	MRL	P		108%	05/08/0816:32	1
JE08004	PCE005WL	P		24.3	05/08/0816:53	1
JE08005	PCE005WC	P		23.7	05/08/0817:14	1
JE08006	MRL	P		113%	05/08/0817:41	1
JE08007	D206-01I	P		502	05/08/0818:07	50
JE08008	RINSE	P		.000	05/08/0818:28	1
JE08009	E040-02	P		.000	05/08/0818:49	1
JE08010	D206-02I	P		580	05/08/0819:10	50
JE08011	RINSE	P		1.99	05/08/0819:31	1
JE08012	CCV173-30	P		98.8%	05/08/0819:52	1
JE08013	IPCS	P	✓	86.6%	05/08/0820:14	1
JE08014	PCE006SB	P		.000	05/08/0820:35	1
JE08015	MRL	P		109%	05/08/0820:56	1
JE08016	PCE006SL	P		24.3	05/08/0821:17	1
JE08017	PCE006SC	P		22.9	05/08/0821:38	1
JE08018	MRL	P		109%	05/08/0821:59	1
JE08019	D206-03	P		2.46	05/08/0822:20	1
JE08020	D206-04	P		1.32	05/08/0822:41	1
JE08021	RINSE	P		.81	05/08/0823:02	1
JE08022	CCV174-15	P	✓	105%	05/08/0823:23	1
JE08023	E041-01	P		.000	05/08/0823:44	1
JE08024	E041-02	P		.000	05/09/0800:05	1
JE08025	E041-03	P		.000	05/09/0800:26	1
JE08026	E041-03D	P		.000	05/09/0800:47	1
JE08027	E041-03M	P		9.99	05/09/0801:08	1
JE08028	E041-04	P		.000	05/09/0801:29	1
JE08029	E041-05	P		.000	05/09/0801:50	1
JE08030	E041-06	P		.000	05/09/0802:11	1
JE08031	E041-07	P		.000	05/09/0802:32	1
JE08032	RINSE	P		1.71	05/09/0802:53	1
JE08033	CCV175-30	P	✓	97.4%	05/09/0803:14	1
JE08034	E041-08	P		.000	05/09/0803:35	1
JE08035	E041-09	P		5.94	05/09/0803:56	1
JE08036	E041-10	P		7.01	05/09/0804:17	1
JE08037	E041-11	P		7.32	05/09/0804:38	1
JE08038	E041-12	*		.000	05/09/0804:59	1
JE08039	E041-13	*		.000	05/09/0805:20	1
JE08040	E041-15	*		.000	05/09/0805:41	1
JE08041	RINSE	P		.000	05/09/0806:02	1
JE08042	CCV176-15	P	✓	99.5%	05/09/0806:23	1

IC RESULT FORM CalVersion: PCHLO314.A25

LFID	LSID	SELCOMP	PERCHLORATE	DateTime	Df
JE09001	IPCS	P	86.3%	05/09/0814:43	1
JE09002	PCE007WB	P	.000	05/09/0815:04	1
JE09003	MRL	P	95.4%	05/09/0815:25	1
JE09004	PCE007WL	P	24.7	05/09/0815:46	1
JE09005	PCE007WC	P	24.3	05/09/0816:07	1
JE09006	E061-01	P	.000	05/09/0816:28	1
JE09007	E061-01	P	57800	05/09/0817:15	2000
JE09008	E040-02	P	.000	05/09/0817:36	10
JE09009	E041-12	P	1390	05/09/0818:00	100
JE09010	E041-13	P	894	05/09/0818:21	100
JE09011	E041-15	P	1550	05/09/0818:42	100
JE09012	CCV177-30	P	97%	05/09/0819:03	1
JE09013	E040-02	*	138000E	05/09/0819:24	2000
JE09014	CCV178-15	P	99.3%	05/09/0819:45	1

ANALYTICAL LOG

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

NaOH : SW9A - 03-013

Book #:	A57-016
Instrument No.:	57
Analytical Sequence:	JE08
Method File:	IC57a25
Analytical Batch:	PCE0044W & PCE0059

SOP #	Rev. #
☐ EMAX-300.0	3
☐ EMAX-300.0M	0
☑ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

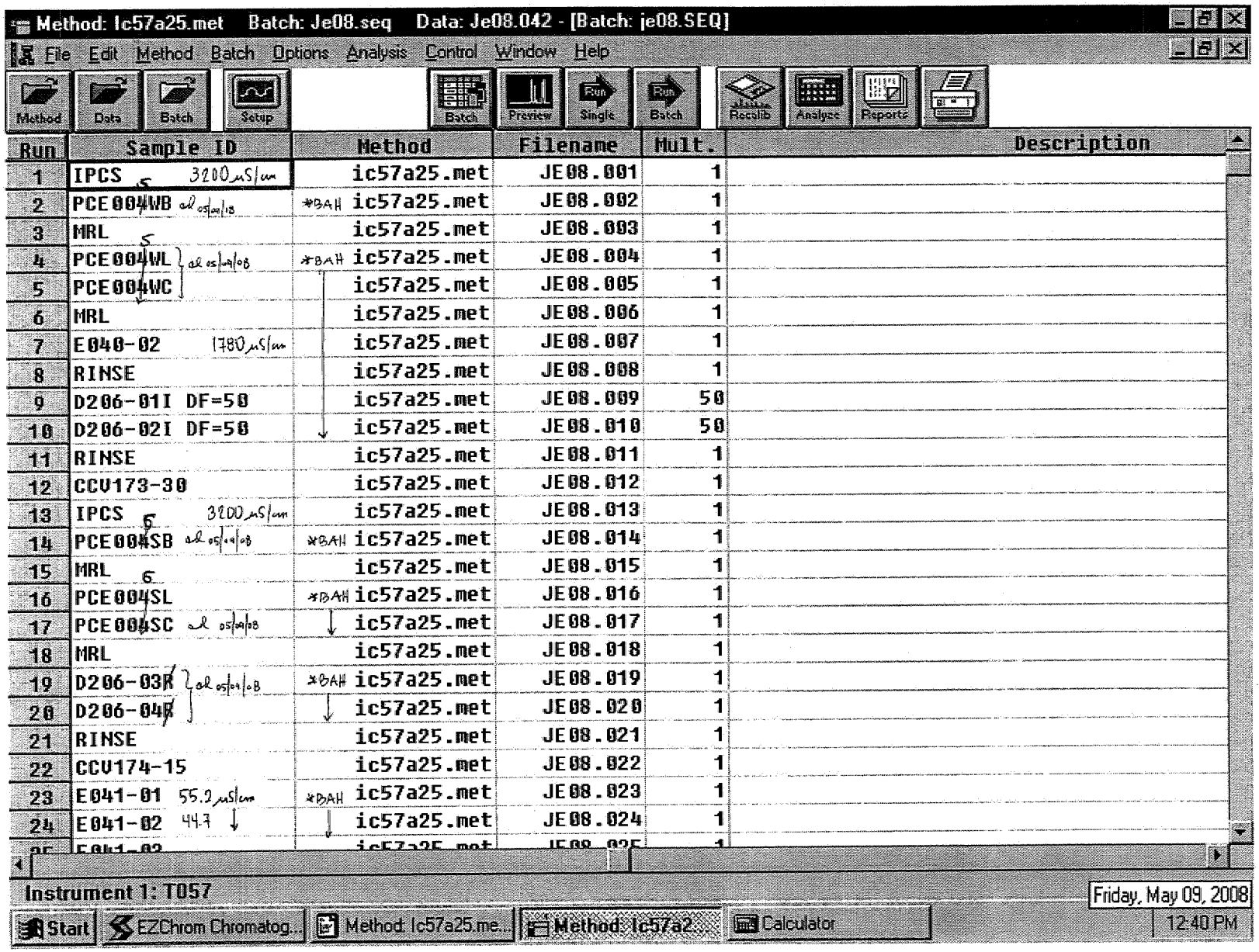
STANDARDS ID	
ICAL	SWBB-02-1063
ICV	1064
CCV-15	1095
CCV-30	1094
LCS	1096
MS	1090
IPC	1097
CMC	SWPI-01-127
MRL	SWBB-02-1091

CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
146.1	(±) 30	20°C

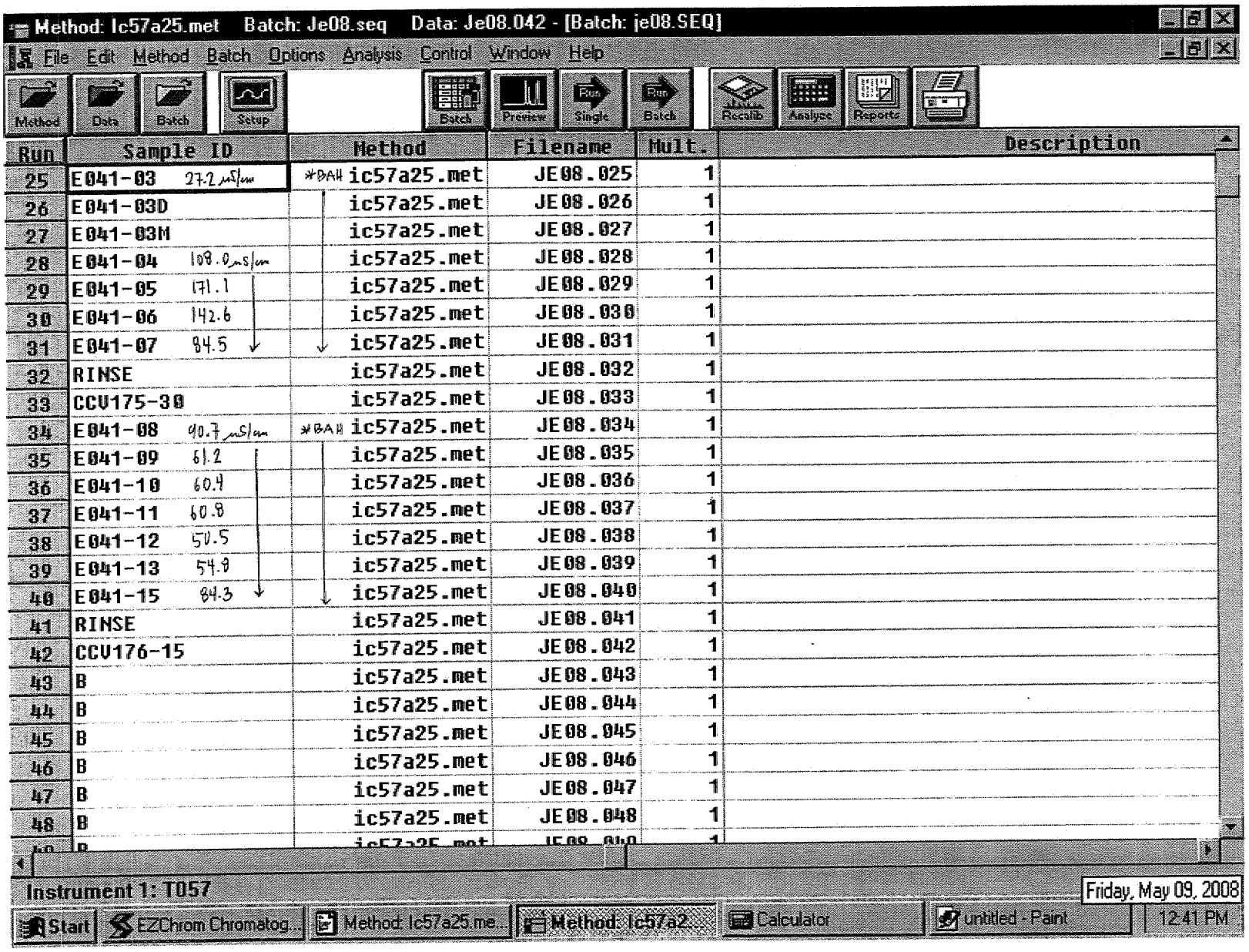
ELECTRONIC DATA ARCHIVAL	
Location	Date
☑ EZ-CHROM	
☐	

Analyzed By: ad

Date: 05/08/08


Method: Ic57a25.met Batch: Je08.seq Data: Je08.042 - [Batch: je08.SEQ]
File Edit Method Batch Options Analysis Control Window Help
Method Data Batch Setup Batch Preview Run Single Run Batch Recalib Analyse Reports
Run | Sample ID | Method | Filename | Mult. | Description
1 IPCS 3200 µS/cm | ic57a25.met | JE08.001 | 1
2 PCE004WB cal 05/04/08 | *BAH ic57a25.met | JE08.002 | 1
3 MRL | ic57a25.met | JE08.003 | 1
4 PCE004WL cal 05/04/08 | *BAH ic57a25.met | JE08.004 | 1
5 PCE004WC | ic57a25.met | JE08.005 | 1
6 MRL | ic57a25.met | JE08.006 | 1
7 E040-02 1780 µS/cm | ic57a25.met | JE08.007 | 1
8 RINSE | ic57a25.met | JE08.008 | 1
9 D206-01I DF=50 | ic57a25.met | JE08.009 | 50
10 D206-02I DF=50 | ic57a25.met | JE08.010 | 50
11 RINSE | ic57a25.met | JE08.011 | 1
12 CCV173-30 | ic57a25.met | JE08.012 | 1
13 IPCS 3200 µS/cm | ic57a25.met | JE08.013 | 1
14 PCE004SB cal 05/04/08 | *BAH ic57a25.met | JE08.014 | 1
15 MRL | ic57a25.met | JE08.015 | 1
16 PCE004SL | *BAH ic57a25.met | JE08.016 | 1
17 PCE004SC cal 05/04/08 | ic57a25.met | JE08.017 | 1
18 MRL | ic57a25.met | JE08.018 | 1
19 D206-03R cal 05/04/08 | *BAH ic57a25.met | JE08.019 | 1
20 D206-04R | ic57a25.met | JE08.020 | 1
21 RINSE | ic57a25.met | JE08.021 | 1
22 CCV174-15 | ic57a25.met | JE08.022 | 1
23 E041-01 55.2 µS/cm | *BAH ic57a25.met | JE08.023 | 1
24 E041-02 44.7 | ic57a25.met | JE08.024 | 1
Instrument 1: T057
Friday, May 09, 2008
Start EZChrom Chromatog... Method: Ic57a25.me... Method: Ic57a2... Calculator 12:40 PM

8528


Method: Ic57a25.met Batch: Je08.seq Data: Je08.042 - [Batch: je08.SEQ]
File Edit Method Batch Options Analysis Control Window Help
Method Data Batch Setup Batch Preview Run Single Run Batch Recalib Analyse Reports
Run Sample ID Method Filename Mult. Description
25 E041-03 27.2 mS/m *BAH ic57a25.met JE08.025 1
26 E041-03D ic57a25.met JE08.026 1
27 E041-03M ic57a25.met JE08.027 1
28 E041-04 108.0 mS/m ic57a25.met JE08.028 1
29 E041-05 171.1 ic57a25.met JE08.029 1
30 E041-06 142.6 ic57a25.met JE08.030 1
31 E041-07 84.5 ic57a25.met JE08.031 1
32 RINSE ic57a25.met JE08.032 1
33 CCV175-30 ic57a25.met JE08.033 1
34 E041-08 90.7 mS/m *BAH ic57a25.met JE08.034 1
35 E041-09 61.2 ic57a25.met JE08.035 1
36 E041-10 60.4 ic57a25.met JE08.036 1
37 E041-11 60.8 ic57a25.met JE08.037 1
38 E041-12 50.5 ic57a25.met JE08.038 1
39 E041-13 54.8 ic57a25.met JE08.039 1
40 E041-15 84.3 ic57a25.met JE08.040 1
41 RINSE ic57a25.met JE08.041 1
42 CCV176-15 ic57a25.met JE08.042 1
43 B ic57a25.met JE08.043 1
44 B ic57a25.met JE08.044 1
45 B ic57a25.met JE08.045 1
46 B ic57a25.met JE08.046 1
47 B ic57a25.met JE08.047 1
48 B ic57a25.met JE08.048 1
Instrument 1: T057
Friday, May 09, 2008
Start EZChrom Chromatog... Method: Ic57a25.me... Method: Ic57a2... Calculator untitled - Paint 12:41 PM

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

NaOH: SW9A - 03-013

Book #:	**A57-016**
Instrument No.:	**57**
Analytical Sequence:	JE09
Method File:	IC57a25
Analytical Batch:	PCE0078W

SOP #	Rev. #
☐ EMAX-300.0	3
☐ EMAX-300.0M	0
☑ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

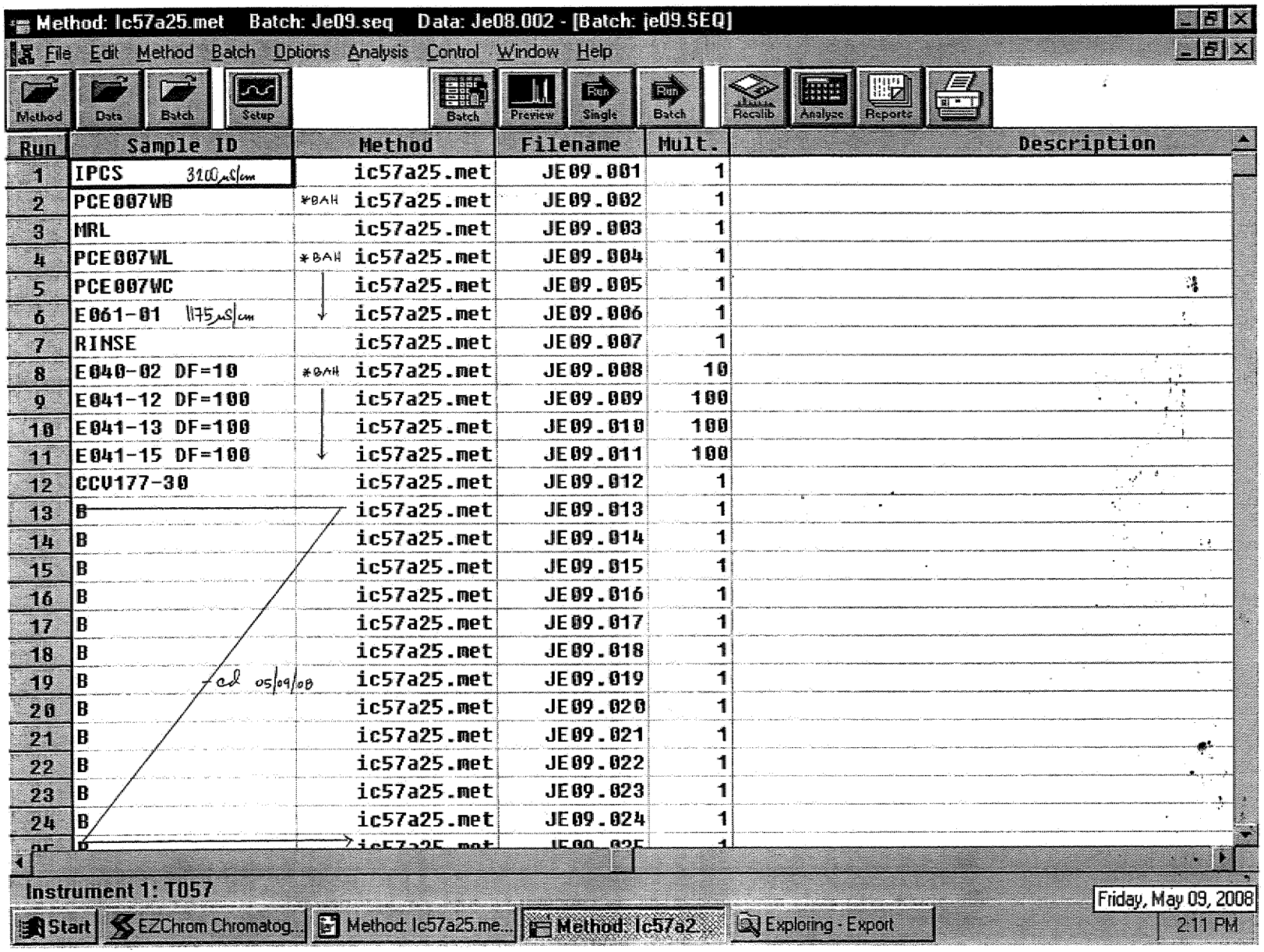
STANDARDS ID	
ICAL	SW8B - 02 - 1063
ICV	1064
CCV-15	1095
CCV-30	1094
LCS	1096
MS	1090
IPC	1097
CMC	SW81 - 01 - 127
MRL	SW8B - 02 - 1091

CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
145.8	(±) 30	20°C

ELECTRONIC DATA ARCHIVAL	
Location	Date
☑ EZ-CHROM	
☐	

Analyzed By: ad

Date: 05/09/08


Method: Ic57a25.met Batch: Je09.seq Data: Je08.002 - [Batch: je09.SEQ]
File Edit Method Batch Options Analysis Control Window Help
Method Data Batch Setup Batch Preview Run Single Run Batch Recalib Analyse Reports
Run Sample ID Method Filename Mult. Description
1 IPCS 3200 µS/cm ic57a25.met JE09.001 1
2 PCE007WB *BAH ic57a25.met JE09.002 1
3 MRL ic57a25.met JE09.003 1
4 PCE007WL *BAH ic57a25.met JE09.004 1
5 PCE007WC ic57a25.met JE09.005 1
6 E061-01 1175 µS/cm ic57a25.met JE09.006 1
7 RINSE ic57a25.met JE09.007 1
8 E040-02 DF=10 *BAH ic57a25.met JE09.008 10
9 E041-12 DF=100 ic57a25.met JE09.009 100
10 E041-13 DF=100 ic57a25.met JE09.010 100
11 E041-15 DF=100 ic57a25.met JE09.011 100
12 CCV177-30 ic57a25.met JE09.012 1
13 B ic57a25.met JE09.013 1
14 B ic57a25.met JE09.014 1
15 B ic57a25.met JE09.015 1
16 B ic57a25.met JE09.016 1
17 B ic57a25.met JE09.017 1
18 B ic57a25.met JE09.018 1
19 B ad 05/09/08 ic57a25.met JE09.019 1
20 B ic57a25.met JE09.020 1
21 B ic57a25.met JE09.021 1
22 B ic57a25.met JE09.022 1
23 B ic57a25.met JE09.023 1
24 B ic57a25.met JE09.024 1
Instrument 1: T057
Start EZChrom Chromatog... Method: Ic57a25.me... Method: Ic57a2... Exploring - Export
Friday, May 09, 2008
2:11 PM

8612

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

NaOH : SW9A-03-013

Book #:	A57-016
Instrument No.:	57
Analytical Sequence:	3A25
Method File:	IC57A25
Analytical Batch:	N/A

SOP #	Rev. #
☐ EMAX-300.0	3
☐ EMAX-300.0M	0
☑ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

STANDARDS ID	
ICAL	SW8B-02-1063
ICV	↓ -1064
CCV-15	N/A
CCV-30	
LCS	
MS	
IPC	
CMC	
MRL	↓

CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
	(±) 30	

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ EZ-CHROM	
☐	

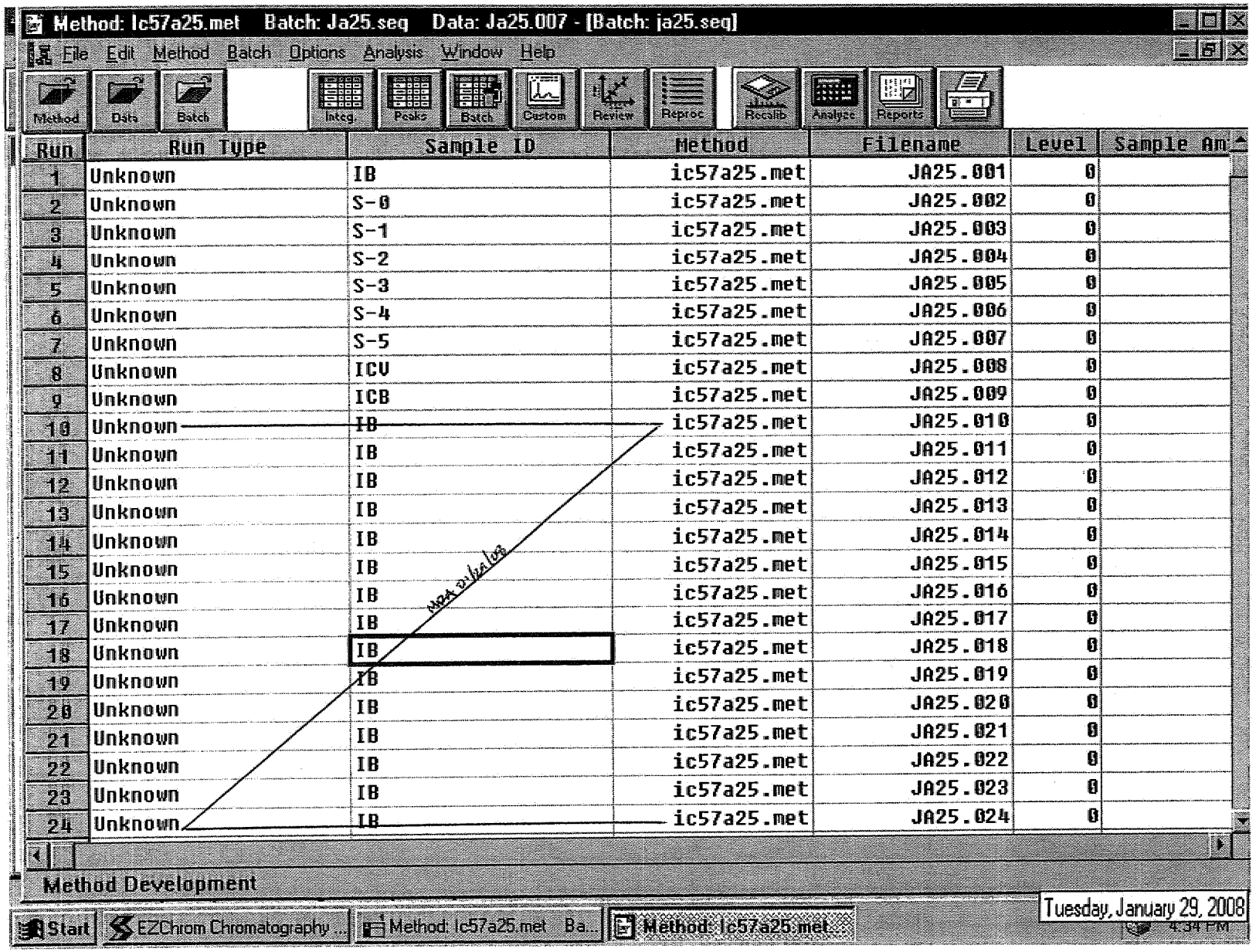
Analyzed By: MBA /cl

Date: 01/25/08

Method: Ic57a25.met Batch: Ja25.seq Data: Ja25.007 - [Batch: ja25.seq]

File Edit Method Batch Options Analysis Window Help

Method Data Batch Integ. Peaks Batch Custom Review Reproc Recalib Analyze Reports



Run	Run Type	Sample ID	Method	Filename	Level	Sample Am
1	Unknown	IB	ic57a25.met	JA25.001	0	
2	Unknown	S-0	ic57a25.met	JA25.002	0	
3	Unknown	S-1	ic57a25.met	JA25.003	0	
4	Unknown	S-2	ic57a25.met	JA25.004	0	
5	Unknown	S-3	ic57a25.met	JA25.005	0	
6	Unknown	S-4	ic57a25.met	JA25.006	0	
7	Unknown	S-5	ic57a25.met	JA25.007	0	
8	Unknown	ICV	ic57a25.met	JA25.008	0	
9	Unknown	ICB	ic57a25.met	JA25.009	0	
10	Unknown	IB	ic57a25.met	JA25.010	0	
11	Unknown	IB	ic57a25.met	JA25.011	0	
12	Unknown	IB	ic57a25.met	JA25.012	0	
13	Unknown	IB	ic57a25.met	JA25.013	0	
14	Unknown	IB	ic57a25.met	JA25.014	0	
15	Unknown	IB	ic57a25.met	JA25.015	0	
16	Unknown	IB	ic57a25.met	JA25.016	0	
17	Unknown	IB	ic57a25.met	JA25.017	0	
18	Unknown	IB	ic57a25.met	JA25.018	0	
19	Unknown	IB	ic57a25.met	JA25.019	0	
20	Unknown	IB	ic57a25.met	JA25.020	0	
21	Unknown	IB	ic57a25.met	JA25.021	0	
22	Unknown	IB	ic57a25.met	JA25.022	0	
23	Unknown	IB	ic57a25.met	JA25.023	0	
24	Unknown	IB	ic57a25.met	JA25.024	0	

MRA 01/29/08

Method Development

Start EZChrom Chromatography ... Method: Ic57a25.met Ba... Method: Ic57a25.met...

Tuesday, January 29, 2008

4:34 PM

MRA 01/29/08

8043

EXTRACTION LOG

SAMPLE PREPARATION LOG FOR ORGANIC ACID/PERCHLORATE

SOP ☑ EMAX-314.0 ☐ EMAX-300.0M Book # E0P-002

Matrix Soil Start Date 05/07/08 Time 17:35 End Date 05/07/08 Time 18:30

PREPARATION BATCH # PCE0066

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Dilution Volume (ml)	Extract Volume (ml)	Notes
*01	PCE0066MB	10.000g	100 ml	100 ml	
*02	WL				all 05/07/08
*03	WLC				
*04	D206-03				
*05	04				
*06	E041-01				
*07	02				
*08	03				
*09	04				
*10	05				
*11	06				
*12	07				
*13	08				
*14	09				
*15	10				
*16	11				
*17	12				
*18	13				
*19	15				
*20	03D				
*21	03M				
*22					
*23					
*24			ed 05/07/08		
*25					

Standards	ID	Amount Added (ml)
Acetate		
Butyrate		
Lactate		
Propionate		
Pyruvate		
Perchlorate LCS/MS	SW8B-02-1090	2.5ml / 1.0ml

Reagent	Lot # / ID
H_2SO_4	
Nanopure	DI H_2O

Legend:

Color	Texture	Clarity	Artifacts
Bu = Blue Bl = Black	Cs = Coarse	Cr = Clear	Rk = Rocks
Bn = Brown Gn = Green	Md = Medium	Cy = Cloudy	Sl = Shale
Og = Orange Rd = Red	Fn = Fine	Td = turbid	Vg= Vegetation
Yw = Yellow			

Comments:

Prepared By: ed / KS

Standard Added By: ed

Checked By:

EMAX LABORATORIES, INC. 1835 W. 205th St. Torrance, CA 90501

8015

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E041

METHOD 351.3
TKN

Two (2) soil samples were received on 05/06/08 for TKN analysis by Method 351.3 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Sample E041-04 was analyzed for duplicate. %RPD was within QC limit.

5. **Matrix Spike**

   Sample E041-04 was spiked. %Recovery was within QC limit.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 351.3
TKN

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E041

Matrix : SOIL
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	KNE004SB	0.781J	1	NA	1.00	0.500	05/17/0811:26	05/14/0811:15	KNE00413	KNE00409	KNE004S	NA	04/14/08
LCS1S	KNE004SL	9.34	1	NA	1.00	0.500	05/17/0811:26	05/14/0811:15	KNE00414	KNE00409	KNE004S	NA	04/14/08
LCD1S	KNE004SC	9.70	1	NA	1.00	0.500	05/17/0811:27	05/14/0811:15	KNE00415	KNE00409	KNE004S	NA	04/14/08
15B-20'	E041-04	17.6	5	6.4	5.34	2.67	05/17/0811:27	05/14/0811:15	KNE00416	KNE00409	KNE004S	05/05/0810:20	05/06/08
15B-20DUP'	E041-04D	15.8	5	6.4	5.34	2.67	05/17/0811:27	05/14/0811:15	KNE00417	KNE00409	KNE004S	05/05/0810:20	05/06/08
15B-20MS'	E041-04M	67.1	5	6.4	5.34	2.67	05/17/0811:27	05/14/0811:15	KNE00418	KNE00409	KNE004S	05/05/0810:20	05/06/08
15B-70'	E041-15	8.37	5	13.7	5.79	2.90	05/17/0811:27	05/14/0811:15	KNE00419	KNE00409	KNE004S	05/05/0813:30	05/06/08

8047

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 351.3
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08E041
SAMPLE ID: LCS1S/LCD1W
CONTROL NO.: KNE004SL/W

DATE RECEIVED: 04/14/08
DATE EXTRACTED: 05/14/08 11:15
DATE ANALYZED: 05/17/08 11:26/11:27

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
TKN	0.781J	10.0	8.56	86	10.0	8.92	89	4	80-120	20

8048

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 351.3
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08E041 DATE RECEIVED: 05/06/08
SAMPLE ID: 15B-20MS' DATE EXTRACTED: 05/14/08 11:15
CONTROL NO.: E041-04M DATE ANALYZED: 05/17/08 11:27

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	QC LIMIT (%)
TKN	17.6	52.8	67.1	94	75-125

0158

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 351.3
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08E041
SAMPLE ID: 15B-20DUP'
CONTROL NO.: E041-04D

DATE RECEIVED: 05/06/08
DATE EXTRACTED: 05/14/08 11:15
DATE ANALYZED: 05/17/08 11:27

ACCESSION:

PARAMETER	SAMPLE (mg/kg)	DUP. SAMPLE (mg/kg)	RPD (%)	RPD LIMIT (%)
TKN	17.6	15.8	11	20

850

ANALYSIS RUN LOG
for
TKN

ICAL stock conc. 10 ppm	**ICAL stock exp Date:** 9/29/08
ICV/LCS/MS stock conc: 10 ppm	**ICV/LCS/MS exp Date:** 7/9/08

Book #: A70-KN-010

Instrument No.: 70

Analytical Batch: KNE004

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

SOP #	
☒ EMAX-351.3	
☐ EMAX-4500 NOrgC	

Comments:

E041-04: $\frac{10Q}{dil\ 5/12/08}(0.335\ mg/L)\left(\frac{50mL}{1.3148g\left(\frac{100-6.4}{100}\right)}\right) = 17.6\ mg/kg$

E041-04D: $(0.305\ mg/L)\left(\frac{50mL}{1.0312g\left(\frac{100-6.4}{100}\right)}\right) = 15.8\ mg/kg$

E041-04MS: $(1.27\ mg/L)\left(\frac{50mL}{1.0118g\left(\frac{100-6.4}{100}\right)}\right) = 67.1\ mg/kg$

E041-15: $(0.149\ mg/L)\left(\frac{50mL}{1.0238g\left(\frac{100-(3.7)}{100}\right)}\right) = 8.40\ mg/kg$

$\%\ RPD = \frac{17.6-15.8}{\left(\frac{17.6+15.8}{2}\right)} \times 100\% = \frac{~~100\%~~\ 11\%}{on\ 5/17/08}$

Actual Value for matrix spike:

$1\ mg/L \times \frac{50mL}{1g} = 50\ mg/kg$

$MS\ recovery = \frac{67.1\ mg/kg - 17.6\ mg/kg}{50\ mg/kg} \times 100\%$

$= 99\%$

$Reporting\ Limit = 1\ mg/kg \times \frac{5g}{1g\ used} = 5\ mg/kg$

STANDARDS ID	☐ 351.3		☐ 4500	
	Conc. ppm	Vol of std used mL Final Vol	Conc. ppm	Vol of std used mL Final Vol
S0 on 5/17/08 Stock sur1-0276	0.00	0	0.00	
S1 sur2-01-427	0.10	0.1	0.05	
S2	0.20	0.2	0.10	
S3	0.50	0.5	0.20	
S4	0.80	0.8	0.40	
S5	1.00	1.0	0.60	
S6	1.60	1.6	0.80	
S7	2.00	2.0		
ICV/LCS/MS sur2-01-394	1.00	1.0	0.40	
CCV sur2-01-427	1.00	1.0	0.40	

Prep Date: 5/17/08 Exp Date: 5/17/08

REAGENT	ID
Color Reagent	sur1-01-061
Phenol Solution	N/A
Sodium Nitroprusside	N/A
Oxidizing Solution	N/A

Analyzed By: CM

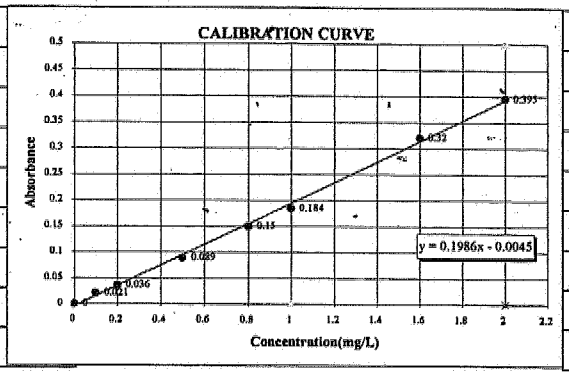
Date: 5/17/08

EMAX LABORATORIES, INC.
TKN ANALYSIS

Instrument ID: 70 Book #: A70-KN-010 Page: 14

SOP: EMAX-351.3 Rev. 1 Calibration Reference: 08KN70E17 Analytical Batch: KNE004

ICAL	mg/L
S0	0
S1	0.1
S2	0.2
S3	0.5
S4	0.8
S5	1
S6	1.6
S7	2



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.03 mg/L	0.5 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	1 mg/L	10 mg/Kg	80-120 %
MS/MSD	1 mg/L	10 mg/Kg	75-125 %
ICV	1 mg/L		85-115%
CCV	1 mg/L		90-110%
STD LOW	0.5 mg/L		90-110%
STD HIGH	1.6 mg/L		90-110%

r (Coeff. Correl.)= 0.99911 CF= 5.03628991 Y= -0.022704195 $FC = [(A * CF) - Y] * DF$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
KNE00401	S0	425nm	0 a	05/17/08	11:20:16	0	1	0.022704195	mg/L	50	ml	50
KNE00402	S1	425nm	0.021 a	05/17/08	11:20:25	0	1	0.128466283	mg/L	50	ml	50
KNE00403	S2	425nm	0.036 a	05/17/08	11:20:40	0	1	0.204010631	mg/L	50	ml	50
KNE00404	S3	425nm	0.089 a	05/17/08	11:20:51	0	1	0.470933997	mg/L	50	ml	50
KNE00405	S4	425nm	0.15 a	05/17/08	11:21:03	0	1	0.778147681	mg/L	50	ml	50
KNE00406	S5	425nm	0.184 a	05/17/08	11:21:15	0	1	0.949381538	mg/L	50	ml	50
KNE00407	S6	425nm	0.32 a	05/17/08	11:21:25	0	1	1.634316966	mg/L	50	ml	50
KNE00408	S7	425nm	0.395 a	05/17/08	11:21:36	0	1	2.012038709	mg/L	50	ml	50
KNE00409	ICV	425nm	0.178 a	05/17/08	11:22:48	0	1	0.919163799	mg/L	50	ml	50
KNE00410	ICB	425nm	0 a	05/17/08	11:22:59	0	1	0.022704195	mg/L	50	ml	50
KNE00411	STD HIGH	425nm	0.32 a	05/17/08	11:26:28	0	1	1.634316966	mg/L	50	ml	50
KNE00412	STD LOW	425nm	0.096 a	05/17/08	11:26:38	0	1	0.506188026	mg/L	50	ml	50
KNE00413	KNE004SB	425nm	0.011 a	05/17/08	11:26:48	0	1	0.078103384	mg/Kg	5	g	50
KNE00414	KNE004SL	425nm	0.181 a	05/17/08	11:26:59	0	1	0.934272668	mg/Kg	5	g	50
KNE00415	KNE004SC	425nm	0.188 a	05/17/08	11:27:08	0	1	0.969526698	mg/Kg	5	g	50
KNE00416	E041-04	425nm	0.062 a	05/17/08	11:27:19	0	1	0.334954169	mg/Kg	1.0148	g	50
KNE00417	E041-04D	425nm	0.056 a	05/17/08	11:27:29	0	1	0.30473643	mg/Kg	1.0312	g	50
KNE00418	E041-04M	425nm	0.247 a	05/17/08	11:27:39	0	1	1.266667803	mg/Kg	1.0118	g	50
KNE00419	E041-15	425nm	0.025 a	05/17/08	11:27:49	0	1	0.148611442	mg/Kg	1.0283	g	50
KNE00420	CCV1	425nm	0.193 a	05/17/08	11:28:12	0	1	0.994708147	mg/L	50	ml	50
KNE00421	CCB1	425nm	0 a	05/17/08	11:28:37	0	1	0.022704195	mg/L	50	ml	50

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

Analyzed by: 8052

DIGESTION AND DISTILLATION LOG FOR TKN

SOP ☒ EMAX-351.3 Rev. No.: ☐ EMAX-4500(ORGANIC)C Rev. No.: ☐ Book # A70-KN-010B

Start Date 5/14/08 Time 1215 End Date Time

PREPARATION BATCH * KJE-001

Sample Prep ID	Lab Sample ID	Sample pH	Boric Acid (ml)	0.04N H_2SO4 (ml)	Sample Amount (ml)	Extract Volume (ml)	Notes
*01	S-1.6	9.5	5.0	NA	50	50	
*02	S-0.5 CCV 5/14/08	↓	↓	↓	↓	↓	
*03	HNE0044@SB				5g		
*04	↓ SC				↓		
*05	↓ SC				↓		
*06	E041-04				1.0148g		
*07	-04D				1.0312g		
*08	-04M				1.0118g		
*09	↓ -15	↓	↓	↓	1.0253g	↓	
*10							
*11							
*12							
*13							
*14							
*15							
*16							
*17				CCV			
*18				5/14/08			
*19							
*20							
*21							
*22							
*23							
*24							
*25							
*26							
*27							

Standards	ID	Amount Added (ml)
ICV/MS	SW2-01-394	5.0 / 10 mL
LCS	↓	↓

Reagent	Lot# / ID
Digestion Mixture	SWA-02-205
0.04N H_2SO4	NA
H_3BO_3	SWB1-01-031
Distilling Soln.	SWP1-02-61
Comments:	

Prepared By: CJS,

Standard Added By: CJS,

Checked By: RM

CASE NARRATIVE

CLIENT: **TETRA TECH, INC.**

PROJECT: **LMC BEAUMONT SITE 2**

SDG: **08E041**

METHOD 365.2
TOTAL PHOSPHORUS

Two (2) soil samples were received on 05/06/08 for Total Phosphorus analysis by Method 365.2 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Sample E041-04 was analyzed for duplicate. %RPD was within QC limit.

5. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 365.2
TOTAL PHOSPHORUS

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E041

Matrix : SOIL
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	POE004SB	ND	1	NA	1.00	0.200	05/12/0818:43	05/09/0816:00	POE00412	POE00408	POE004S	NA	05/09/08
LCS1S	POE004SL	5.17	1	NA	1.00	0.200	05/12/0818:43	05/09/0816:00	POE00413	POE00408	POE004S	NA	05/09/08
LCD1S	POE004SC	5.49	1	NA	1.00	0.200	05/12/0818:43	05/09/0816:00	POE00414	POE00408	POE004S	NA	05/09/08
15B-20'	E041-04	1.02J	1	6.4	1.07	0.214	05/12/0818:44	05/09/0816:00	POE00415	POE00408	POE004S	05/05/0810:20	05/06/08
15B-20'DUP	E041-04D	1.01J	1	6.4	1.07	0.214	05/12/0818:44	05/09/0816:00	POE00416	POE00408	POE004S	05/05/0810:20	05/06/08
15B-70'	E041-15	0.869J	1	13.7	1.16	0.232	05/12/0818:45	05/09/0816:00	POE00417	POE00408	POE004S	05/05/0813:30	05/06/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08E041
SAMPLE ID: LCS1S/LCD1W
CONTROL NO.: POE004SL/C

DATE RECEIVED: NA
DATE EXTRACTED: 05/09/08 16:00
DATE ANALYZED: 05/12/08 18:43/18:43

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Phosphorus	ND	5.00	5.17	103	5.00	5.49	110	6	80-120	20

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08E041 DATE RECEIVED: 05/06/08
SAMPLE ID: 15B-20'DUP DATE EXTRACTED: 05/09/08 16:00
CONTROL NO.: E041-04D DATE ANALYZED: 05/12/08 18:44

ACCESSION:

PARAMETER	SAMPLE (mg/kg)	DUP. SAMPLE (mg/kg)	RPD (%)	RPD LIMIT (%)
Phosphorus	1.02J	1.01J	NA	20

ANALYSIS RUN LOG
for
PHOSPHORUS

ICAL stock conc. 10 ppm	ICAL stock exp Date: 4/11/08
ICV/LCS/MS stock conc: 10 ppm	ICV/LCS/MS exp Date: 4/11/08

Book #: A70-PO-006A

Instrument No.: 70

Analytical Batch: P0E004

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

E041-04: 0.0152 mg/L × 50mL / 4.9909 g (0.936) = 1.02 mg/kg

E041-04D: 0.0952 mg/L × 50mL / 5.0284g (0.936) = 1.01 mg/kg

E041-15: 0.0751 mg/L × 50mL / 5.0287g (0.863) = 0.869 mg/kg

G = ND

SOP #	Rev. #
☒ EMAX-365.2	3
☐ EMAX-	

STANDARDS ID		aliquot (mL) in 50 final vol.	CONC. (mg/L)
S0	Nanopure	0	0.0
S1	SW2-01-440	0.25	0.05
S2		0.5	0.10
S3		1.0	0.20
S4		2.5	0.50
S5		3.5	0.70
S6		5.0	1.00
ICV/LCS/MS	SW2-01-441	2.5	0.5
CCV	SW2-01-440	2.5	0.5

Prep Date: 5/12/08 Exp Date: 5/12/08

REAGENT	ID
Ammonium Persulfate	SW7A-06-233
Coloring Reagent	SWP1-02-65
H_2SO_4, 5 N	SWP1-02-63
H_2SO_4, 11 N	SWP1-01-305
NaOH, LW 20%	SWP1-02-45

Analyzed By: CM

Date: 5/12/08

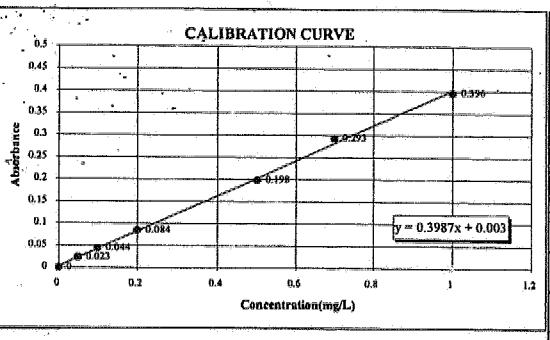
EMAX LABORATORIES, INC.

PHOSPHORUS ANALYSIS

Instrument ID: 70 Book #: A70-PO-006 Page: 12

SOP: EMAX-365.2 Rev. 3 Calibration Reference: 70PO08E12 Analytical Batch: POE004

CAL	mg/L
S0	0
S1	0.05
S2	0.1
S3	0.2
S4	0.5
S5	0.7
S6	1



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.02 mg/L	0.1 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	0.5 mg/L	5 mg/Kg	80-120 %
MS/MSD	0.5 mg/L	5 mg/Kg	75-125 %
ICV	0.5 mg/L		80-120%
CCV	0.5 mg/L		80-120%
STD LOW	0.1 mg/L		80-120%
STD HIGH	0.8 mg/L		80-120%

r (Coeff. Correl.)= 0.99934 CF= 2.508038585 Y= 0.00762 $FC = [(A * CF) - Y] * DF$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
POE00401	S0	650nm	0 a	05/12/08	18:40:28	0	1	-0.007620579	mg/L	20	ml	20
POE00402	S1	650nm	0.023 a	05/12/08	18:40:39	0	1	0.050064309	mg/L	20	ml	20
POE00403	S2	650nm	0.044 a	05/12/08	18:40:49	0	1	0.102733119	mg/L	20	ml	20
POE00404	S3	650nm	0.084 a	05/12/08	18:41:00	0	1	0.203054662	mg/L	20	ml	20
POE00405	S4	650nm	0.198 a	05/12/08	18:41:11	0	1	0.488971061	mg/L	20	ml	20
POE00406	S5	650nm	0.293 a	05/12/08	18:41:20	0	1	0.727234727	mg/L	20	ml	20
POE00407	S6	650nm	0.396 a	05/12/08	18:41:29	0	1	0.985562701	mg/L	20	ml	20
POE00408	ICV	650nm	0.206 a	05/12/08	18:41:50	0	1	0.50903537	mg/L	20	ml	20
POE00409	ICB	650nm	0 a	05/12/08	18:42:14	0	1	-0.007620579	mg/L	20	ml	20
POE00410	STD LOW	650nm	0.046 a	05/12/08	18:42:26	0	1	0.107749196	mg/L	20	ml	20
POE00411	STD HIGH	650nm	0.346 a	05/12/08	18:42:51	0	1	0.860160772	mg/L	20	ml	20
POE00412	POE004SB	650nm	0.002 a	05/12/08	18:43:14	0	1	-0.002604502	mg/Kg	5	g	50
POE00413	POE004SL	650nm	0.209 a	05/12/08	18:43:32	0	1	0.516559486	mg/Kg	5	g	50
POE00414	POE004SC	650nm	0.222 a	05/12/08	18:43:42	0	1	0.549163987	mg/Kg	5	g	50
POE00415	E041-04	650nm	0.041 a	05/12/08	18:44:04	0	1	0.095209003	mg/Kg	4.9909	g	50
POE00416	E041-04D	650nm	0.041 a	05/12/08	18:44:12	0	1	0.095209003	mg/Kg	5.0284	g	50
POE00417	E041-15	650nm	0.033 a	05/12/08	18:45:45	0	1	0.075144695	mg/Kg	5.0087	g	50
POE00418	CCV1	650nm	0.2 a	05/12/08	18:46:07	0	1	0.493987138	mg/L	20	ml	20
POE00419	CCB1	650nm	0 a	05/12/08	18:46:16	0	1	-0.007620579	mg/L	20	ml	20

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

Analyzed by: 8059

EXTRACTION LOG FOR PHOSPHORUS

Method ☐ Distillation: EMAX _____ - Rev. No. ___ ☒ Digestion: EMAX 365.2 - Rev. No. ___ ☐

Matrix: S Start Date: 5/9/08 Time: 16:00 End Date: 5/12/08 Time: 12:00

Book # A70-PO-006B

PREPARATION BATCH * P06004

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Extraction Solution (ml)	Notes
01	S-0.1	50	50	
02	S-0.8	↓	↓	
03	P06004SB	5g		
04	↓ SL	↓		
05	↓ SC	↓		
06	E041-04	4.9909		
07	-04D	5.0284		
08	↓ -15	5.0387	↓	
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COH 5/9/08

Calibration of pH meter

Buffer ID	Value	Reading
	7	
	4	
Slope		
pH meter ID		

Reagents

Reagents	Lot #	Amount (ml)	Final Volume (ml)
H_2SO_4	SwP1-01-306	1	50
$(NH_4)_2S_2O_8$	SwA-06-233	0.4g	
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)

High	Low	Thermostat Setting	Criteria
			20-40

Comments: _____

Prepared By: COH

Checked By: _____

Extracts Received By: COH

Disposed by: _____ Disposal Date: _____

CASE NARRATIVE

CLIENT: **TETRA TECH, INC.**

PROJECT: **LMC BEAUMONT SITE 2**

SDG: **08E041**

METHOD 365.2
ORTHO-PHOSPHATE

Two (2) soil samples were received on 05/06/08 for Ortho-phosphate analysis by Method 365.2 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Sample E041-04 was analyzed for duplicate. %RPD was within QC limit.

5. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 365.2
Ortho-PHOSPHATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E041

Matrix : SOIL
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	POE006SB	ND	1	NA	1.00	0.200	05/12/0818:58	05/12/0815:30	POE00610	POE00608	POE006S	NA	05/12/08
LCS1S	POE006SL	ND	1	NA	1.00	0.200	05/12/0818:59	05/12/0815:30	POE00611	POE00608	POE006S	NA	05/12/08
LCD1S	POE006SC	ND	1	NA	1.00	0.200	05/12/0818:59	05/12/0815:30	POE00612	POE00608	POE006S	NA	05/12/08
15B-20'	E041-04	0.395J	1	6.4	1.07	0.214	05/12/0818:59	05/12/0815:30	POE00613	POE00608	POE006S	05/05/0810:20	05/06/08
15B-20DUP'	E041-04D	0.472J	1	6.4	1.07	0.214	05/12/0818:59	05/12/0815:30	POE00614	POE00608	POE006S	05/05/0810:20	05/06/08
15B-70'	E041-15	ND	1	13.7	1.16	0.232	05/12/0819:01	05/12/0815:30	POE00615	POE00608	POE006S	05/05/0813:30	05/06/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08E041
SAMPLE ID: LCS1S/LCD1W
CONTROL NO.: P0E006SL/C

DATE RECEIVED: 05/12/08
DATE EXTRACTED: 05/12/08 15:30
DATE ANALYZED: 05/12/08 18:59/18:59

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Phosphorus	ND	5.00	4.88	98	5.00	5.08	102	4	80-120	20

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08E041 DATE RECEIVED: 05/06/08
SAMPLE ID: 15B-20DUP' DATE EXTRACTED: 05/12/08 15:30
CONTROL NO.: E041-04D DATE ANALYZED: 05/12/08 18:59

ACCESSION:

PARAMETER	SAMPLE (mg/kg)	DUP. SAMPLE (mg/kg)	RPD (%)	RPD LIMIT (%)
Phosphorus	0.395J	0.472J	NA	20

8691

ANALYSIS RUN LOG
for
PHOSPHORUS

ICAL stock conc. 10 ppm	ICAL stock exp Date: 11/11/08
ICV/LCS/MS stock conc: 10 ppm	ICV/LCS/MS exp Date: 11/1/08

Book #: A70-PO-006A

Instrument No.: 70

Analytical Batch: PO E006

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

E041-04: 0.037 mg/L × 50 mL / 5.0009 g (100 − 6.4 / 100) = ~~0.5~~ 0.40 mg/kg
CJL 5/12/08

E041-04 D: 0.044 mg/L × 50 mL / (5.0294 g)(100 − 6.4 / 100) = 0.47 mg/kg

E041-15: 0.020 mg/L × 50 mL / (5.003 g)(100 − 18.7 / 100) = 0.23 mg/kg

RL = 1 mg/kg all Results ND

SOP #	Rev. #
☒ EMAX-365.2	3
☐ EMAX-	

STANDARDS ID	aliquot (mL) in 20 final vol.	CONC. (mg/L)
S0 nanopure	0	0.0
S1 SW2-01-440	0.1	0.05
S2	0.2	0.10
S3	0.4	0.20
S4	1.0	0.50
S5	1.4	0.70
S6	2.0	1.00
ICV/LCS/MS SW2-01-441	1.0	0.5
CCV SW2-01-440	1.0	0.5

Prep Date: 5/12/08 Exp Date: 5/12/08

REAGENT	ID
Ammonium Persulfate	NA
Coloring Reagent	SWP1-02-~~67~~66 CJL 5/12/08
H_2SO_4, 5 N	SWP1-02-63
H_2SO_4, 11 N	NA
NaOH, 1 N	NA

Analyzed By: CJL

Date: 5/12/08

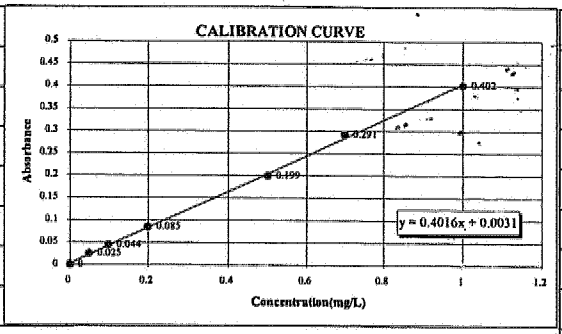
EMAX LABORATORIES, INC.

PHOSPHORUS ANALYSIS

Instrument ID: 70 **Book #:** A70-PO-006 **Page:** 14

SOP: EMAX-365.2 Rev. 3 **Calibration Reference:** 70PO08E12 **Analytical Batch:** POE006

ICAL	mg/L
S0	0
S1	0.05
S2	0.1
S3	0.2
S4	0.5
S5	0.7
S6	1



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.02 mg/L	0.1 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	0.5 mg/L	5 mg/Kg	80-120 %
MS/MSD	0.5 mg/L	5 mg/Kg	75-125 %
ICV	0.5 mg/L		80-120%
CCV	0.5 mg/L		80-120%
STD LOW	0.1 mg/L		80-120%
STD HIGH	0.8 mg/L		80-120%

r (Coeff. Correl.)= 0.99967 CF= 2.490062406 Y= 0.00780

$$FC = [(A * CF) - Y] * DF$$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
POE00601	S0	650nm	0 a	05/12/08	18:56:23	0	1	-0.007800754	mg/L	20	ml	20
POE00602	S1	650nm	0.025 a	05/12/08	18:56:33	0	1	0.054450806	mg/L	20	ml	20
POE00603	S2	650nm	0.044 a	05/12/08	18:56:45	0	1	0.101761992	mg/L	20	ml	20
POE00604	S3	650nm	0.085 a	05/12/08	18:56:55	0	1	0.203854551	mg/L	20	ml	20
POE00605	S4	650nm	0.199 a	05/12/08	18:57:18	0	1	0.487721665	mg/L	20	ml	20
POE00606	S5	650nm	0.291 a	05/12/08	18:57:27	0	1	0.716807406	mg/L	20	ml	20
POE00607	S6	650nm	0.402 a	05/12/08	18:57:40	0	1	0.993204333	mg/L	20	ml	20
POE00608	ICV	650nm	0.204 a	05/12/08	18:58:07	0	1	0.500171977	mg/L	20	ml	20
POE00609	ICB	650nm	0 a	05/12/08	18:58:15	0	1	-0.007800754	mg/L	20	ml	20
	STD LOW											
	STD HIGH											
POE00610	POE006SB	650nm	0 a	05/12/08	18:58:51	0	1	-0.007800754	mg/Kg	5	g	50
POE00611	POE006SL	650nm	0.199 a	05/12/08	18:59:11	0	1	0.487721665	mg/Kg	5	g	50
POE00612	POE006SC	650nm	0.207 a	05/12/08	18:59:19	0	1	0.507642164	mg/Kg	5	g	50
POE00613	E041-04	650nm	0.102 a	05/12/08	18:59:40	0.084	1	0.037020369	mg/Kg	5.0009	g	50
POE00614	E041-04D	650nm	0.11 a	05/12/08	18:59:51	0.089	1	0.044490557	mg/Kg	5.0284	g	50
POE00615	E041-15	650nm	0.045 a	05/12/08	19:01:10	0.034	1	0.019589933	mg/Kg	5.003	g	50
POE00616	CCV1	650nm	0.198 a	05/12/08	19:01:23	0	1	0.485231603	mg/L	20	ml	20
POE00617	CCB1	650nm	0 a	05/12/08	19:01:36	0	1	-0.007800754	mg/L	20	ml	20

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

Analyzed by: MBS

EXTRACTION LOG FOR PHOSPHORUS

Method ☐ Distillation: EMAX_____ - Rev. No.___ ☒ Digestion: EMAX 365.2 - Rev. No.___ ☐ Leachate Book # A70-PO-006B

Matrix: S Start Date: 5/12/08 Time: 15:30 End Date: 5/12/08 Time: 16:30

PREPARATION BATCH #OE006

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Extraction Solution (ml)	Notes
01	NOE006 SB	5	50	
02	SC			
03	SC			
04	C041-04	5.0009		
05	-04D	5.0284		
06	-15	5.0030		
07				
08				
09				
10				
11				
12				
13				
14				
15			CSK	
16				
17			5/14/08	
18				
19				
20				
21				
22				
23				
24				
25				
26				

Calibration of pH meter

Buffer ID	Value	Reading
	7	
	4	
Slope		
pH meter ID		

Reagents

Reagents	Lot #	Amount (ml)	Final Volume (ml)
H_2SO_4	SWA-01-105	1	50
$(NH_4)_2S_2O_7$	SWA-06-233	0.4g	CSK 5/12/08
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)

High	Low	Thermostat Setting	Criteria
			20-40

Comments:

Prepared By: CSK

Checked By:

Extracts Received By: CSK

Disposed by: Disposal Date:

8867

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E041

METHOD 376.1
TOTAL SULFIDE

Two (2) soil samples were received on 05/06/08 for Total Sulfide analysis by Method 376.1 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Sample E041-15 was analyzed for duplicate. %RPD was within QC limit.

5. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 376.1
TOTAL SULFIDE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E041

Matrix : SOIL
Instrument ID : NA

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	SDE003SB	ND	1	NA	10.0	4.00	05/09/0815:43	05/09/0814:00	SDE00301	NA	SDE003S	NA	05/09/08
LCS1S	SDE003SL	60.0	1	NA	10.0	4.00	05/09/0815:50	05/09/0814:00	SDE00302	NA	SDE003S	NA	05/09/08
15B-20'	E041-04	16.0	1	6.4	10.7	4.27	05/09/0815:58	05/09/0814:00	SDE00303	NA	SDE003S	05/05/0810:20	05/06/08
15B-70'	E041-15	20.0	1	13.7	11.6	4.63	05/09/0816:03	05/09/0814:00	SDE00304	NA	SDE003S	05/05/0813:30	05/06/08
15B-70'DUP	E041-15D	20.0	1	13.7	11.6	4.63	05/09/0816:08	05/09/0814:00	SDE00305	NA	SDE003S	05/05/0813:30	05/06/08

EMAX QUALITY CONTROL DATA
LCS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 376.1
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08E041
SAMPLE ID: LCS1S
CONTROL NO.: SDE003SL

DATE RECEIVED: 05/09/08
DATE EXTRACTED: 05/09/08 14:00
DATE ANALYZED: 05/09/08 15:50

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	LCS RSLT (mg/kg)	LCS % REC	QC LIMIT (%)
Sulfide	ND	58.7	60.0	102	80-120

8079

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 376.1
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08E041
SAMPLE ID: 15B-70'
CONTROL NO.: E041-15

DATE RECEIVED: 05/06/08
DATE EXTRACTED: 05/09/08 14:00
DATE ANALYZED: 05/09/08 16:03

ACCESSION:

PARAMETER	SAMPLE (mg/kg)	DUP. SAMPLE (mg/kg)	RPD (%)	RPD LIMIT (%)
Sulfide	20.0	20.0	0	20

8074

ANALYSIS RUN LOG
for
SULFIDE

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Book #: ASD-013

Analytical Batch: 085DE003

Comments:

SOP #	Rev. #
☑ EMAX-376.1	2
☐ EMAX-9034	0

STANDARDS ID		CONC.
LCS	SW1-01-041 (typo strike)	5-87 mg/L
Spike	~~SW1-01-041~~ (typo strike) NA	NA (typo strike)
$Na_2S_2O_3$ Standard	SWP1-01-067	0.025N
Iodine	SWP1-01-066	0.025N
HCl	SWP1-01-013	1:1
Indicator	SWP1-01-047	

Analyzed By: MW/pm

Date: 5/9/08

EMAX LABORATORIES, INC.

ANALYSIS FOR SULFIDE

SOP: EMAX-376.1 Rev. 1 | Analytical Batch: SDE003 | Book #: ASD-013 | Page: 24

Data File Name	Lab Sample ID	Sample Amount g	Sample Amount V_c (ml)	Sample Amount V_1 (ml)	Sample Amount %Moisture	Volume of Titant V_t (ml)	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Sulfide	Sample Result	Flag J	Unit	LCS Recovery (%)	RPD (%)
SDE0031	SDE003SB		100	10		9.9	05/09/08	15:43:03	0.4	ND		mg/L		
SDE0032	SDE003SL		100	10		8.5	05/09/08	15:50:47	6	6 = 60mg/Kg		mg/L	102	
SDE0033	E041-04		100	10		9.6	05/09/08	15:58:29	1.6	1.6 = 16mg/Kg		mg/L	27	
SDE0034	E041-15		100	10		9.5	05/09/08	16:03:43	2	2 = 20mg/Kg		mg/L		0
SDE0035	E041-15D		100	10		9.5	05/09/08	16:08:36	2	2 = 20mg/Kg		mg/L		

vf 5/09/08

STANDARDIZATION

V_I (ml)	$V_{Na_2SO_3}$ (ml)	DATE	TIME	Titrant Na_2SO_3 (N)
	Average Normality of Iodine (N_I)=			0.025000

☑ Standard Purchased as Certified Solution

$$N_I = \frac{(N * V)_{Na_2SO_3}}{V_I}$$

MISCELLANEOUS INFORMATION

Standard	Concentration		Unit
Iodine	0.025		N
$Na_2S_2O_3$	0.025		N
LCS [WATER | SOIL]	5.87	444	mg/L | mg/Kg
MDL [WATER | SOIL]	0.4	10	mg/L | mg/Kg
RL	2	20	mg/L | mg/Kg

$$S(mg/L) = \frac{[(V_I * N_I) - (V_t * N_t)](16{,}000)}{V_S}$$

MS/MSD	TV=	5.87	mg/L
ID	Result (mg/L)	%Rec.	RPD

Comments:

Computation from water to Soil

LCS = $\frac{6mg}{L}$ × 100 (prep) factor for Soil = 60 $\frac{mg}{Kg}$

Analyzed By: VV

8073

EXTRACTION LOG FOR WET CHEMISTRY

Book # EWE-015

Method ☐ Distillation: EMAX_____ - Rev. No.___ ☐ Digestion: EMAX_____ - Rev. No.___ ☑ Leaching

Matrix: S Start Date: 5/9/08 Time: 1400H End Date: 5/9/08 Time: 1515H

PREPARATION BATCH * SDE003

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Extraction Solution (ml)	Notes
01	E041-04	20	200	
02	E041-~~0~~ 15	20	200	
03	E041-15D	20	200	
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26	[illegible] 5/9/8			

Calibration of pH meter

Buffer ID	Value	Reading
NA	7	
	4	
Slope		
pH meter ID		

Reagents

Reagents	Lot #	Amount (ml)	Final Volume (ml)
DI-water			
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)

High	Low	Thermostat Setting	Criteria
			20-40

Comments:

Prepared By: [illegible]

Checked By:

Extracts Received By: [illegible]

Disposed by: Disposal Date:

8074

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E041

METHOD 415.1
TOTAL ORGANIC CARBON

Two (2) soil samples were received on 05/06/08 for Total Organic Carbon analysis by Method 415.1 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria. Extraction was performed on 5/9/08.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   No Duplicate sample was designated with this SDG.

5. **Matrix Spike**

   No MS sample was designated with this SDG.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 415.1
TOC

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E041

Matrix : SOIL
Instrument ID : I62

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	TCE008SB	ND	1	NA	10.0	5.00	05/10/0800:09	05/09/0811:00	TCE006-63	TCE006-61	TCE008S	NA	05/09/08
LCS1S	TCE008SL	238	1	NA	10.0	5.00	05/10/0800:22	05/09/0811:00	TCE006-64	TCE006-61	TCE008S	NA	05/09/08
LCD1S	TCE008SC	238	1	NA	10.0	5.00	05/10/0800:35	05/09/0811:00	TCE006-65	TCE006-61	TCE008S	NA	05/09/08
15B-20'	E041-04	102	1	6.4	10.7	5.34	05/10/0800:47	05/09/0811:00	TCE006-66	TCE006-61	TCE008S	05/05/0810:20	05/06/08
15B-70'	E041-15	28.1	1	13.7	11.6	5.79	05/10/0800:58	05/09/0811:00	TCE006-67	TCE006-61	TCE008S	05/05/0813:30	05/06/08

8976

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E041
METHOD: METHOD 415.1

MATRIX:	SOIL			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1S				
LAB SAMP ID:	TCE008SB	TCE008SL	TCE008SC		
LAB FILE ID:	TCE006-63	TCE006-64	TCE006-65		
DATE EXTRACTED:	05/09/0811:00	05/09/0811:00	05/09/0811:00	DATE COLLECTED:	NA
DATE ANALYZED:	05/10/0800:09	05/10/0800:22	05/10/0800:35	DATE RECEIVED:	05/09/08
PREP. BATCH:	TCE008S	TCE008S	TCE008S		
CALIB. REF:	TCE006-61	TCE006-61	TCE006-61		

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
TOC	ND	250	238	95	250	238	95	0	80-120	20

8071

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Start Date/Time: 5/9/08 9:19

Stop Date/Time: 5/10/08 01:24

TCE006W: E807, E049, E059, E814

TCE007W: E062, E061, E073

TCE008S: E041

All water samples had a pH<2.

Book #: A62-011

Instrument No.: 62

Analytical Sequence: TCE006

Method File: TCE006

Analytical Batch: TCE006W, TCE007W, TCE008S

SOP #	Rev. #
☐ EMAX-415.1	1
☑ EMAX-9060	1
☐ EMAX-	

STANDARDS ID		CONC. (mg/L)
S0	Nanopure	0
S1	SW10B-01-903	1
S2	↓	5
S3		10
S4		40
S5		80
S6	—	—
ICV/LCS	SW10B-01-904	25
CCV	SW10B-01-905	25

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ TOC	
☐	

Analyzed By: KS

Date: 5/9/08

	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result
1	Standard	NPOC	ICAL	TCE006-1	0A-123456-000	C:\Program	1.000	
2	Control	NPOC	ICV	TCE006-2	0A-123456-000	C:\Program	1.000	NPOC:23.77 mg/
3	Unknown	NPOC	ICB	TCE006-3	0A-123456-000	C:\Program	1.000	NPOC:0.1736 mg
4	Unknown	NPOC	HCO3\CO3	TCE006-4	0A-123456-000	C:\Program	1.000	NPOC:0.2217 mg
5	Unknown	NPOC	TCE006WB	TCE006-5	0A-123456-000	C:\Program	1.000	NPOC:0.1663 mg
6	Unknown	NPOC	TCE006WL	TCE006-6	0A-123456-000	C:\Program	1.000	NPOC:23.46 mg/
7	Unknown	NPOC	TCE006WC	TCE006-7	0A-123456-000	C:\Program	1.000	NPOC:23.44 mg/
8	Unknown	NPOC	08E807-01	TCE006-8	0A-123456-000	C:\Program	1.000	NPOC:1.969 mg/
9	Unknown	NPOC	08E049-01	TCE006-9	0A-123456-000	C:\Program	1.000	NPOC:8.462 mg/
10	Unknown	NPOC	08E049-02	TCE006-10	0A-123456-000	C:\Program	1.000	NPOC:14.94 mg/
11	Unknown	NPOC	08E049-03	TCE006-11	0A-123456-000	C:\Program	1.000	NPOC:19.80 mg/
12	Unknown	NPOC	08E049-04	TCE006-12	0A-123456-000	C:\Program	1.000	NPOC:129.5 mg/
13	Unknown	NPOC	08E049-05	TCE006-13	0A-123456-000	C:\Program	1.000	NPOC:11.00 mg/
14	Control	NPOC	CCV1	TCE006-14	0A-123456-000	C:\Program	1.000	NPOC:24.76 mg/
15	Unknown	NPOC	CCB1	TCE006-15	0A-123456-000	C:\Program	1.000	NPOC:0.1805 mg
16	Unknown	NPOC	08E049-06	TCE006-16	0A-123456-000	C:\Program	1.000	NPOC:5.869 mg/
17	Unknown	NPOC	08E049-06D	TCE006-17	0A-123456-000	C:\Program	1.000	NPOC:5.945 mg/
18	Unknown	NPOC	08E049-06M	TCE006-18	0A-123456-000	C:\Program	1.000	NPOC:29.68 mg/
19	Unknown	NPOC	08E059-01	TCE006-19	0A-123456-000	C:\Program	1.000	NPOC:6.901 mg/
20	Unknown	NPOC	08E059-02	TCE006-20	0A-123456-000	C:\Program	1.000	NPOC:4.142 mg/
21	Unknown	NPOC	08E059-03	TCE006-21	0A-123456-000	C:\Program	1.000	NPOC:5.788 mg/
22	Unknown	NPOC	08E059-04	TCE006-22	0A-123456-000	C:\Program	1.000	NPOC:4.422 mg/
23	Unknown	NPOC	08E059-05	TCE006-23	0A-123456-000	C:\Program	1.000	NPOC:8.526 mg/
24	Unknown	NPOC	08E059-06	TCE006-24	0A-123456-000	C:\Program	1.000	NPOC:5.501 mg/
25	Unknown	NPOC	08E059-07	TCE006-25	0A-123456-000	C:\Program	1.000	NPOC:10.75 mg/
26	Control	NPOC	CCV2	TCE006-26	0A-123456-000	C:\Program	1.000	NPOC:24.86 mg/
27	Unknown	NPOC	CCB2	TCE006-27	0A-123456-000	C:\Program	1.000	NPOC:0.2698 mg
28	Unknown	NPOC	08E059-08	TCE006-28	0A-123456-000	C:\Program	1.000	NPOC:8.703 mg/
29	Unknown	NPOC	08E814-01	TCE006-29	0A-123456-000	C:\Program	1.000	NPOC:2.120 mg/
30	Unknown	NPOC	08E814-02	TCE006-30	0A-123456-000	C:\Program	1.000	NPOC:1.658 mg/
31	Unknown	NPOC	08E049-05	TCE006-31	0A-123456-000	C:\Program	1.000	NPOC:10.79 mg/
32	Unknown	NPOC	08E049-04	TCE006-32	0A-123456-000	C:\Program	10.00	NPOC:78.97 mg/
33	Unknown	NPOC	TCE007WL	TCE006-33	0A-123456-000	C:\Program	1.000	NPOC:23.61 mg/
34	Unknown	NPOC	TCE007WC	TCE006-34	0A-123456-000	C:\Program	1.000	NPOC:23.77 mg/
35	Unknown	NPOC	TCE007WB	TCE006-35	0A-123456-000	C:\Program	1.000	NPOC:0.08432 m
36	Unknown	NPOC	08E062-06	TCE006-36	0A-123456-000	C:\Program	1.000	NPOC:424.1 mg/
37	Unknown	NPOC	08E062-07	TCE006-37	0A-123456-000	C:\Program	1.000	NPOC:745.6 mg/
38	Control	NPOC	CCV3	TCE006-38	0A-123456-000	C:\Program	1.000	NPOC:25.01 mg/
39	Unknown	NPOC	CCB3	TCE006-39	0A-123456-000	C:\Program	1.000	NPOC:0.000 mg/
40	Unknown	NPOC	08E062-01	TCE006-40	0A-123456-000	C:\Program	200.0	NPOC:3568 mg/L
41	Unknown	NPOC	08E062-02	TCE006-41	0A-123456-000	C:\Program	200.0	NPOC:5450 mg/L
42	Unknown	NPOC	08E062-03	TCE006-42	0A-123456-000	C:\Program	200.0	NPOC:5664 mg/L
43	Unknown	NPOC	08E062-04	TCE006-43	0A-123456-000	C:\Program	200.0	NPOC:5799 mg/L
44	Unknown	NPOC	08E062-05	TCE006-44	0A-123456-000	C:\Program	200.0	NPOC:6544 mg/L
45	Unknown	NPOC	08E062-12	TCE006-45	0A-123456-000	C:\Program	200.0	NPOC:3402 mg/L
46	Unknown	NPOC	08E061-01	TCE006-46	0A-123456-000	C:\Program	1.000	NPOC:2.617 mg/
47	Unknown	NPOC	08E061-01D	TCE006-47	0A-123456-000	C:\Program	1.000	NPOC:2.614 mg/
48	Unknown	NPOC	08E061-01M	TCE006-48	0A-123456-000	C:\Program	1.000	NPOC:26.74 mg/
49	Unknown	NPOC	08E062-11	TCE006-49	0A-123456-000	C:\Program	200.0	NPOC:9266 mg/L
50	Control	NPOC	CCV4	TCE006-50	0A-123456-000	C:\Program	1.000	NPOC:24.74 mg/
51	Unknown	NPOC	CCB4	TCE006-51	0A-123456-000	C:\Program	1.000	NPOC:0.09052 m
52	Unknown	NPOC	08E073-01	TCE006-52	0A-123456-000	C:\Program	1.000	NPOC:10.74 mg/
53	Unknown	NPOC	08E073-02	TCE006-53	0A-123456-000	C:\Program	1.000	NPOC:8.032 mg/
54	Unknown	NPOC	08E073-03	TCE006-54	0A-123456-000	C:\Program	1.000	NPOC:8.044 mg/
55	Unknown	NPOC	08E073-04	TCE006-55	0A-123456-000	C:\Program	1.000	NPOC:9.527 mg/
56	Unknown	NPOC	08E073-05	TCE006-56	0A-123456-000	C:\Program	1.000	NPOC:1.589 mg/
57	Unknown	NPOC	08E073-06	TCE006-57	0A-123456-000	C:\Program	1.000	NPOC:7.727 mg/
58	Unknown	NPOC	08E073-07	TCE006-58	0A-123456-000	C:\Program	1.000	NPOC:3.515 mg/
59	Unknown	NPOC	08E073-08	TCE006-59	0A-123456-000	C:\Program	1.000	NPOC:10.56 mg/
60	Unknown	NPOC	08E073-09	TCE006-60	0A-123456-000	C:\Program	1.000	NPOC:8.510 mg/
61	Control	NPOC	CCV5	TCE006-61	0A-123456-000	C:\Program	1.000	NPOC:25.21 mg/
62	Unknown	NPOC	CCB5	TCE006-62	0A-123456-000	C:\Program	1.000	NPOC:0.06028 m
63	Unknown	NPOC	TCE008SB	TCE006-63	0A-123456-000	C:\Program	1.000	NPOC:0.000 mg/
64	Unknown	NPOC	TCE008SL	TCE006-64	0A-123456-000	C:\Program	1.000	NPOC:23.84 mg/
65	Unknown	NPOC	TCE008SC	TCE006-65	0A-123456-000	C:\Program	1.000	NPOC:23.85 mg/
66	Unknown	NPOC	08E041-04	TCE006-66	0A-123456-000	C:\Program	1.000	NPOC:9.519 mg/
67	Unknown	NPOC	08E041-15	TCE006-67	0A-123456-000	C:\Program	1.000	NPOC:2.424 mg/

OVERRANG NOT EVALU KS

OVERRAN N. E. KS

	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result
68	Control	NPOC	CCV6	TCE006-68	0A-123456-000	C:\Program	1.000	NPOC:24.93 mg/
69	Unknown	NPOC	CCB6	TCE006-69	0A-123456-000	C:\Program	1.000	NPOC:0.09037 m
70								
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								
81								
82								
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97								
98								
99								
100								

YS
5/20/08

8080

Instr.Information

System	toc
Detector	Combustion
Catalyst	Regular Sensitivity
Cell Length	long

Cal. Curve

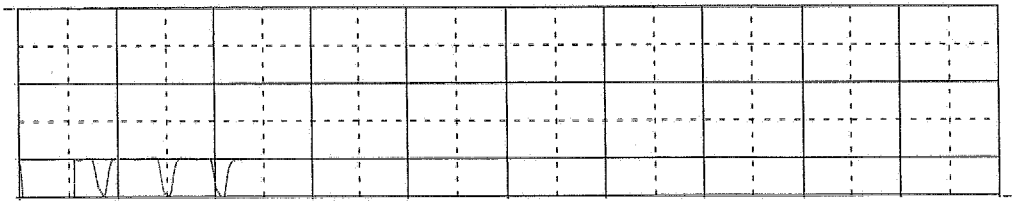
Sample Name:	ICAL
Sample ID:	TCE006-1
Cal. Curve:	tce006.2008_05_09_09_12_22.cal

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	0.4037	50uL	1	*******		05/09/08 09:19:40 AM
2	0.7119	50uL	1	*******		05/09/08 09:21:11 AM
3	0.4898	50uL	1	*******		05/09/08 09:22:26 AM
4	0.4673	50uL	1	*******		05/09/08 09:23:42 AM

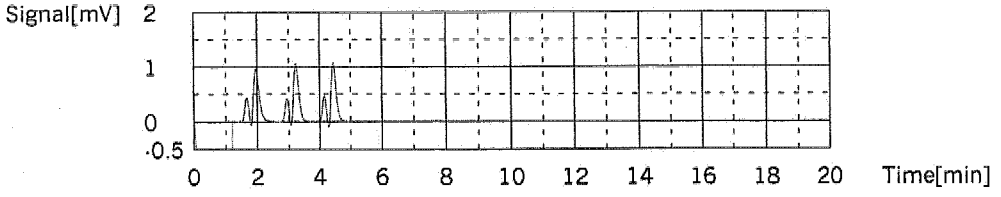
Acid Add.	2.500%
Sp. Time	90.00sec
Mean Area	0.5182



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1.526	50uL	10	*******		05/09/08 09:32:04 AM
2	1.493	50uL	10	*******		05/09/08 09:33:31 AM
3	1.531	50uL	10	*******		05/09/08 09:34:54 AM
4	1.523	50uL	10	*******		05/09/08 09:36:17 AM

Acid Add.	2.500%
Sp. Time	90.00sec
Mean Area	1.518

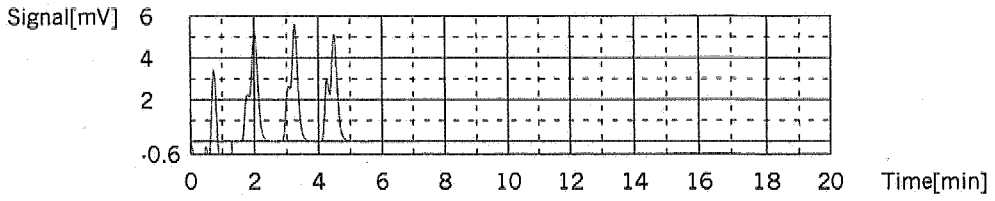


Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	9.595	50uL	2	*******		05/09/08 09:42:49 AM
2	9.839	50uL	2	*******		05/09/08 09:44:15 AM
3	9.989	50uL	2	*******		05/09/08 09:45:39 AM
4	9.988	50uL	2	*******		05/09/08 09:47:04 AM

8081

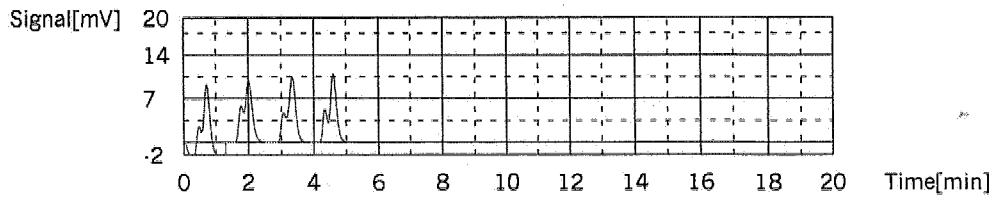
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 9.853



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	19.83	50uL	1	*******		05/09/08 09:52:53 AM
2	20.31	50uL	1	*******		05/09/08 09:54:21 AM
3	20.08	50uL	1	*******		05/09/08 09:55:48 AM
4	20.28	50uL	1	*******		05/09/08 09:57:15 AM

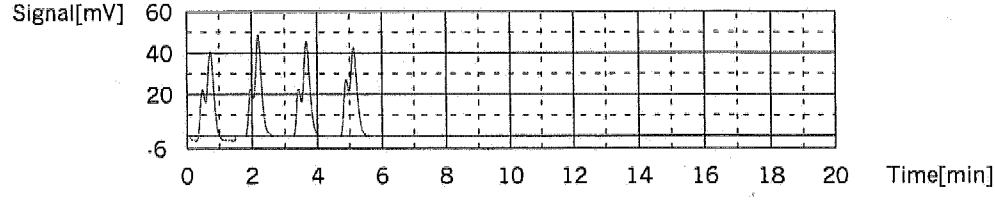
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 20.13



Conc: 40.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	85.77	50uL	2	*******		05/09/08 10:05:54 AM
2	87.35	50uL	2	*******		05/09/08 10:07:31 AM
3	86.81	50uL	2	*******		05/09/08 10:09:09 AM
4	88.31	50uL	2	*******		05/09/08 10:10:45 AM

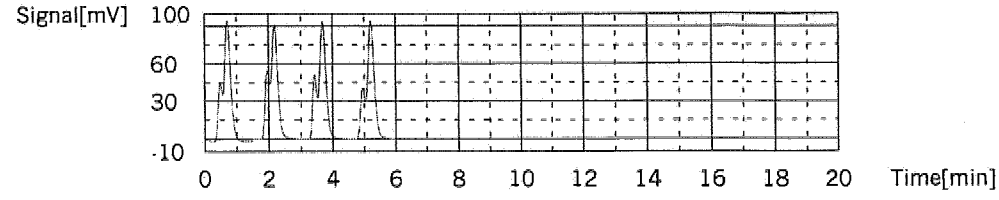
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 87.06



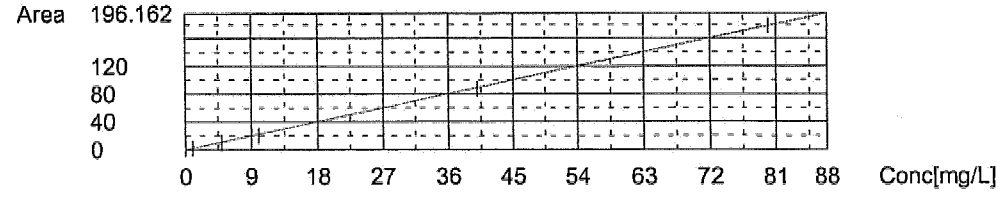
Conc: 80.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	176.2	50uL	1	*******		05/09/08 10:16:45 AM
2	177.8	50uL	1	*******		05/09/08 10:18:24 AM
3	180.3	50uL	1	*******		05/09/08 10:20:04 AM
4	177.8	50uL	1	*******		05/09/08 10:21:45 AM

Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 178.0



Slope: 2.229
Intercept 0.000
r^2 0.999779



Control Sample

Sample Name: ICV
Sample ID: TCE006-2
Method: tce006.tpl
Chk. Result Control value: 23.77 / Control exceeds range!

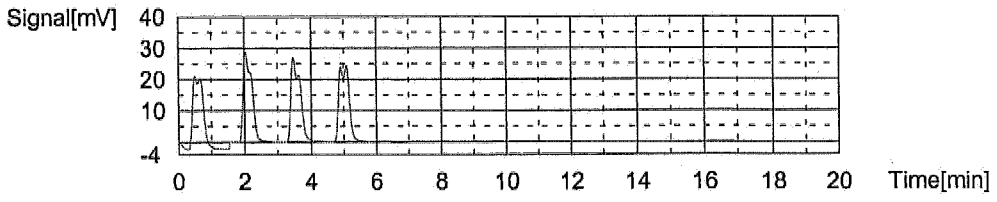
Type	Anal.	Dil.	Result
Control	NPOC	1.000	NPOC:23.77 mg/L

1. Det.

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	52.39	23.50mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:30:00 AM
2	53.07	23.81mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:31:36 AM
3	53.47	23.99mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:33:12 AM
4	53.04	23.79mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:34:52 AM

Mean Area 52.99
Mean Conc. 23.77mg/L



Sample

Sample Name: ICB
Sample ID: TCE006-3
Origin: tce006.cal
Chk. Result

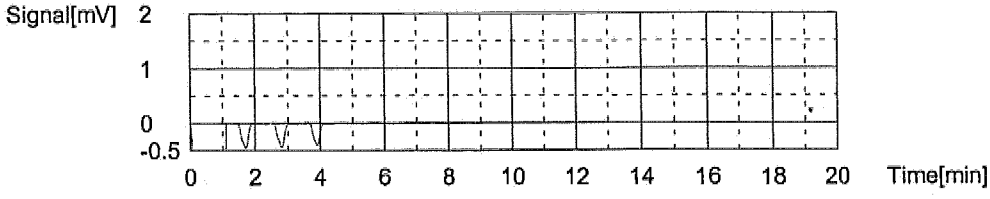
Type	Anal.	Dil.	Result
Unknown	NPOC	1.000	NPOC:0.1736 mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.3357	0.1506mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:42:26 AM
2	0.4256	0.1909mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:43:42 AM
3	0.4184	0.1877mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:44:58 AM
4	0.3679	0.1650mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:46:13 AM

Mean Area 0.3869
Mean Conc. 0.1736mg/L



8083

	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result
1	Standard	NPOC	ICAL		0A-123456-000	C:\Program	1.000	
2	Control	NPOC	ICV		0A-123456-000	C:\Program	1.000	
3	Unknown	NPOC	ICB		0A-123456-000	C:\Program	1.000	
4	Unknown	NPOC	HCO3\CO3		0A-123456-000	C:\Program	1.000	
5	Unknown	NPOC	TCE006WB		0A-123456-000	C:\Program	1.000	
6	Unknown	NPOC	TCE006WL		0A-123456-000	C:\Program	1.000	
7	Unknown	NPOC	TCE006WC		0A-123456-000	C:\Program	1.000	
8	Unknown	NPOC	08E807-01		0A-123456-000	C:\Program	1.000	
9	Unknown	NPOC	08E049-01		0A-123456-000	C:\Program	1.000	
10	Unknown	NPOC	08E049-02		0A-123456-000	C:\Program	1.000	
11	Unknown	NPOC	08E049-03		0A-123456-000	C:\Program	1.000	
12	Unknown	NPOC	08E049-04		0A-123456-000	C:\Program	1.000	
13	Unknown	NPOC	08E049-05		0A-123456-000	C:\Program	1.000	
14	Control	NPOC	CCV1		0A-123456-000	C:\Program	1.000	
15	Unknown	NPOC	CCB1		0A-123456-000	C:\Program	1.000	
16	Unknown	NPOC	08E049-06		0A-123456-000	C:\Program	1.000	
17	Unknown	NPOC	08E049-06D		0A-123456-000	C:\Program	1.000	
18	Unknown	NPOC	08E049-06M		0A-123456-000	C:\Program	1.000	
19	Unknown	NPOC	08E059-01		0A-123456-000	C:\Program	1.000	
20	Unknown	NPOC	08E059-02		0A-123456-000	C:\Program	1.000	
21	Unknown	NPOC	08E059-03		0A-123456-000	C:\Program	1.000	
22	Unknown	NPOC	08E059-04		0A-123456-000	C:\Program	1.000	
23	Unknown	NPOC	08E059-05		0A-123456-000	C:\Program	1.000	
24	Unknown	NPOC	08E059-06		0A-123456-000	C:\Program	1.000	
25	Unknown	NPOC	08E059-07		0A-123456-000	C:\Program	1.000	
26	Control	NPOC	CCV2		0A-123456-000	C:\Program	1.000	
27	Unknown	NPOC	CCB2		0A-123456-000	C:\Program	1.000	
28	Unknown	NPOC	08E059-08		0A-123456-000	C:\Program	1.000	
29	Unknown	NPOC	08E814-01		0A-123456-000	C:\Program	1.000	
30	Unknown	NPOC	08E814-02		0A-123456-000	C:\Program	1.000	
31	Unknown	NPOC	08E049-05		0A-123456-000	C:\Program	1.000	
32	Unknown	NPOC	08E049-04		0A-123456-000	C:\Program	10.00	
33	Unknown	NPOC	TCE007WL		0A-123456-000	C:\Program	1.000	
34	Unknown	NPOC	TCE007WC		0A-123456-000	C:\Program	1.000	
35	Unknown	NPOC	TCE007WB		0A-123456-000	C:\Program	1.000	
36	Unknown	NPOC	08E062-06		0A-123456-000	C:\Program	1.000	
37	Unknown	NPOC	08E062-07		0A-123456-000	C:\Program	1.000	
38	Control	NPOC	CCV3		0A-123456-000	C:\Program	1.000	
39	Unknown	NPOC	CCB3		0A-123456-000	C:\Program	1.000	
40	Unknown	NPOC	08E062-01		0A-123456-000	C:\Program	200.0	
41	Unknown	NPOC	08E062-02		0A-123456-000	C:\Program	200.0	
42	Unknown	NPOC	08E062-03		0A-123456-000	C:\Program	200.0	
43	Unknown	NPOC	08E062-04		0A-123456-000	C:\Program	200.0	
44	Unknown	NPOC	08E062-05		0A-123456-000	C:\Program	200.0	
45	Unknown	NPOC	08E062-12		0A-123456-000	C:\Program	200.0	
46	Unknown	NPOC	08E061-01		0A-123456-000	C:\Program	1.000	
47	Unknown	NPOC	08E061-01D		0A-123456-000	C:\Program	1.000	
48	Unknown	NPOC	08E061-01M		0A-123456-000	C:\Program	1.000	
49	Unknown	NPOC	08E062-11		0A-123456-000	C:\Program	200.0	
50	Control	NPOC	CCV4		0A-123456-000	C:\Program	1.000	
51	Unknown	NPOC	CCB4		0A-123456-000	C:\Program	1.000	
52	Unknown	NPOC	08E073-01		0A-123456-000	C:\Program	1.000	
53	Unknown	NPOC	08E073-02		0A-123456-000	C:\Program	1.000	
54	Unknown	NPOC	08E073-03		0A-123456-000	C:\Program	1.000	
55	Unknown	NPOC	08E073-04		0A-123456-000	C:\Program	1.000	
56	Unknown	NPOC	08E073-05		0A-123456-000	C:\Program	1.000	
57	Unknown	NPOC	08E073-06		0A-123456-000	C:\Program	1.000	
58	Unknown	NPOC	08E073-07		0A-123456-000	C:\Program	1.000	
59	Unknown	NPOC	08E073-08		0A-123456-000	C:\Program	1.000	
60	Unknown	NPOC	08E073-09		0A-123456-000	C:\Program	1.000	
61	Control	NPOC	CCV5		0A-123456-000	C:\Program	1.000	
62	Unknown	NPOC	CCB5		0A-123456-000	C:\Program	1.000	
63	Unknown	NPOC	TCE008SB		0A-123456-000	C:\Program	1.000	
64	Unknown	NPOC	TCE008SL		0A-123456-000	C:\Program	1.000	
65	Unknown	NPOC	TCE008SC		0A-123456-000	C:\Program	1.000	
66	Unknown	NPOC	08E041-04		0A-123456-000	C:\Program	1.000	
67	Unknown	NPOC	08E041-05		0A-123456-000	C:\Program	1.000	

	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result
68	Control	NPOC	CCV6		0A-123456-000	C:\Program	1.000	
69	Unknown	NPOC	CCB6		0A-123456-000	C:\Program	1.000	
70								
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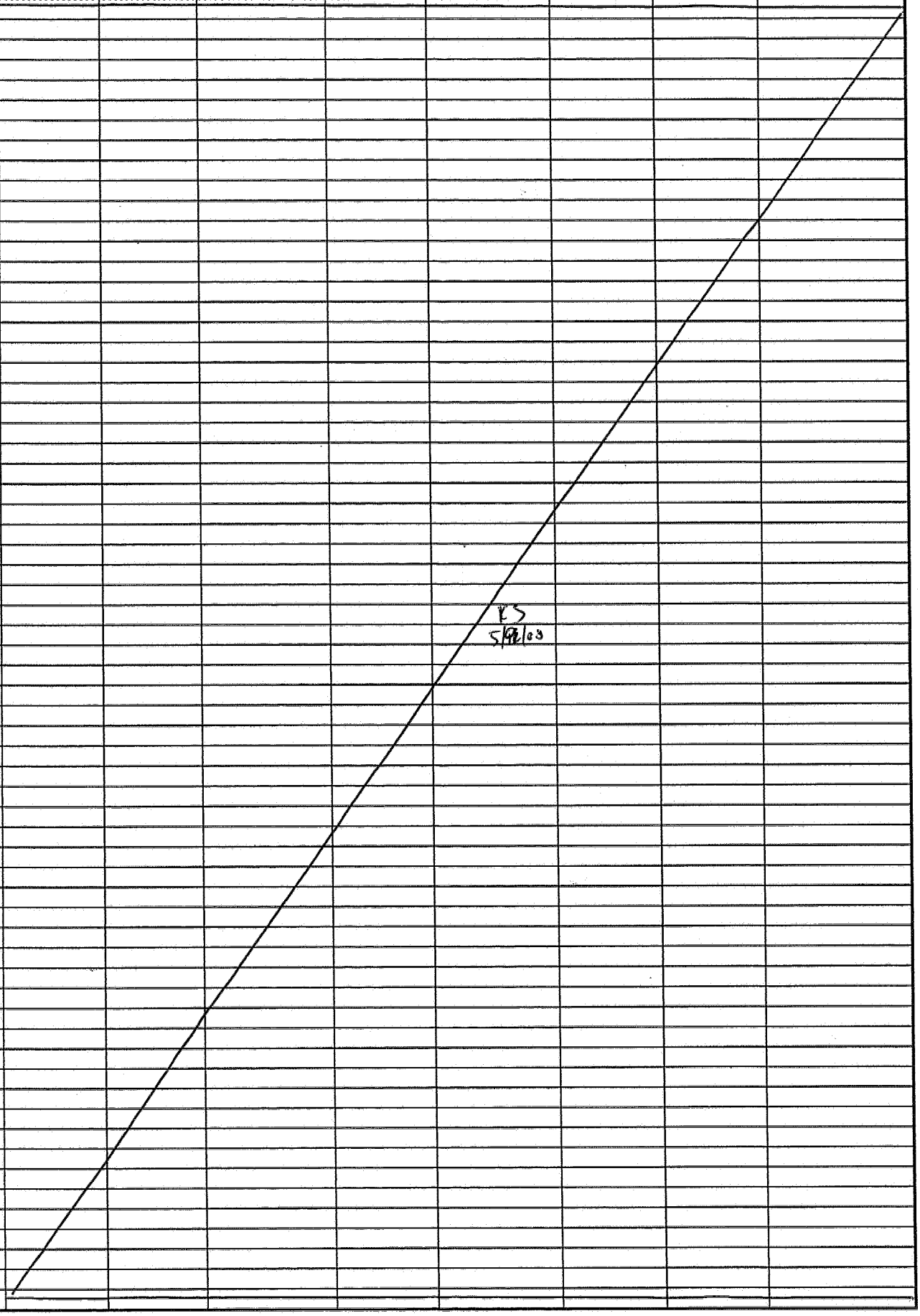

8085

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E041

METHOD 9045C
pH

Two (2) soil samples were received on 05/06/08 for pH analysis by Method 9045C in accordance with "Test Methods for Evaluating Solid Waste, Physical/Chemical Method", SW846, 3rd edition.

1. **Holding Time**

   Extracts of soil samples were analyzed on the same day as extraction.

2. **Duplicate**

   Sample E041-15 was analyzed for duplicate. %RPD was within QC limit.

3. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 9045C
PH

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E041

Matrix : SOIL
Instrument ID : I53

SAMPLE ID	EMAX SAMPLE ID	RESULTS (pH Unit)	DLF	MOIST	RL (pH Unit)	MDL (pH Unit)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
15B-20'	E041-04	9.30	1	NA	NA	NA	05/06/0813:29	05/06/0811:45	PHE00402	PHE00401	PHE004S	05/05/0810:20	05/06/08
15B-70'	E041-15	8.78	1	NA	NA	NA	05/06/0813:30	05/06/0811:45	PHE00403	PHE00401	PHE004S	05/05/0813:30	05/06/08
15B-70DUP'	E041-15D	8.85	1	NA	NA	NA	05/06/0813:31	05/06/0811:45	PHE00404	PHE00401	PHE004S	05/05/0813:30	05/06/08

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EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 9045C
MATRIX: SOIL
% MOISTURE: NA

BATCH NO.: 08E041
SAMPLE ID: 15B-70DUP'
CONTROL NO.: E041-15D

DATE RECEIVED: 05/06/08
DATE EXTRACTED: 05/06/08 11:45
DATE ANALYZED: 05/06/08 13:31

ACCESSION:

PARAMETER	SAMPLE (pH Unit)	DUP. SAMPLE (pH Unit)	DIFFERENCE (pH Unit)	RPD LIMIT (pH Unit)
PH	10.2	10.3	0.1	+/-0.1

ANALYSIS RUN LOG
for
pH

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Soil samples

Book #: APH-017

Instrument No.: ☑ 53 ☐ 97

Analytical Batch: 08PHE004

SOP #	Rev. #
☐ EMAX-150.1	3
☐ EMAX-9040	3
☑ EMAX-9045	0
☐ EMAX-	

STANDARDS ID		pH Value
Buffer 4	SWI-01-086	4.00
Buffer 7	SWI-01-096	7.00
Buffer 10	SWI-01-073	10.00
Buffer		
Buffer		
LCS/ICV	SWI-01-057	8.00

Analyzed By: JJ / RM

Date: 05-06-08

EMAX LABORATORIES, INC

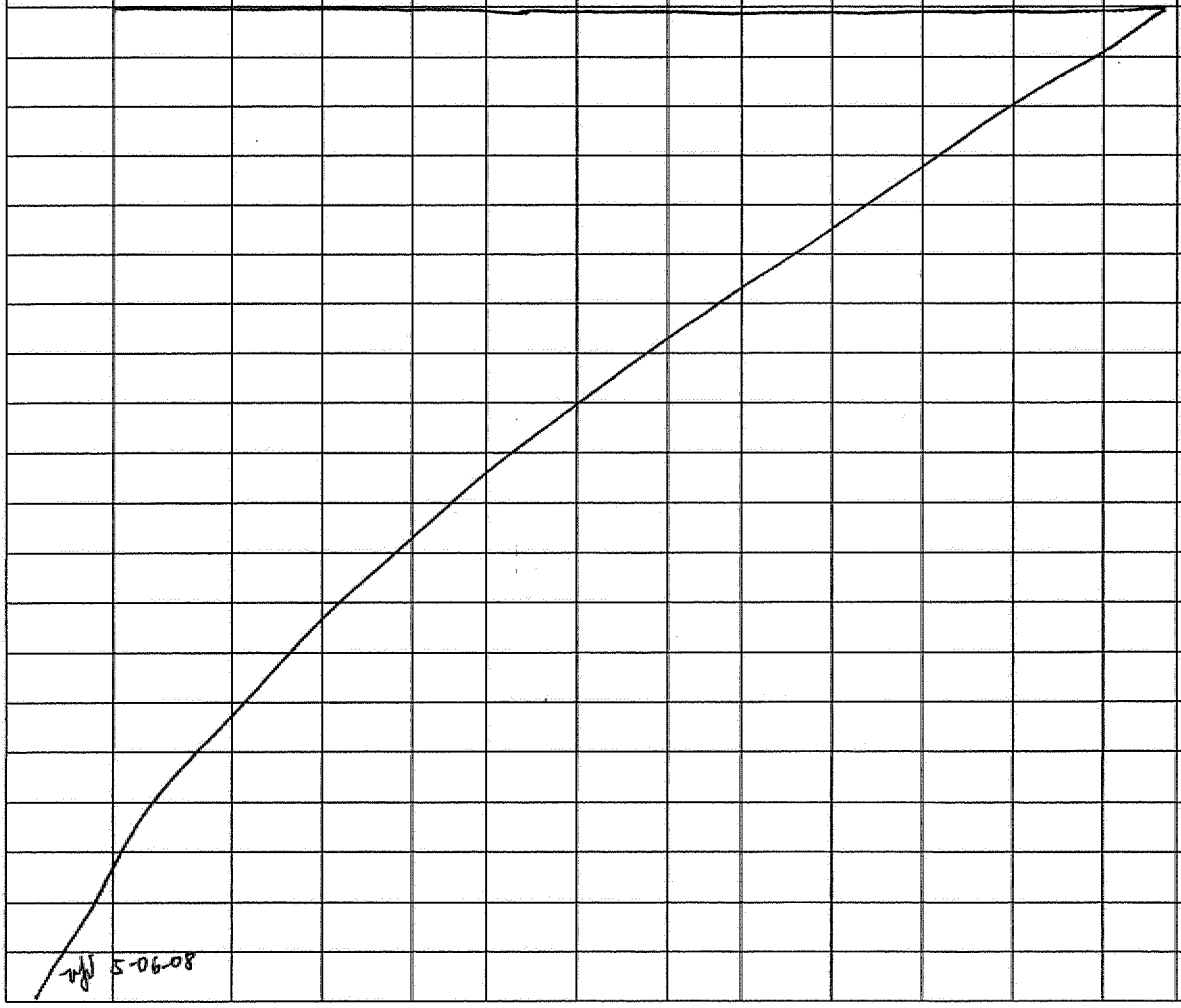
ANALYSIS FOR pH

Book #: APH-017 Page: 27

SOP: EMAX-9045 Rev.0

Analytical Batch: **08PHE004**

Data File Name	Lab Sample ID	Sample Amount	Unit	Initial pH	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Final pH	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Diff. of Initial and Final pH	Result	Unit	Comments
08PHE004-01	ICV/LCS	20	ml	7.97	05/06/08	13:27:28	7.97	05/06/08	13:27:34	0	7.97	pH Unit	
08PHE004-02	E041-04	20	ml	9.3	05/06/08	13:29:05	9.3	05/06/08	13:29:08	0	9.3	pH Unit	
08PHE004-03	E041-15	20	ml	8.78	05/06/08	13:30:34	8.78	05/06/08	13:30:39	0	8.78	pH Unit	
08PHE004-04	E041-15D	20	ml	8.85	05/06/08	13:31:35	8.85	05/06/08	13:31:39	0	8.85	pH Unit	
08PHE004-05	CCV	20	ml	7.01	05/06/08	13:33:39	7.01	05/06/08	13:33:42	0	7.01	pH Unit	



5-06-08

pH Meter Calibration

		Instrument ID:	53
Buffer 4	3.99	05/06/08	13:21:27
Buffer 7	6.98	05/06/08	13:22:23
Buffer 10	9.98	05/06/08	13:23:13
Slope (%)	99	05/06/08	13:23:31
pH Check Buffer	8.00	05/06/08	13:24:11

STANDARD	STANDARD ID/LOT#
Buffer 4	SW1-01-086
Buffer 7	SW1-01-096
Buffer 10	SW1-01-073
pH Check Buffer	SW1-01-057

Duplicate Sample	Result	Diff.	Comment
E041-15	8.78	0.07	Passed
E041-15D	8.85		

Notes: ☑ pH meter autocompensates sample temperature.

Electrode Slope (%) Acceptance Criteria 92 - 102

Electrode Slope: Acceptable

Analyzed By: VV

EXTRACTION LOG FOR WET CHEMISTRY

Method ☐ Distillation: EMAX_____ - Rev. No.___ ☐ Digestion: EMAX_____ - Rev. No.___ ☑ Leaching — Book # EWE-015

Matrix: S Start Date: 05-06-08 Time: 11:45 End Date: 05-06-08 Time: 1250 H

PREPARATION BATCH # 08PHE004

Sample Prep ID	Lab Sample ID	Sample Amount (g)	Extraction Solution (ml)	Notes
01	E041-04	20	20	
02	E041-04S	20	20	
03	E041-15D	20	20	
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26	wj 5-06-08			

Calibration of pH meter

Buffer ID	Value	Reading
NA	7	
	4	
Slope		
pH meter ID		

Reagents

Reagents	Lot #	Amount (ml)	Final Volume (ml)
DI-Water			
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)

High	Low	Thermostat Setting	Criteria
			20-40

Comments:

Prepared By: wj

Checked By:

Extracts Received By: wj

Disposed by: Disposal Date:

B021

TABLE OF CONTENTS

CLIENT: **TETRA TECH, INC.**

PROJECT: **LMC BEAUMONT SITE 2**

SDG: **08E061**

SECTION		PAGE
Cover Letter, COC/Sample Receipt Form		1000 – 1004
GC/MS-VOA	**	2000 –
GC/MS-SVOA	**	3000 –
GC-VOA	**	4000 –
GC-SVOA	**	5000 –
HPLC	**	6000 –
METALS	METHOD 3010A/6010B	7000 – 7025
WET	METHOD 160.1	8000 – 8007
	METHOD 300.0	8008 – 8038
	METHOD 314.0	8039 – 8055
	METHOD 350.2	8056 – 8061
	METHOD 351.3	8062 – 8067
	METHOD 365.2 (TOTAL PHOSPHORUS)	8068 – 8074
	METHOD 365.2 (ORTHOPHOSPHATE)	8075 – 8081
	METHOD 415.1	8082 – 8094
	METHOD 2320B	8095 – 8105
OTHERS	SULFUR, TOTAL	

** - Not Requested

EMAX
LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889
Fax: (310) 618-0818

Date: 05-30-2008
EMAX Batch No.: 08E061

Attn: Michael Wilson

Tetra Tech, Inc.
348 W Hospitality Lane, Ste 100
San Bernardino CA 92408

Subject: Laboratory Report
Project: LMC Beaumont Site 2

Enclosed is the Laboratory report for samples received on 05/07/08.
The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
TT-MW2-17D	E061-01	05/07/08	WATER	PERCHLORATE BY IC
				ANIONS BY IC
				ALKALINITY
				SOLIDS TOTAL DISSOLVED
				PHOSPHORUS, TOTAL
				TKN
				AMMONIA-N
				ORTHOPHOSPHATE-P
				TOTAL ORGANIC CARBON
				SULFUR, TOTAL
				METALS BY ICP

Note: SULFUR, TOTAL was subcontracted to Test America.

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning
these results.

Sincerely yours,

for

Caspar J. Pang
Acting Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that the results included in this report meet all NELAC requirements unless noted in the Case Narrative.

08E061

CHAIN OF CUSTODY RECORD

TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

TT-0610

SHIP TO: EMAX

DATE 5-7-08 PAGE 1 OF 1

CLIENT: Tetra Tech

PROJECT NAME: UCR Study site 2

PROJECT MANAGER: Tom Villanueva

TC #: 22289-0201

SAMPLERS (Signatures): Holly A H

TURN-AROUND TIME: Standard

PARAMETERS

LINE ITEM	SAMPLE NO.	DATE	TIME	alkalinity, TDS,	basic anions (Cl, SO4, NO3)	perchlorate, soluble P	basic cations (Ca, Mg, Na, K)	Fe, Mn, As, Total S	nitrogen (all forms - ammonia, TKN)	Total P	TCC	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	TT-MW2-17D	5-7-08	1150	X	X	X	X	X	X	X	X	U	W	P	4	See bottle	
2.																	
3.																	
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

Holly A H

FILTERING: ☐ FILTERED ☑ UNFILTERED

MATRIX TYPE: S - Soil, M - Sediment, W - Water

CONTAINER TYPE: G - Glass Bottle/Jar, SS - Stainless Steel Sleeve, SB - Brass Sleeve, P - Plastic Bottle/Jar

T=4.0

PRESERVATIVES: (Water Only) HCL, NR (None required), NaOH, H_2SO_4

RELINQUISHED BY	SIGNATURE	TETRA TECH, INC.	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 4
Holly Hanke	Holly A H		5-7-08	1525	
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT/SHIPMENT NO.
[signature]	[signature]	Orange Cove	5-7-08	1525	Carrier P/U
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
Sy. J Alchon	[signature]	Orange Cove	5-7-08	1730	
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	
V-LUNA	[signature]	emax	5-7-08	1730	

DISTRIBUTION: White and Pink = Tetra Tech, Inc. Canary = Laboratory

X:\GIS\ATT-MISC\COCR.CDR

1001

LABORATORIES, INC.

SAMPLE RECEIPT FORM 1

Type of Delivery	Delivered By/Airbill	ECN 08E061
☐ EMAX Courier		Receipient J-LUNA
☐ Client Delivery		Date 5-07-08
☑ Third Party ORANGE COURRIER		Time 1730

COC Inspection

☑ Client Name	☑ Client PM/FC	☑ Sampler Name	☑ Sampling Date/Time/Location	☑ Sample ID	☑ Matrix
☑ Address	☐ Tel# / Fax #	☐ Courier Signature	☑ Analysis Required	☐ Preservative (if any)	☑ TAT

Safety Issues

☑ None ☐ High concentrations expected ☐ Superfund Site samples ☐ Rad screening required

Comments:

Packaging Inspection

Container	☑ Cooler	☐ Box	☐ Other		
Condition	☐ Custody Seal	☑ Intact	☐ Damaged		
Packaging	☐ Bubble Pack	☐ Styrofoam	☐ Popcorn	☑ Sufficient	☐ _____
Temperatures	☑ Cooler 1 4.0 °C	☐ Cooler 2 _____ °C	☐ Cooler 3 _____ °C	☐ Cooler 4 _____ °C	☐ Cooler 5 _____ °C
	☐ Cooler 6 _____ °C	☐ Cooler 7 _____ °C	☐ Cooler 8 _____ °C	☐ Cooler 9 _____ °C	☐ Cooler 10 _____ °C

Comments: ☐ PM was informed on non-compliant coolers imediately.

DISCREPANCIES

LSID	LSCID	Sample Label ID/COC ID	Discrepancy Code	Corrective Action Code
01			A2	R2

REVIEWS

Sample Labeling _____ Date 5/7/08

SRF _____ Date 5/7/08

PM RK for YC Date 5/8/08

LEGEND:

Code	Description- Sample Management	Code	Description-Sample Management	Code	Description-Project Management
A1	Analysis is not indicated in COC	E1	Preservative needed; sample has no preservative	R1	Hold sample(s); wait for further instructions
A2	Analysis is not indicated in label	E2	Preservative not needed but sample is preserved	R2	Proceed as indicated in COC
A3	Analysis is inconsistent in COC vis-à-vis label	F1	Not enough quantity of samples	R3	Refer to attached instruction
B1	Sample ID is not indicated in COC	F2	Bubble is> 6mm	R4	Cancel the analysis
B2	Sample ID is not indicated in label	G1	Temperature is out of range (4 ± 2°C)	R5	_____
B3	Sample ID is inconsistent in COC vis-à-vis label	G2	Out of Holding Time	R6	_____
C1	Wrong container	G3	>20 % solid particle		
C2	Broken container	H1	_____		
C3	Leaking container	H2	_____		
D1	Date and/or time is not indicated in COC				
D2	Date and/or time is not indicated in label				
D3	Date and/or time is inconsistent in COC vis-à-vis label				

- ECONOMICAL
- RADIO DISPATCHED
- IMMEDIATE PICKUP & DELIVERY
- NATIONWIDE SERVICE

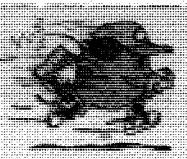
When Reliability Counts - We Make The Difference

ORANGE COURIER, INC.

MESSENGER DELIVERY WAREHOUSE AND DISTRIBUTION

3731 WEST WARNER • SANTA ANA, CA 92704

CUSTOMER SERVICE:	949.975.1313
ADMINISTRATION:	714.384.3600
LEGAL:	949.975.8470
FAX:	949.975.0505



Licensed, Bonded, Insured
24 Hrs / 7 Days
Radio Dispatch
CA# 48426
DOT 710576
MC# 327888

CUST. ACCT.#

SO # 592121

DATE 05/07/08 REF. NO. 17NH

CHARGE TO

PICK UP: Tatra Tech
348 W. Hospital Ln Fl
San Bernardino 92408

DELIVER TO: Emax Laboratory Inc
1835 W. 205th St
Torrance 90501

PACKAGES	DESCRIPTION	WEIGHT		CHARGE
1	Coolers code 08E061			
			DELIVERY CHARGES	
			SPECIAL HANDLING	
			RETURN CHARGES	
			WAITING TIME	
			TOTAL CHARGES	

DRIVER 128 PREPAID ☐ C.O.D. ☐ EXCLUSIVE ☐ REG. ☐

X [signature]
PICKUP SIGNATURE

X [signature] 1730 PICK-UP TIME 15 DELIVERY TIME

RECEIVED IN GOOD CONDITION. PLEASE SIGN LEGIBLY.

PLEASE VISIT OUR WEBSITE AT:
www.orangecourier.com

CONSIGNEE COPY

By using this Delivery Slip - Bill of Lading, you agree to the terms and conditions on the back of this Delivery Slip - Bill of Lading including terms that limit our liability

1003

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TETRA TECH, INC.

LMC BEAUMONT SITE 2

METHOD 3010A/6010B
CATIONS BY TRACE ICP

SDG#: 08E061

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E061

METHOD 3010A/6010B
CATIONS BY TRACE ICP

One (1) water sample was received on 05/07/08 for Cations analysis by Method 3010A/6010B in accordance with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW846, 3rd edition.

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Serial Dilution/Post-Analytical Spike**

   Sample E080-03 from another SDG was analyzed for serial dilution and post-analytical spike. All QC requirements were met.

5. **Matrix Spike/Matrix Spike Duplicate**

   No MS/MSD sample was designated in this SDG.

6. **Sample Analysis**

   Sample was analyzed according to the prescribed QC procedures. All criteria were met.

LAB CHRONICLE
CATIONS BY TRACE ICP

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2

SDG NO. : 08E061
Instrument ID : T-ID8

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	IPE020WB	1	NA	05/19/0819:15	05/13/0810:45	ID8E015083	ID8E015081	IPE020W	Method Blank
LCS1W	IPE020WL	1	NA	05/19/0819:20	05/13/0810:45	ID8E015084	ID8E015081	IPE020W	Lab Control Sample (LCS)
LCD1W	IPE020WC	1	NA	05/19/0819:25	05/13/0810:45	ID8E015085	ID8E015081	IPE020W	LCS Duplicate
TT-MW2-17D	E061-01	1	NA	05/19/0819:45	05/13/0810:45	ID8E015089	ID8E015081	IPE020W	Field Sample
OF1 5EAS	E080-03A	1	NA	05/19/0819:30	05/13/0810:45	ID8E015086	ID8E015081	IPE020W	Analytical Spike Sample
OF1 5E	E080-03	1	NA	05/19/0819:35	05/13/0810:45	ID8E015087	ID8E015081	IPE020W	Field Sample
OF1 5EDL	E080-03J	5	NA	05/19/0819:40	05/13/0810:45	ID8E015088	ID8E015081	IPE020W	Diluted Sample

FN - Filename
% Moist - Percent Moisture

METHOD 3010A/6010B
CATIONS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	05/07/08 11:50
Project	: LMC BEAUMONT SITE 2	Date Received:	05/07/08
SDG NO.	: 08E061	Date Extracted:	05/13/08 10:45
Sample ID:	TT-MW2-17D	Date Analyzed:	05/19/08 19:45
Lab Samp ID:	E061-01	Dilution Factor:	1
Lab File ID:	ID8E015089	Matrix :	WATER
Ext Btch ID:	IPE020W	% Moisture :	NA
Calib. Ref.:	ID8E015081	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Arsenic	ND	0.100	0.0400
Calcium	73.5	1.00	0.100
Iron	0.0666J	0.200	0.0400
Magnesium	13.7	1.00	0.100
Manganese	0.0325	0.0100	0.00300
Potassium	3.47	2.00	0.100
Sodium	187	1.00	0.100

METHOD 3010A/6010B
CATIONS BY TRACE ICP

Client	: TETRA TECH, INC.	Date Collected:	NA
Project	: LMC BEAUMONT SITE 2	Date Received:	05/13/08
SDG NO.	: 08E061	Date Extracted:	05/13/08 10:45
Sample ID:	MBLK1W	Date Analyzed:	05/19/08 19:15
Lab Samp ID:	IPE020WB	Dilution Factor:	1
Lab File ID:	ID8E015083	Matrix :	WATER
Ext Btch ID:	IPE020W	% Moisture :	NA
Calib. Ref.:	ID8E015081	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Arsenic	ND	0.100	0.0400
Calcium	ND	1.00	0.100
Iron	ND	0.200	0.0400
Magnesium	ND	1.00	0.100
Manganese	ND	0.0100	0.00300
Potassium	ND	2.00	0.100
Sodium	ND	1.00	0.100

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
SDG NO.: 08E061
METHOD: METHOD 3010A/6010B

MATRIX:	WATER			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1W				
CONTROL NO.:	IPE020WB	IPE020WL	IPE020WC		
LAB FILE ID:	ID8E015083	ID8E015084	ID8E015085		
DATIME EXTRCTD:	05/13/0810:45	05/13/0810:45	05/13/0810:45	DATE COLLECTED:	NA
DATIME ANALYZD:	05/19/0819:15	05/19/0819:20	05/19/0819:25	DATE RECEIVED:	05/13/08
PREP. BATCH:	IPE020W	IPE020W	IPE020W		
CALIB. REF:	ID8E015081	ID8E015081	ID8E015081		

ACCESSION:

PARAMETER	BLNK RSLT mg/L	SPIKE AMT mg/L	BS RSLT mg/L	BS % REC	SPIKE AMT mg/L	BSD RSLT mg/L	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Arsenic	ND	1	1.02	102	1	1.02	102	1	80-120	20
Calcium	ND	50	48.9	98	50	50.3	101	3	80-120	20
Iron	ND	10	9.3	93	10	9.44	94	1	80-120	20
Magnesium	ND	50	48.7	97	50	50.2	100	3	80-120	20
Manganese	ND	1	.934	93	1	.962	96	3	80-120	20
Potassium	ND	50	50.2	100	50	51	102	1	80-120	20
Sodium	ND	50	49.4	99	50	51	102	3	80-120	20

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E061
METHOD: METHOD 3010A/6010B

MATRIX:	WATER		% MOISTURE:	NA
DILUTION FACTOR:	1	5		
SAMPLE ID:	OF1 5E	OF1 5EDL		
EMAX SAMP ID:	E080-03	E080-03J		
LAB FILE ID:	ID8E015087	ID8E015088		
DATE EXTRACTED:	05/13/0810:45	05/13/0810:45	DATE COLLECTED:	05/05/08 20:00
DATE ANALYZED:	05/19/0819:35	05/19/0819:40	DATE RECEIVED:	05/09/08
PREP. BATCH:	IPE020W	IPE020W		
CALIB. REF:	ID8E015081	ID8E015081		

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SERIAL DIL RSLT (mg/L)	DIF RSLT %	QC LIMIT (%)
Arsenic	0.115	ND	NA	10
Calcium	67.4	64.5	4	10
Iron	8.77	8.59	2	10
Manganese	22.7	22.0	3	10
Magnesium	8.41	8.24	2	10
Potassium	3.25	3.20J	NA	10
Sodium	12.0	11.4	5	10

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
SDG NO.: 08E061
METHOD: METHOD 3010A/6010B

MATRIX:	WATER		% MOISTURE:	NA
DILTN FACTR:	1	1		
SAMPLE ID:	OF1 5E			
CONTROL NO.:	E080-03	E080-03A		
LAB FILE ID:	ID8E015087	ID8E015086		
DATIME EXTRCTD:	05/13/0810:45	05/13/0810:45	DATE COLLECTED:	05/05/08 20:00
DATIME ANALYZD:	05/19/0819:35	05/19/0819:30	DATE RECEIVED:	05/09/08
PREP. BATCH:	IPE020W	IPE020W		
CALIB. REF:	ID8E015081	ID8E015081		

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	AS RSLT (mg/L)	AS % REC	QC LIMIT (%)
Arsenic	.115	1	1.19	107	75-125
Calcium	67.4	50	116	98	75-125
Iron	8.77	10	18.1	93	75-125
Magnesium	22.7	50	74.3	103	75-125
Manganese	8.41	1	9.13	72*	75-125
Potassium	3.25	50	55.2	104	75-125
Sodium	12	50	64.3	105	75-125

TRACE-LOW ICP QC CHECK TABLE

QC	ICV HIGH	ICV	CCV	ICSAB	ICSA
Limit%	95-105	90-110	90-110	80-120	80-120
Comp	mg/L	mg/L	mg/L	mg/L	mg/L
Al	10	5	5	500	500
Sb	1	0.5	0.5	1	0
As	1	0.5	0.5	1	0
Ba	1	0.5	0.5	0.5	0
Be	1	0.5	0.5	0.5	0
B	1	0.5	0.5	0.5	0
Cd	1	0.5	0.5	1	0
Ca	100	50	50	500	500
Cr	1	0.5	0.5	0.5	0
Co	1	0.5	0.5	0.5	0
Cu	1	0.5	0.5	0.5	0
Fe	10	5	5	200	200
Pb	1	0.5	0.5	1	0
Li	1	0.5	0.5	0.5	0
Mg	100	50	50	500	500
Mn	1	0.5	0.5	0.5	0
Mo	1	0.5	0.5	1	0
Ni	1	0.5	0.5	1	0
K	100	50	50	75	0
Se	1	0.5	0.5	1	0
Si	1	0.5	0.5	1	0
Ag	1	0.5	0.5	1	0
Na	100	50	50	75	0
Sr	1	0.5	0.5	0.5	0
Tl	1	0.5	0.5	1	0
Sn	1	0.5	0.5	1	0
Ti	1	0.5	0.5	1	0
U	10	5	5	1	0
V	1	0.5	0.5	0.5	0
Zn	1	0.5	0.5	1	0

ANALYSIS RUN LOG
for
ICP

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Start Date: 5/19/08 12:24

End Date: 5/19/08 21:05

Comments:

All CCB's : Ca > 3XIDL

Book #: AD8-005

Instrument No.: D8

Analytical Batch: 1D8E015

Analytical Sequence: S-086010E(V30)

Method File: 086010E(V30)

SOP #	Rev. #
☑ EMAX-6010	5
☐ EMAX-200.7	0
☐ EMAX-	

STANDARDS ID	
S0	SM1B11.28.04
S1	NA
S2	SM1B11.19.05
S3	NA
S4	NA
S5	SM1B11.19.06
S6	NA
S7	NA
S8	SM1B11.28.02
S9	NA
S11	SM1B11.18.05
S17	↓ 18.06
ICV	SM1B11.28.03
CCV	SM1B11.28.01
ICSA	SM1B11.27.01
ICSAB	↓ 18.07
CRI/MRL MRL1A BGMD LOW	SM1B11.25.01
MRL1B CAM3	↓ 08.06

Analyzed By: TH

Date: 5/19/08

7009

SEQUENCE FILE : ID8E015

4-18	19-33	34-43	44-53	54-63
LFID	LSID	TIME	DATE	DF
ID8E015001	Blank	12:24	05/19/08	1.000
ID8E015002	S2	12:29	05/19/08	1.000
ID8E015003	S5	12:34	05/19/08	1.000
ID8E015004	S8	12:39	05/19/08	1.000
ID8E015005	S11	12:44	05/19/08	1.000
ID8E015006	S17	12:49	05/19/08	1.000
ID8E015007	ICV	12:54	05/19/08	1.000
ID8E015008	ICB	12:59	05/19/08	1.000
ID8E015009	MRL1A	13:04	05/19/08	1.000
ID8E015010	MRL1B	13:09	05/19/08	1.000
ID8E015011	ICSA1	13:14	05/19/08	1.000
ID8E015012	ICSAB1	13:19	05/19/08	1.000
ID8E015013	CCV1	13:25	05/19/08	1.000
ID8E015014	CCB1	13:29	05/19/08	1.000
ID8E015015	IPE027SB	13:34	05/19/08	1.000
ID8E015016	IPE027SL	13:40	05/19/08	1.000
ID8E015017	IPE027SC	13:44	05/19/08	1.000
ID8E015018	E128-16M	13:49	05/19/08	1.000
ID8E015019	E128-16S	13:54	05/19/08	1.000
ID8E015020	E128-16A	13:59	05/19/08	1.000
ID8E015021	E128-16	14:04	05/19/08	1.000
ID8E015022	E128-16J	14:09	05/19/08	5.000
ID8E015023	E128-02	14:14	05/19/08	1.000
ID8E015024	BLANK	14:19	05/19/08	1.000
ID8E015025	CCV2	14:24	05/19/08	1.000
ID8E015026	CCB2	14:28	05/19/08	1.000
ID8E015027	E128-03	14:34	05/19/08	1.000
ID8E015028	E128-04	14:39	05/19/08	1.000
ID8E015029	E128-05	14:43	05/19/08	1.000
ID8E015030	E128-06	14:48	05/19/08	1.000
ID8E015031	E128-07	14:54	05/19/08	1.000
ID8E015032	E128-08	14:59	05/19/08	1.000
ID8E015033	E128-09	15:04	05/19/08	1.000
ID8E015034	E128-10	15:09	05/19/08	1.000
ID8E015035	E128-11	15:16	05/19/08	1.000
ID8E015036	BLANK	15:21	05/19/08	1.000
ID8E015037	CCV3	15:26	05/19/08	1.000
ID8E015038	CCB3	15:31	05/19/08	1.000
ID8E015039	E128-12	15:36	05/19/08	1.000
ID8E015040	E128-13	15:41	05/19/08	1.000
ID8E015041	E128-14	15:46	05/19/08	1.000
ID8E015042	E128-15	15:51	05/19/08	1.000
ID8E015043	E128-17	15:56	05/19/08	1.000
ID8E015044	E128-18	16:01	05/19/08	1.000
ID8E015045	E128-19	16:06	05/19/08	1.000
ID8E015046	E128-20	16:11	05/19/08	1.000
ID8E015047	BLANK	16:16	05/19/08	1.000
ID8E015048	CCV4	16:21	05/19/08	1.000
ID8E015049	CCB4	16:26	05/19/08	1.000
ID8E015050	IPE029WB	16:31	05/19/08	1.000
ID8E015051	IPE029WL	16:36	05/19/08	1.000
ID8E015052	IPE029WC	16:41	05/19/08	1.000
ID8E015053	E142-14A	16:46	05/19/08	1.000

ID8E015054	E142-14	16:50	05/19/08	1.000
ID8E015055	E142-14J	16:55	05/19/08	5.000
ID8E015056	E128-01	17:00	05/19/08	1.000
ID8E015057	BLANK	17:06	05/19/08	1.000
ID8E015058	CCV5	17:10	05/19/08	1.000
ID8E015059	CCB5	17:15	05/19/08	1.000
ID8E015060	IPE028SB	17:20	05/19/08	1.000
ID8E015061	IPE028SL	17:25	05/19/08	1.000
ID8E015062	IPE028SC	17:31	05/19/08	1.000
ID8E015063	E109-01A	17:35	05/19/08	1.000
ID8E015064	E109-01	17:40	05/19/08	1.000
ID8E015065	E109-01J	17:45	05/19/08	5.000
ID8E015066	E124-02	17:50	05/19/08	1.000
ID8E015067	E127-01	17:55	05/19/08	1.000
ID8E015068	BLANK	18:00	05/19/08	1.000
ID8E015069	CCV6	18:05	05/19/08	1.000
ID8E015070	CCB6	18:10	05/19/08	1.000
ID8E015071	E127-02	18:15	05/19/08	1.000
ID8E015072	E127-03	18:20	05/19/08	1.000
ID8E015073	E127-04	18:25	05/19/08	1.000
ID8E015074	E127-05	18:30	05/19/08	1.000
ID8E015075	E127-06	18:35	05/19/08	1.000
ID8E015076	E127-07	18:40	05/19/08	1.000
ID8E015077	E127-08	18:45	05/19/08	1.000
ID8E015078	E127-09	18:50	05/19/08	1.000
ID8E015079	E127-10	18:55	05/19/08	1.000
ID8E015080	BLANK	19:00	05/19/08	1.000
ID8E015081	CCV7	19:05	05/19/08	1.000
ID8E015082	CCB7	19:10	05/19/08	1.000
ID8E015083	IPE020WB	19:15	05/19/08	1.000
ID8E015084	IPE020WL	19:20	05/19/08	1.000
ID8E015085	IPE020WC	19:25	05/19/08	1.000
ID8E015086	E080-03A	19:30	05/19/08	1.000
ID8E015087	E080-03	19:35	05/19/08	1.000
ID8E015088	E080-03J	19:40	05/19/08	5.000
ID8E015089	E061-01	19:45	05/19/08	1.000
ID8E015090	E087-03	19:50	05/19/08	1.000
ID8E015091	BLANK	19:55	05/19/08	1.000
ID8E015092	CCV8	20:00	05/19/08	1.000
ID8E015093	CCB8	20:05	05/19/08	1.000
ID8E015094	IPE024WB	20:10	05/19/08	1.000
ID8E015095	IPE024WL	20:15	05/19/08	1.000
ID8E015096	IPE024WC	20:20	05/19/08	1.000
ID8E015097	E087-01A	20:25	05/19/08	1.000
ID8E015098	E087-01	20:30	05/19/08	1.000
ID8E015099	E087-01J	20:35	05/19/08	5.000
ID8E015100	E087-02	20:40	05/19/08	1.000
ID8E015101	E087-04	20:45	05/19/08	1.000
ID8E015102	E087-05	20:50	05/19/08	1.000
ID8E015103	BLANK	20:55	05/19/08	1.000
ID8E015104	CCV9	21:00	05/19/08	1.000
ID8E015105	CCB9	21:05	05/19/08	1.000

SDG : 08E061 UNIT : % SUMMARY of ICV and CCV : ID8E015 DATE : 05/19/08

ANALYTE	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	Sr	Tl	V	Zn
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICV	106	98	100	96	98	92	101	95	93	95	95	95	101	96	95	93	98	98	96	99	96	96	95	98
ICB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MRL1A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MRL1B	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA1	102	----	----	----	----	----	93	----	----	----	88	----	103	----	----	----	----	----	----	----	----	----	----	----
ICSAB1	105	88	105	105	98	96	94	93	95	105	88	96	104	93	104	94	106	101	108	107	99	94	97	98
CCV1	106	101	102	100	101	97	104	97	96	98	95	97	103	99	101	96	100	102	98	102	99	99	101	101
CCB1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE027SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE027SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE027SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-16M	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-16S	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-16A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-16	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-16J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV2	105	101	102	96	97	96	99	95	95	96	94	96	98	94	100	95	98	101	95	98	95	98	99	96
CCB2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-08	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-09	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV3	106	101	102	99	100	97	101	97	96	98	95	97	101	97	101	95	100	103	98	102	98	99	101	96
CCB3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-12	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-13	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-14	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-15	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-18	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-19	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-20	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV4	105	101	102	96	96	97	98	93	96	96	93	97	96	93	101	95	98	102	95	98	95	99	98	96
CCB4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE029WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE029WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE029WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E142-14A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

E142-14	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E142-14J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV5	104	101	103	97	97	97	98	94	96	96	94	97	97	94	101	96	99	103	95	98	95	99	99	96	
CCB5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE028SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE028SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE028SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E109-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E109-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E109-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E124-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV6	106	101	102	100	101	96	102	97	96	98	95	96	102	98	101	95	101	102	98	103	99	99	101	96	
CCB6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-08	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-09	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV7	105	102	105	99	100	97	100	97	95	98	95	96	101	96	101	95	101	105	97	101	97	99	100	97	
CCB7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE020WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE020WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE020WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E080-03A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E080-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E080-03J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E061-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV8	106	101	105	104	104	97	103	99	96	101	96	97	105	101	102	95	104	105	101	107	103	101	102	97	
CCB8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE024WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE024WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE024WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV9	103	102	108	103	104	97	99	98	96	99	94	97	104	99	103	96	105	108	98	105	100	102	100	97	
CCB9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

QC limit of each parameter are listed in a table attached next to all the ICP check forms

* : Out of QC Limit

SDG : 08E015 UNIT : UG/L SUMMARY of CALIBRATION BLANKS : ID8E015 (WATER) DATE : 05/19/08 I

ANALYTE	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	Sr	Tl	V	Zn
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
S17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICV	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICB	-1.87	-1.62	-.320	-.060	.010	-.050	-102	-.300	-.020	-.400	-5.65	-.570	9.17	-.480	.140	-.120	-10.2	.370	.040	-21.0	-.170	-.340	-.210	-3.69
MRL1A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MRL1B	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ICSA1	----	1.61	6.75	.270	-.030	-.790	----	.430	-1.01	2.46	----	.560	----	-.360	-2.43	-3.43	33.9	-9.10	.710	75.9	6.76	-3.11	.360	9.00
ICSAB1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB1	1.67	-1.24	-.410	-.060	.030	.010	-86.8	-.250	.470	-.380	-1.50	-.150	-13.0	-.360	.290	-.080	9.75	-.450	.150	-12.2	-.050	.520	-.080	-.920
IPE027SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE027SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE027SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-16M	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-16S	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-16A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-16	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-16J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB2	-.910	-1.63	.020	-.090	-.010	.040	-70.6	-.350	-.140	-.360	-2.04	.180	-3.81	-.120	.090	.070	12.1	1.03	.130	-22.7	-.090	.390	-.140	-2.17
E128-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-08	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-09	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-11	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB3	-.980	-1.80	.400	-.170	.030	.000	-71.7	-.350	.060	-.220	-4.71	-.480	14.8	-.010	.130	.140	-8.90	-.900	.100	-21.2	.020	.370	.010	-2.44
E128-12	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-13	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-14	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-15	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-18	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-19	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-20	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB4	-1.86	-2.75	-2.09	-.030	.010	.000	-92.5	-.220	-.060	-.210	-7.39	-.360	-12.0	-.190	.030	.090	-4.02	-.140	-.120	-28.9	.060	-.270	.030	-3.75
IPE029WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE029WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE029WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E142-14A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

FORM I

E142-14	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E142-14J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E128-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB5	-2.71	-1.57	-.990	-.160	.020	.060	-92.9	-.110	.010	-.300	-1.65	1.20	-4.19	-.050	.110	-.010	17.0	-.090	.080	-26.8	.010	.150	.010	-3.84
IPE028SB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE028SL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE028SC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E109-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E109-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E109-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E124-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB6	1.49	-1.03	-.770	-.190	.030	.050	-99.9	-.360	-.120	-.320	-3.46	-.420	4.94	-.240	.140	-.020	12.8	-1.84	-.030	-25.5	-.070	-.260	-.110	-3.97
E127-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-08	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-09	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E127-10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB7	-2.27	-2.38	-1.01	-.070	-.010	-.010	-99.6	-.280	-.010	-.120	-2.53	-.620	-1.05	-.110	.110	.050	19.5	.400	.060	-24.0	.020	-.990	-.050	-3.97
IPE020WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE020WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE020WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E080-03A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E080-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E080-03J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E061-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB8	-2.11	-2.15	-.710	-.040	.040	.020	-101	-.220	.010	.270	-3.12	-.070	3.04	-.220	.050	.000	15.2	-.020	.190	-13.5	.060	-.180	-.050	-4.32
IPE024WB	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE024WL	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
IPE024WC	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-01A	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-01	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-01J	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-04	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
E087-05	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BLANK	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCV9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
CCB9	-6.90	-1.15	-.570	-.040	.000	.000	-93.3	-.330	.110	.470	-4.54	.010	4.51	-.230	.120	.000	11.1	.600	.070	11.6	-.040	-.530	-.040	-3.81

QC limit of each parameter are listed in a table attached next to all the ICP check forms

* : Out of QC Limit

	Pos ID	Type	Samplename	Comment	Data File	Type*	Diln Factor	CorrFact	Check	Check Table	Fail Action
1	0	Unk	S0		ID8E015001			1	☐		Continue
2	0	Unk	S2		ID8E015002			1	☐		Continue
3	0	Unk	S5		ID8E015003			1	☐		Continue
4	0	Unk	S8		ID8E015004			1	☐		Continue
5	0	Unk	S11		ID8E015005			1	☐		Continue
6	0	Unk	S17		ID8E015006			1	☐		Continue
7	1	QC	ICV		ID8E015007			1	☒	ICV	Continue
8	2	QC	ICB		ID8E015008			1	☒	3XIDL	Continue
9	3	Unk	MRL1A	BaMP-low CAM3	ID8E015009			1	☐		Continue
10	4	Unk	MRL1B		ID8E015010			1	☐		Continue
11	5	QC	ICSA1		ID8E015011			1	☒	ICSA	Continue
12	6	QC	ICSAB1		ID8E015012			1	☒	ICSAB	Continue
13	7	QC	CCV1		ID8E015013			1	☒	CCV	Continue
14	8	QC	CCB1		ID8E015014			1	☒	3XIDL	Continue
15	9	QC	IPE027SB		ID8E015015			1	☒	CCB1	Continue
16	10	QC	IPE027SL		ID8E015016			1	☒	LCS	Continue
17	11	QC	IPE027SC		ID8E015017			1	☒	LCS	Continue
18	12	Unk	E128-16M		ID8E015018			1	☐		Continue
19	13	Unk	E128-16S		ID8E015019			1	☐		Continue
20	14	Unk	E128-16A		ID8E015020			1	☐		Continue
21	15	Unk	E128-16		ID8E015021			1	☐		Continue
22	16	Unk	E128-16J		ID8E015022			1	☐		Continue
23	17	Unk	E128-02		ID8E015023			1	☐		Continue
24	18	Unk	BLANK		ID8E015024			1	☐		Continue
25	19	QC	CCV2		ID8E015025			1	☒	CCV	Continue
26	20	QC	CCB2		ID8E015026			1	☒	3XIDL	Continue
27	21	Unk	E128-03		ID8E015027			1	☐		Continue
28	22	Unk	E128-04		ID8E015028			1	☐		Continue
29	23	Unk	E128-05		ID8E015029			1	☐		Continue
30	24	Unk	E128-06		ID8E015030			1	☐		Continue
31	25	Unk	E128-07		ID8E015031			1	☐		Continue
32	26	Unk	E128-08		ID8E015032			1	☐		Continue
33	27	Unk	E128-09		ID8E015033			1	☐		Continue
34	28	Unk	E128-10		ID8E015034			1	☐		Continue
35	29	Unk	E128-11		ID8E015035			1	☐		Continue
36	30	Unk	BLANK		ID8E015036			1	☐		Continue
37	31	QC	CCV3		ID8E015037			1	☒	CCV	Continue
38	32	QC	CCB3		ID8E015038			1	☒	3XIDL	Continue
39	33	Unk	E128-12		ID8E015039			1	☐		Continue
40	34	Unk	E128-13		ID8E015040			1	☐		Continue
41	35	Unk	E128-14		ID8E015041			1	☐		Continue
42	36	Unk	E128-15		ID8E015042			1	☐		Continue
43	37	Unk	E128-17		ID8E015043			1	☐		Continue
44	38	Unk	E128-18		ID8E015044			1	☐		Continue
45	39	Unk	E128-19		ID8E015045			1	☐		Continue
46	40	Unk	E128-20		ID8E015046			1	☐		Continue

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	Pos ID	Type	Samplename	Comment	Data File	Type*	Dilln Factor	CorrFact	Check	Check Table	Fail Action
47	41	Unk	BLANK		ID8E015047			1	☐		Continue
48	42	QC	CCV4		ID8E015048			1	☒	CCV	Continue
49	43	QC	CCB4		ID8E015049			1	☒	3XIDL	Continue
50	44	QC	IPE029WB		ID8E015050			1	☒	CCB1	Continue
51	45	QC	IPE029WL		ID8E015051			1	☒	LCS	Continue
52	46	QC	IPE029WC		ID8E015052			1	☒	LCS	Continue
53	47	Unk	E142-14A		ID8E015053			1	☐		Continue
54	48	Unk	E142-14		ID8E015054			1	☐		Continue
55	49	Unk	E142-14J		ID8E015055			1	☐		Continue
56	50	Unk	E128-01		ID8E015056			1	☐		Continue
57	51	Unk	BLANK		ID8E015057			1	☐		Continue
58	52	QC	CCV5		ID8E015058			1	☒	CCV	Continue
59	53	QC	CCB5		ID8E015059			1	☒	3XIDL	Continue
60	54	QC	IPE028SB		ID8E015060			1	☒	CCB1	Continue
61	55	QC	IPE028SL		ID8E015061			1	☒	LCS	Continue
62	56	QC	IPE028SC		ID8E015062			1	☒	LCS	Continue
63	57	Unk	E109-01A		ID8E015063			1	☐		Continue
64	58	Unk	E109-01		ID8E015064			1	☐		Continue
65	59	Unk	E109-01J		ID8E015065			1	☐		Continue
66	60	Unk	E124-02		ID8E015066			1	☐		Continue
67	61	Unk	E127-01		ID8E015067			1	☐		Continue
68	62	Unk	BLANK		ID8E015068			1	☐		Continue
69	63	QC	CCV6		ID8E015069			1	☒	CCV	Continue
70	64	QC	CCB6		ID8E015070			1	☒	3XIDL	Continue
71	65	Unk	E127-02		ID8E015071			1	☐		Continue
72	66	Unk	E127-03		ID8E015072			1	☐		Continue
73	67	Unk	E127-04		ID8E015073			1	☐		Continue
74	68	Unk	E127-05		ID8E015074			1	☐		Continue
75	69	Unk	E127-06		ID8E015075			1	☐		Continue
76	70	Unk	E127-07		ID8E015076			1	☐		Continue
77	71	Unk	E127-08		ID8E015077			1	☐		Continue
78	72	Unk	E127-09		ID8E015078			1	☐		Continue
79	73	Unk	E127-10		ID8E015079			1	☐		Continue
80	74	Unk	BLANK		ID8E015080			1	☐		Continue
81	75	QC	CCV7		ID8E015081			1	☒	CCV	Continue
82	76	QC	CCB7		ID8E015082			1	☒	3XIDL	Continue
83	77	QC	IPE020WB		ID8E015083			1	☒	CCB1	Continue
84	78	QC	IPE020WL		ID8E015084			1	☒	LCS	Continue
85	79	QC	IPE020WC		ID8E015085			1	☒	LCS	Continue
86	80	Unk	E080-03A		ID8E015086			1	☐		Continue
87	81	Unk	E080-03		ID8E015087			1	☐		Continue
88	82	Unk	E080-03J		ID8E015088			1	☐		Continue
89	83	Unk	E061-01		ID8E015089			1	☐		Continue
90	87	Unk	E087-03	DISS	ID8E015090			1	☐		Continue
91	84	Unk	BLANK		ID8E015091			1	☐		Continue
92	85	QC	CCV8		ID8E015092			1	☒	CCV	Continue

	Pos ID	Type	Samplename	Comment	Data File	Type*	Dil'n Factor	CorrFact	Check	Check Table	Fail Action
93	86	QC	CCB8		ID8E015093			1	☒	3XIDL	Continue
94	88	QC	IPE024WB		ID8E015094			1	☒	CCB1	Continue
95	89	QC	IPE024WL		ID8E015095			1	☒	LCS	Continue
96	90	QC	IPE024WC		ID8E015096			1	☒	LCS	Continue
97	91	Unk	E087-01A	TOT	ID8E015097			1	☐		Continue
98	92	Unk	E087-01	TOT	ID8E015098			1	☐		Continue
99	93	Unk	E087-01J	TOT	ID8E015099			1	☐		Continue
100	94	Unk	E087-02	TOT	ID8E015100			1	☐		Continue
101	95	Unk	E087-04	TOT	ID8E015101			1	☐		Continue
102	96	Unk	E087-05	TOT	ID8E015102			1	☐		Continue
103	97	Unk	BLANK		ID8E015103			1	☐		Continue
104	98	QC	CCV9		ID8E015104			1	☒	CCV	Continue
105	99	QC	CCB9		ID8E015105			1	☒	3XIDL	Continue

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ID8E015 Section 1 of 3

INDX	LSID	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	LSID
1	Blank	.00010	.00002	-.00001	.00011	.00002	-.00097	.00242	.00010	-.00100	.00139	Blank
2	S2				.48272	.80304	2.8820		.09324	.75762	.23634	S2
3	S5		.00681	.00326								S5
4	S8							1.6776				S8
5	S11											S11
6	S17	.15571										S17
7	ICV	5.2829	.49069	.50175	.48226	.49087	.46234	50.439	.47397	.46519	.47726	ICV
8	ICB	-.00187	-.00162	-.00032	-.00006	.00001	-.00005	-.10175*	-.00030	-.00002	-.00040	ICB
9	MRL1A	.19391	.09856	.01064	.00519	.00398	.00510	.72461	.00997	.01505	.01035	MRL1A
10	MRL1B	-.00066	.00831	.00798	.00990	.00983	.01018	.22680	.00970	.01013	.00947	MRL1B
11	ICSA1	511.67	.00161	.00675	.00027	-.00003	-.00079	465.62	.00043	-.00101	.00246	ICSA1
12	ICSAB1	524.29	.87687	1.0454	.52730	.48969	.95966	470.78	.46457	.47638	.52602	ICSAB1
13	CCV1	5.3039	.50372	.51225	.49802	.50616	.48398	51.993	.48562	.48082	.48892	CCV1
14	CCB1	.00167	-.00124	-.00041	-.00006	.00003	.00001	-.08677*	-.00025	.00047	-.00038	CCB1
15	IPE027SB	.00837	-.00291	.00143	.00004	.00001	.00013	-.11328*	-.00031	.00031	.00021	IPE027SB
16	IPE027SL	10.439	5.0251	1.0146	.96381	1.0013	.98242	50.218	.93919	.97097	.97153	IPE027SL
17	IPE027SC	10.526	5.0214	1.0136	.98191	1.0275	.98290	51.252	.96481	.97297	.98365	IPE027SC
18	E128-16M	35.998	3.8871	.91244	1.0127	.92997	.87564	162.68	.89239	.88597	.91967	E128-16M
19	E128-16S	35.858	3.8036	.89931	1.0182	.91893	.87238	174.14	.87923	.88531	.91189	E128-16S
20	E128-16A	31.593	4.1674	.98049	1.0487	.97232	.94440	159.30	.94208	.95634	.98377	E128-16A
21	E128-16	20.378	.00094	.01223	.10398	.00060	-.00012	112.60	.02791	.01174	.01388	E128-16
22	E128-16J	3.9365	-.00061	.00111	.02109	.00010	-.00004	23.091	.00587	.00240	.00251	E128-16J
23	E128-02	97.121	.10071	.04364	1.0583	.00234	.00700	204.67	.69311	.06898	8.7074	E128-02
24	BLANK	.01112	-.00119	.00044	.00013	.00009	.00014	-.07441	-.00026	.00013	.00015	BLANK
25	CCV2	5.2308	.50470	.51206	.48000	.48507	.48060	49.570	.47257	.47659	.48083	CCV2
26	CCB2	-.00091	-.00163	.00002	-.00009	-.00001	.00004	-.07063*	-.00035	-.00014	-.00036	CCB2
27	E128-03	46.498	.01314	.03269	1.1632	.00124	.00115	244.00	.08924	.03566	.27785	E128-03
28	E128-04	60.247	.00820	.02013	.86046	.00142	.00121	139.07	.13275	.03204	1.3677	E128-04
29	E128-05	11.738	-.00432	.01142	1.7407	.00053	-.00034	4.4716	.03233	.00861	.08776	E128-05
30	E128-06	122.45	-.01212	.04136	.86681	.00352	.00340	47.502	.13999	.06089	.17943	E128-06
31	E128-07	51.027	-.00958	.01306	.87735	.00103	-.00044	191.51	.06133	.03819	.04358	E128-07
32	E128-08	17.486	-.00346	.00758	2.0914	.00058	-.00119	13.848	.03079	.00684	.18078	E128-08
33	E128-09	99.475	.10669	.04762	.80345	.00267	.00632	57.653	.27624	.06275	.61367	E128-09
34	E128-10	102.29	-.00458	.03355	.88368	.00264	.00097	34.414	.10470	.04957	.15261	E128-10
35	E128-11	64.963	-.00833	.02010	.46049	.00179	-.00047	139.26	.09549	.04218	.05219	E128-11
36	BLANK	-.00062	-.00180	-.00074	-.00001	.00001	.00011	-.02926	-.00023	.00004	-.00016	BLANK
37	CCV3	5.2839	.50362	.51179	.49561	.50085	.48293	50.594	.48343	.48049	.49094	CCV3
38	CCB3	-.00098	-.00180	.00040	-.00017	.00003	.00000	-.07174*	-.00035	.00006	-.00022	CCB3
39	E128-12	81.448	-.00795	.02691	.60501	.00239	-.00017	65.817	.09696	.04366	.10250	E128-12
40	E128-13	66.094	-.01107	.01961	.47414	.00162	-.00048	67.354	.08226	.03790	.05945	E128-13
41	E128-14	24.201	-.00603	.01305	.16480	.00059	-.00043	12.649	.03209	.01398	.01494	E128-14
42	E128-15	79.498	.08278	.03042	1.2556	.00219	.00408	190.68	.09943	.04015	.23510	E128-15
43	E128-17	26.975	-.00547	.00991	.14736	.00060	-.00038	10.944	.03410	.01416	.01502	E128-17
44	E128-18	98.376	-.01214	.03108	.83212	.00249	-.00017	76.922	.12933	.05057	.14635	E128-18
45	E128-19	92.684	-.01353	.02963	.81678	.00197	.00056	143.79	.35549	.05168	.15711	E128-19
46	E128-20	66.430	-.00571	.02851	.27414	.00375	-.00016	114.27	.09173	.08156	.04176	E128-20
47	BLANK	.00218	-.00143	-.00068	-.00004	.00001	-.00001	-.05283	-.00036	.00011	-.00046	BLANK
48	CCV4	5.2342	.50572	.51019	.48220	.48222	.48348	49.032	.46665	.47967	.48173	CCV4
49	CCB4	-.00186	-.00275	-.00209	-.00003	.00001	.00000	-.09248*	-.00022	-.00006	-.00021	CCB4
50	IPE029WB	-.00464	-.00277	.00167	-.00009	.00003	.00018	-.10025*	-.00029	.00002	.00022	IPE029WB
51	IPE029WL	10.471	4.9485	.99633	.97526	1.0078	.96940	50.534	.95125	.96266	.97811	IPE029WL
52	IPE029WC	10.472	4.9631	.99204	.95882	.98737	.96864	49.957	.93967	.96582	.97080	IPE029WC
53	E142-14A	10.764	5.0469	1.0342	.93590	.95144	.93363	48.427	.92312	.90917	.95115	E142-14A

54	E142-14	-.00001	.00096	.00001	.00015	.00010	.00020	-.03179	.00097	.00014	.00356	E142-14
55	E142-14J	-.00033	.00170	.00022	.00008	.00017	.00019	-.05173	.00016	.00011	.00099	E142-14J
56	E128-01	.00292	-.00244	.00013	.00015	.00007	.00020	.07075	.00116	.00019	.00043	E128-01
57	BLANK	1.5118	.78073	.15491	.14757	.13905	.14487	14.303	.13845	.14104	.13849	BLANK
58	CCV5	5.2087	.50607	.51400	.48342	.48404	.48526	48.870	.46993	.47936	.48114	CCV5
59	CCB5	-.00271	-.00157	-.00099	-.00016	.00002	.00006	-.09289*	-.00011	.00001	-.00030	CCB5
60	IPE028SB	-.00498	-.00323	.00144	-.00015	.00003	.00021	-.12888*	-.00021	.00000	.00001	IPE028SB
61	IPE028SL	10.464	4.9482	.98634	.97192	1.0019	.96963	50.540	.93920	.96632	.97474	IPE028SL
62	IPE028SC	10.421	4.9720	.99639	.95301	.98085	.97391	49.386	.93171	.96282	.96893	IPE028SC
63	E109-01A	205.59	4.7817	1.0667	1.5145	.98723	.94084	90.709	1.0152	.95158	1.1326	E109-01A
64	E109-01	199.13	.00258	.08433	.58143	.00235	-.00068	44.052	.09904	.02233	.16787	E109-01
65	E109-01J	39.981	-.00008	.01777	.11580	.00048	-.00015	8.7384	.01996	.00465	.03244	E109-01J
66	E124-02	62.390	-.01226	.04503	.40139	.00214	-.00062	28.812	.09991	.04742	.04871	E124-02
67	E127-01	87.835	-.00660	.04909	.64858	.00328	-.00061	19.158	.10389	.04384	.14124	E127-01
68	BLANK	-.00081	-.00143	-.00128	.00000	.00006	-.00001	-.10221	-.00028	.00005	-.00008	BLANK
69	CCV6	5.2933	.50410	.50888	.49989	.50344	.48246	51.060	.48672	.47967	.49118	CCV6
70	CCB6	.00149	-.00103	-.00077	-.00019	.00003	.00005	-.09988*	-.00036	-.00012	-.00032	CCB6
71	E127-02	73.332	-.00961	.02080	.61639	.00180	-.00010	47.984	.09354	.04927	.15122	E127-02
72	E127-03	33.055	-.00491	.01176	.18693	.00095	.00026	78.118	.04226	.01705	.04492	E127-03
73	E127-04	118.89	-.00773	.03552	.67307	.00495	-.00117	21.359	.11909	.06433	.06081	E127-04
74	E127-05	22.963	-.00638	.01621	.18424	.00063	-.00038	9.6601	.02866	.01278	.01176	E127-05
75	E127-06	20.187	-.00569	.01679	.13200	.00043	-.00013	130.89	.02358	.01183	.01523	E127-06
76	E127-07	35.287	-.00644	.01709	.22855	.00078	-.00008	19.303	.04344	.02056	.02217	E127-07
77	E127-08	80.703	-.00666	.03709	.86475	.00347	-.00013	132.40	.08996	.04334	.09386	E127-08
78	E127-09	52.006	-.00756	.01893	.40309	.00148	-.00058	22.452	.06307	.02613	.05801	E127-09
79	E127-10	33.028	-.00740	.00631	.21506	.00052	-.00052	8.1360	.04264	.01489	.01707	E127-10
80	BLANK	-.00231	-.00157	-.00055	-.00008	.00000	.00005	-.07581	-.00035	.00002	-.00053	BLANK
81	CCV7	5.2338	.50823	.52455	.49558	.49854	.48346	49.972	.48593	.47630	.48769	CCV7
82	CCB7	-.00227	-.00238	-.00101	-.00007	-.00001	-.00001	-.09955*	-.00028	-.00001	-.00012	CCB7
83	IPE020WB	-.00292	-.00313	.00049	-.00010	.00004	.00019	-.10252*	-.00026	.00012	.00036	IPE020WB
84	IPE020WL	10.288	4.9706	1.0176	.96741	.99408	.96916	48.858	.93796	.95561	.97169	IPE020WL
85	IPE020WC	10.357	4.9659	1.0247	.99186	1.0219	.97449	50.296	.95835	.96022	.98256	IPE020WC
86	E080-03A	437.79	5.0982	1.1854	2.2655	1.0349	.95755	116.33	.98358	.98224	1.3878	E080-03A
87	E080-03	431.61	.00275	.11483	1.2812	.00407	.00218	67.400	.00963	.04290	.34431	E080-03
88	E080-03J	86.081	.00125	.02290	.25151	.00080	.00051	12.909	.00169	.00835	.06381	E080-03J
89	E061-01	.12952	-.00045	.00229	.03035	.00005	.00025	73.527	.00110	-.00011	.00222	E061-01
90	E087-03	.00434	-.00132	.00062	.05053	-.00001	.00015	109.79	.00055	.00042	.00167	E087-03
91	BLANK	-.00430	-.00124	-.00054	-.00010	-.00003	.00003	-.02887	.00010	-.00007	.00006	BLANK
92	CCV8	5.2763	.50672	.52734	.52062	.52178	.48412	51.291	.49682	.47965	.50390	CCV8
93	CCB8	-.00211	-.00215	-.00071	-.00004	.00004	.00002	-.10121*	-.00022	.00001	.00027	CCB8
94	IPE024WB	-.00460	-.00186	-.00197	.00000	.00001	.00003	-.08728	-.00019	-.00005	.00024	IPE024WB
95	IPE024WL	10.782	5.0319	1.0760	1.0573	1.0986	.99055	51.041	1.0219	.98641	1.0446	IPE024WL
96	IPE024WC	10.913	5.1549	1.0874	1.0850	1.1303	.99450	53.114	1.0393	.99134	1.0565	IPE024WC
97	E087-01A	11.256	5.1967	1.0986	1.0912	1.0030	.92706	154.92	.94374	.90361	.99412	E087-01A
98	E087-01	.02119	.00144	.00098	.08890	.00003	.00020	106.65	.00092	.00057	.00235	E087-01
99	E087-01J	-.00066	.00163	.00013	.01815	-.00003	.00005	21.665	.00006	.00012	.00070	E087-01J
100	E087-02	.02683	-.00340	.00176	.05648	.00001	.00020	112.73	.00029	.00068	.00220	E087-02
101	E087-04	.01035	-.00276	.00218	.17202	.00000	.00010	113.04	.00035	.00442	.00229	E087-04
102	E087-05	.01315	-.00284	.00126	.04182	-.00002	.00018	119.22	.00070	.00044	.00209	E087-05
103	BLANK	-.00060	.00036	-.00068	.00005	.00006	.00005	.02649	-.00020	.00009	-.00012	BLANK
104	CCV9	5.1555	.50836	.53810	.51474	.51796	.48597	49.700	.48759	.47851	.49661	CCV9
105	CCB9	-.00690	-.00115	-.00057	-.00004	.00000	.00000	-.09334*	-.00033	.00011	.00047	CCB9
INDX	LSID	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	LSID

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INDX	LSID	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	LSID
1	Blank	.00001	.00027	.00000	.00006	.00022	-.00083	-.00066	.00000	.00018	.00087	Blank
2	S2		.19948		.09561		.74485			.12856		S2
3	S5					.71278			.00339			S5
4	S8			.19121				.71488			1.9078	S8
5	S11	.04992										S11
6	S17											S17
7	ICV	4.7733	.47380	50.299	.47964	.47383	.46387	49.049	.48882	.47764	49.730	ICV
8	ICB	-.00565	-.00057	.00917	-.00048	.00014	-.00012	-.01020	.00037	.00004	-.02101	ICB
9	MRL1A	.10837	.00277	.20757	.00517	.01505	.02018	.97575	.00870	.00996	.48631	MRL1A
10	MRL1B	-.00130	.01020	.09831	.00980	.00969	.01064	-.00389	.00901	.01021	.08700	MRL1B
11	ICSA1	175.13	.00056	515.43	-.00036	-.00243	-.00343	.03387	-.00910	.00071	.07587	ICSA1
12	ICSAB1	176.54	.95595	519.30	.46689	1.0354	.93591	79.213	1.0141	1.0838	80.386	ICSAB1
13	CCV1	4.7718	.48337	51.472	.49462	.50302	.47766	49.769	.50972	.48770	51.186	CCV1
14	CCB1	-.00150	-.00015	-.01296	-.00036	.00029	-.00008	.00975	-.00045	.00015	-.01218	CCB1
15	IPE027SB	.00091	.00030	-.00100	-.00033	-.00010	.00151	.01919	-.00238	.00031	-.00552	IPE027SB
16	IPE027SL	9.4258	.97834	49.152	.94803	1.0052	.96810	49.567	.97712	.92474	49.183	IPE027SL
17	IPE027SC	9.5805	.98016	51.023	.97125	1.0107	.96957	50.594	.97554	.94786	50.555	IPE027SC
18	E128-16M	37.157	.89691	52.419	1.1530	.89359	.87815	50.701	.86531	.87285	50.038	E128-16M
19	E128-16S	38.185	.90226	51.460	1.1575	.88480	.87563	50.301	.85210	.86531	49.099	E128-16S
20	E128-16A	36.973	.96395	52.366	1.1935	.86315	.94787	52.387	.92191	.94975	50.565	E128-16A
21	E128-16	28.537	.01594	5.8399	.27974	.00250	.01200	5.0085	-.00064	-.00112	2.3170	E128-16
22	E128-16J	5.9335	.00331	1.2344	.05861	.00047	.00233	1.0026	-.00022	-.00046	.45497	E128-16J
23	E128-02	139.87	5.3113	33.443	1.3220	.00512	.09554	26.853	.00237	.00015	4.9964	E128-02
24	BLANK	.00431	.00014	.02569	-.00003	.00001	.00005	.02183	-.00067	.00027	-.02002	BLANK
25	CCV2	4.6851	.48181	49.112	.47244	.49862	.47555	49.144	.50587	.47595	48.889	CCV2
26	CCB2	-.00204	.00018	-.00381	-.00012	.00009	.00007	.01213	.00103	.00013	-.02273	CCB2
27	E128-03	194.83	.40179	19.284	1.7723	.01115	.08989	12.744	.00297	-.00147	3.8025	E128-03
28	E128-04	87.932	.62950	24.291	1.1653	.00419	.06325	16.326	.00036	-.00153	3.7406	E128-04
29	E128-05	27.965	.13891	3.1088	.26133	.00066	.00894	2.9960	.00072	-.00118	.87105	E128-05
30	E128-06	162.69	.15423	43.141	2.7318	.00392	.07000	35.545	.00145	-.00390	4.6456	E128-06
31	E128-07	69.953	.06083	20.499	3.0709	.00282	.03288	16.138	-.00052	-.00225	4.4578	E128-07
32	E128-08	58.356	.19660	7.2309	.41348	.00115	.00931	4.6708	.00188	-.00085	3.5973	E128-08
33	E128-09	449.76	.59577	32.101	3.9852	.01359	.11173	19.464	.00803	-.00076	3.1523	E128-09
34	E128-10	110.11	.24473	26.963	2.9012	.00231	.06861	17.867	-.00047	-.00242	2.4765	E128-10
35	E128-11	94.362	.13075	20.474	1.4923	.00242	.03704	18.313	.00010	-.00246	2.5821	E128-11
36	BLANK	.00874	-.00011	.00173	.00058	-.00014	.00009	-.00098	.00032	-.00008	-.01218	BLANK
37	CCV3	4.7503	.48345	50.642	.48654	.50464	.47740	50.036	.51419	.48765	50.767	CCV3
38	CCB3	-.00471	-.00048	.01476	-.00001	.00013	.00014	-.00890	-.00090	.00010	-.02116	CCB3
39	E128-12	99.421	.14675	26.435	2.0528	.00269	.04796	21.140	.00043	-.00288	2.4376	E128-12
40	E128-13	89.777	.07962	23.922	1.6079	.00316	.03764	21.021	.00249	-.00232	2.7184	E128-13
41	E128-14	35.163	.01906	8.0804	.48706	.00220	.01578	7.4814	.00057	-.00109	2.9290	E128-14
42	E128-15	97.811	.86314	28.567	1.3796	.00271	.07714	15.189	-.00092	-.00062	1.9523	E128-15
43	E128-17	35.115	.03090	7.3772	.31842	.00135	.01475	6.9819	-.00012	-.00139	1.5403	E128-17
44	E128-18	131.92	.23100	34.878	1.9241	.00256	.07940	28.525	.00020	-.00318	3.6067	E128-18
45	E128-19	141.37	.06673	40.944	2.1704	.04313	.08231	29.666	.00332	-.00358	3.9474	E128-19
46	E128-20	74.903	.04721	21.995	1.2715	.00713	.02935	15.802	.00099	-.00217	10.901	E128-20
47	BLANK	.00078	.00019	.00468	-.00022	-.00019	-.00001	-.00005	.00018	-.00001	-.02875	BLANK
48	CCV4	4.6533	.48332	48.059	.46695	.50268	.47712	49.206	.51065	.47251	48.969	CCV4
49	CCB4	-.00739	-.00036	-.01199	-.00019	.00003	.00009	-.00402	-.00014	-.00012	-.02886	CCB4
50	IPE029WB	-.00497	-.00008	.00688	-.00029	-.00014	.00141	.01572	-.00020	.00048	-.02260	IPE029WB
51	IPE029WL	9.4445	.97051	49.580	.95528	.99812	.95997	49.702	.95511	.94331	50.269	IPE029WL
52	IPE029WC	9.4188	.97176	48.759	.93716	.99832	.96288	49.332	.94653	.92977	49.342	IPE029WC
53	E142-14A	9.4189	.94399	47.893	.91570	.92659	.91504	48.886	1.0367	.92030	47.663	E142-14A

54	E142-14	-.00187	.00009	-.01329	.00011	.00033	.00106	.04687	-.00055	.00041	.00217	E142-14
55	E142-14J	-.00049	.00006	.01249	.00010	.00034	.00031	.02195	.00120	.00026	-.02242	E142-14J
56	E128-01	.00225	.00000	.00942	.00011	-.00006	.00206	.02402	.00011	.00017	.00992	E128-01
57	BLANK	1.4320	.14536	8.5585	.13640	.14535	.14306	7.6612	.15055	.07806	12.566	BLANK
58	CCV5	4.6811	.48280	48.485	.47023	.50322	.47777	49.474	.51348	.47317	48.856	CCV5
59	CCB5	-.00165	.00120	-.00419	-.00005	.00011	-.00001	.01697	-.00009	.00008	-.02684	CCB5
60	IPE028SB	-.00582	-.00023	-.01423	-.00035	-.00011	.00155	.02397	-.00242	.00024	-.02338	IPE028SB
61	IPE028SL	9.3940	.97121	49.348	.95356	.99666	.96281	49.432	.94774	.93335	50.107	IPE028SL
62	IPE028SC	9.3521	.97159	48.048	.92744	1.0005	.96172	49.215	.96337	.92205	48.727	IPE028SC
63	E109-01A	54.170	.95887	74.586	2.5016	.97557	1.0222	53.765	.95592	.95521	50.488	E109-01A
64	E109-01	48.149	.02894	27.019	1.6833	.00162	.10671	4.9874	-.00077	-.00110	1.5908	E109-01
65	E109-01J	9.7270	.00527	5.4131	.34004	.00018	.02143	1.0057	.00085	-.00019	.29649	E109-01J
66	E124-02	101.81	.02954	37.172	1.5367	.00205	.07995	20.276	.00115	-.00288	6.4360	E124-02
67	E127-01	104.70	.17759	27.275	1.7209	.00486	.04759	22.698	.00300	-.00251	2.6396	E127-01
68	BLANK	-.00030	-.00009	.00031	-.00034	-.00003	-.00007	.02985	.00098	-.00010	-.02735	BLANK
69	CCV6	4.7573	.48212	50.933	.48871	.50449	.47643	50.383	.50861	.49119	51.525	CCV6
70	CCB6	-.00346	-.00042	.00494	-.00024	.00014	-.00002	.01277	-.00184	-.00003	-.02545	CCB6
71	E127-02	99.716	.24247	25.940	2.1283	.00285	.05075	22.629	-.00055	-.00252	2.8449	E127-02
72	E127-03	41.827	.09578	10.615	.52623	.00163	.01873	9.6755	-.00018	-.00168	2.0447	E127-03
73	E127-04	122.13	.05364	36.649	2.9566	.00329	.06283	29.935	.00095	-.00319	2.8610	E127-04
74	E127-05	33.280	.00959	7.6927	.30302	.00282	.01271	7.4203	.00196	-.00120	1.7053	E127-05
75	E127-06	28.140	.01040	6.0167	.37187	.00339	.01135	5.3313	-.00067	-.00125	2.7806	E127-06
76	E127-07	50.523	.10428	12.053	.44172	.00421	.02028	11.165	.00104	-.00183	2.0176	E127-07
77	E127-08	94.026	.09661	29.638	5.4577	.00347	.04738	21.020	-.00045	-.00222	2.3533	E127-08
78	E127-09	67.321	.08549	19.185	.68538	.00180	.02825	17.268	.00194	-.00223	2.3762	E127-09
79	E127-10	40.938	.03973	11.378	.36002	.00144	.01397	11.777	-.00084	-.00151	3.6026	E127-10
80	BLANK	.00164	.00012	-.00066	-.00004	-.00013	.00006	-.00370	.00062	.00009	-.03390	BLANK
81	CCV7	4.7342	.48235	50.391	.48215	.50395	.47544	50.721	.52508	.48656	50.541	CCV7
82	CCB7	-.00253	-.00062	-.00105	-.00011	.00011	.00005	.01951	.00040	.00006	-.02401	CCB7
83	IPE020WB	-.00066	.00023	-.00722	-.00017	-.00019	.00150	.02137	-.00094	.00037	-.01760	IPE020WB
84	IPE020WL	9.3013	.96869	48.666	.93407	1.0004	.95563	50.239	.97814	.92801	49.362	IPE020WL
85	IPE020WC	9.4397	.97300	50.243	.96179	1.0103	.95910	50.972	.99099	.94375	50.969	IPE020WC
86	E080-03A	18.060	.99572	74.320	9.1349	.95803	1.0066	55.167	1.0699	.97287	64.287	E080-03A
87	E080-03	8.7747	.03911	22.693	8.4144	-.00049	.07642	3.2464	-.01019	-.00013	11.987	E080-03
88	E080-03J	1.7185	.00644	4.4038	1.6487	-.00001	.01546	.64042	-.00110	-.00019	2.2793	E080-03J
89	E061-01	.06661	.00207	13.661	.03251	.00419	.00239	3.4742	.00410	.00036	187.12	E061-01
90	E087-03	.01216	.00344	69.227	.42391	.00574	.00271	2.0820	-.00237	.00023	167.75	E087-03
91	BLANK	.00210	-.00039	.00477	.00055	-.00009	.00008	.03398	.00014	-.00003	.03813	BLANK
92	CCV8	4.7813	.48377	52.576	.50405	.51211	.47733	51.890	.52582	.50494	53.726	CCV8
93	CCB8	-.00312	-.00007	.00304	-.00022	.00005	.00000	.01517	-.00002	.00019	-.01354	CCB8
94	IPE024WB	-.00386	.00029	-.00655	-.00017	-.00006	.00009	.01398	.00030	.00017	-.01309	IPE024WB
95	IPE024WL	9.8783	.99936	52.092	1.0222	1.0200	.98724	52.391	1.0401	1.0097	53.468	IPE024WL
96	IPE024WC	9.9562	1.0072	54.716	1.0532	1.0372	.99251	53.950	1.0487	1.0321	55.812	IPE024WC
97	E087-01A	9.4883	.94756	123.92	.99978	.95678	.90347	54.621	1.1054	.93685	213.44	E087-01A
98	E087-01	.07715	.00341	71.435	.03935	.00697	.00236	2.2583	-.00109	.00039	161.23	E087-01
99	E087-01J	.01122	-.00008	14.526	.00817	.00155	.00064	.44622	-.00056	.00007	33.440	E087-01J
100	E087-02	.59338	.00332	72.037	.52757	.00562	.00237	2.1596	-.00177	.00027	172.47	E087-02
101	E087-04	3.0177	.00309	74.664	1.9077	.03300	.00174	2.0408	-.00324	.00031	223.34	E087-04
102	E087-05	.39102	.00316	73.601	.44303	.00737	.00222	2.8573	-.00249	.00000	175.61	E087-05
103	BLANK	-.00029	-.00018	.00440	.00002	.00007	.00017	.03545	-.00036	.00003	.05792	BLANK
104	CCV9	4.6833	.48591	51.938	.49413	.51407	.47802	52.493	.53990	.49184	52.419	CCV9
105	CCB9	-.00454	.00001	.00451	-.00023	.00012	.00000	.01114	.00060	.00007	.01162	CCB9
INDX	LSID	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	Na	LSID

ID8E015 Section 3 of 3

INDX	LSID	Sr	Tl	V	Zn	LSID
1	Blank	-.00052	-.00091	-.00009	.00489	Blank
2	S2	.53693	.11646	.11221		S2
3	S5				.72640	S5
4	S8					S8
5	S11					S11
6	S17					S17
7	ICV	.47977	.48003	.47565	.49057	ICV
8	ICB	-.00017	-.00034	-.00021	-.00369	ICB
9	MRL1A	.00001	.01101	.01035	.03860	MRL1A
10	MRL1B	.00938	.01073	.00969	.13580	MRL1B
11	ICSA1	.00676	-.00311	.00036	.00900	ICSA1
12	ICSAB1	.49437	.94153	.48640	.97622	ICSAB1
13	CCV1	.49555	.49334	.50482	.50700	CCV1
14	CCB1	-.00005	.00052	-.00008	-.00092	CCB1
15	IPE027SB	-.00006	.00342	.00019	-.00484	IPE027SB
16	IPE027SL	.94036	.97914	1.0555	.98681	IPE027SL
17	IPE027SC	.95808	.98486	1.0733	.99596	IPE027SC
18	E128-16M	1.3108	.87790	1.0758	.95151	E128-16M
19	E128-16S	1.3383	.87384	1.0715	.94532	E128-16S
20	E128-16A	1.1496	.94962	1.1529	1.0054	E128-16A
21	E128-16	.33697	.00251	.10354	.06981	E128-16
22	E128-16J	.06905	.00050	.02107	.00950	E128-16J
23	E128-02	.75019	.00883	.38116	6.1406	E128-02
24	BLANK	.00002	.00065	.00026	-.00243	BLANK
25	CCV2	.47356	.48881	.49529	.48167	CCV2
26	CCB2	-.00009	.00039	-.00014	-.00217	CCB2
27	E128-03	.61400	.00715	.26561	1.3625	E128-03
28	E128-04	.52667	.00478	.25125	1.5134	E128-04
29	E128-05	.11173	.00123	.14288	.24369	E128-05
30	E128-06	.30146	.00959	.43776	.61780	E128-06
31	E128-07	.70773	.00715	.24375	.19797	E128-07
32	E128-08	.20575	.00080	.13243	.16448	E128-08
33	E128-09	.23447	.01302	.33633	3.7016	E128-09
34	E128-10	.16735	.00724	.30152	.84614	E128-10
35	E128-11	.49806	.00542	.29239	.23574	E128-11
36	BLANK	.00009	.00100	-.00002	-.00072	BLANK
37	CCV3	.49051	.49648	.50352	.48225	CCV3
38	CCB3	.00002	.00037	.00001	-.00244	CCB3
39	E128-12	.23117	.00702	.30281	.39685	E128-12
40	E128-13	.23894	.00753	.27708	.25818	E128-13
41	E128-14	.06781	.00231	.12152	.08399	E128-14
42	E128-15	.65382	.00384	.31048	2.3572	E128-15
43	E128-17	.06500	.00146	.12576	.09182	E128-17
44	E128-18	.32140	.00856	.37945	.69631	E128-18
45	E128-19	.29103	.01256	.37042	.47946	E128-19
46	E128-20	.19636	.00034	.23154	.16355	E128-20
47	BLANK	.00001	.00019	-.00001	-.00253	BLANK
48	CCV4	.47664	.49286	.49195	.47777	CCV4
49	CCB4	.00006	-.00027	.00003	-.00375	CCB4
50	IPE029WB	-.00007	.00272	.00009	-.00348	IPE029WB
51	IPE029WL	.95386	.97500	1.0600	.97926	IPE029WL
52	IPE029WC	.93956	.97112	1.0536	.97562	IPE029WC
53	E142-14A	.89626	.96695	1.0449	.94598	E142-14A

54	E142-14	.00013	.00107	.00001	.00266	E142-14
55	E142-14J	.00008	.00027	.00023	-.00113	E142-14J
56	E128-01	.00035	.00229	-.00009	.01128	E128-01
57	BLANK	.23642	.14987	.15341	.14687	BLANK
58	CCV5	.47420	.49335	.49449	.48111	CCV5
59	CCB5	.00001	.00015	.00001	-.00384	CCB5
60	IPE028SB	-.00011	.00397	.00004	-.00507	IPE028SB
61	IPE028SL	.95223	.97190	1.0535	.97372	IPE028SL
62	IPE028SC	.93214	.97288	1.0484	.97733	IPE028SC
63	E109-01A	1.2252	.93991	1.1935	1.1291	E109-01A
64	E109-01	.31350	.00189	.16563	.18369	E109-01
65	E109-01J	.06235	.00164	.03275	.03331	E109-01J
66	E124-02	.22790	.01012	.19281	.28615	E124-02
67	E127-01	.21456	.00576	.29670	.40551	E127-01
68	BLANK	-.00002	.00007	.00001	-.00440	BLANK
69	CCV6	.49642	.49528	.50560	.48204	CCV6
70	CCB6	-.00007	-.00026	-.00011	-.00397	CCB6
71	E127-02	.25083	.00788	.29617	.46305	E127-02
72	E127-03	.22714	.00344	.13562	.22492	E127-03
73	E127-04	.22194	.00737	.31422	.25534	E127-04
74	E127-05	.06720	.00226	.12148	.07298	E127-05
75	E127-06	.52962	.00172	.11586	.05319	E127-06
76	E127-07	.08611	.00377	.17159	.12747	E127-07
77	E127-08	.26231	.01132	.25532	.36209	E127-08
78	E127-09	.10543	.00433	.21908	.23624	E127-09
79	E127-10	.06668	.00397	.13967	.11110	E127-10
80	BLANK	.00003	.00103	-.00001	-.00290	BLANK
81	CCV7	.48639	.49637	.50230	.48651	CCV7
82	CCB7	.00002	-.00099	-.00005	-.00397	CCB7
83	IPE020WB	-.00002	.00349	-.00003	-.00404	IPE020WB
84	IPE020WL	.93330	.97641	1.0460	.97612	IPE020WL
85	IPE020WC	.96368	.98736	1.0606	.98519	IPE020WC
86	E080-03A	1.5196	.98911	1.2457	1.4035	E080-03A
87	E080-03	.56415	.00849	.16843	.43929	E080-03
88	E080-03J	.11021	.00302	.03218	.08532	E080-03J
89	E061-01	1.4410	.00383	.00264	.01227	E061-01
90	E087-03	.59634	.00384	.00293	-.00063	E087-03
91	BLANK	.00017	.00047	-.00016	-.00233	BLANK
92	CCV8	.51301	.50570	.51062	.48411	CCV8
93	CCB8	.00006	-.00018	-.00005	-.00432*	CCB8
94	IPE024WB	-.00001	.00021	.00008	-.00352	IPE024WB
95	IPE024WL	1.0055	1.0294	1.0365	1.0246	IPE024WL
96	IPE024WC	1.0440	1.0361	1.0470	1.0351	IPE024WC
97	E087-01A	1.5135	.97045	1.0728	.93980	E087-01A
98	E087-01	.55182	.00390	.01186	.00260	E087-01
99	E087-01J	.11345	.00101	.00223	-.00222	E087-01J
100	E087-02	.60956	.00454	.00378	.01747	E087-02
101	E087-04	.56492	.00659	.00074	.00321	E087-04
102	E087-05	.63606	.00378	.00175	-.00178	E087-05
103	BLANK	.00015	.00007	-.00004	.00226	BLANK
104	CCV9	.49967	.50886	.50126	.48500	CCV9
105	CCB9	-.00004	-.00053	-.00004	-.00381	CCB9
INDX	LSID	Sr	Tl	V	Zn	LSID

DIGESTION LOG FOR ICP METALS

SOP ☐ EMAX-3005 Rev. No.4 ☑ EMAX-3010 Rev. No. 3 ☐ EMAX-3050 Rev. No. 3 ☐ EMAX-CLP-TAL ☐ Book # EIP-068

Matrix: WATER Start Date: 5-13-08 Time: 10:45 Temp: 90 °C Ending Date: 5-13-08 Time: 14:45 Temp.: 90 °C

BATCH: IPE020-W

Sample Prep ID	Lab Sample ID	Matrix Description: Color	Matrix Description: Texture / Clarity	Matrix Description: Artifacts	Turbidity <1 NTU	Sample Amount (g | ml)	pH	Extract Volume (ml)	Digestate Description: Color	Digestate Description: Clarity
01	IPE020-WB					50	—	50		
02	-WL					50	—	50		
03	-WC					50	—	50		
04	E091-01					50	<2	50		
05	-01M					50		50		
06	-01S					50		50		
07	-02					50		50		
08	-03					50		50		
09	-04					50		50		
10	-04M					50		50		
11	-04S					50		50		
12	-05					50		50		
13	-06					50		50		
14	-07					50		50		
15	-08					50		50		
16	-10					50		50		
17	-11					50		50		
18	-12					50		50		
19	E080-03					50		50		
20	E061-01					50		50		
21	E440-01					50		50		
22	-02					50		50		
23										
24										
25										
26										
27										

5-13-08 mc

Standards	ID	Amount Added (ml)
LCS -1	SM1A - 11 -20	0.5
LCS -2	SM1A - 11 -21	0.5
LCS -3	SM1A - 11 - 22	0.5
MS		
Reagent	**Lot# / ID**	**Amount Added (ml)**
HNO_3	SW1A - 03 - 721	1.5+1.5
HCl	SW1A - 03 - 671	2.5
H_2O_2	N/A	
HNO3 (1:1)	N/A	
Digestate Location	ICP	
Extract Location		

Legend:

Texture	Cs = Coarse	Md = Medium	Fn = Fine
Clarity	Cr = Clear	Cy = Cloudy	Td = Turbid
Artifacts	Rk = rocks	Sl = Shale	Vg=Vegetation
Color	Bu = blue	Bk = Black	Bn = Brown
	Gn = Green	Og = Orange	Rd = Red
	Yw = Yellow	Cl = Colorless	

Comments: Samples for Methods 200.7 or 200.8 Analyses

If turbidity ≤ 1 NTU no digestion is required unless otherwise required by the project

Prepared By: mc Standard Added By: mc

Witnessed By: TH Extracts Rcvd. By: TH 5/13/8

Checked By: TH

Date Disposed: Disposed by:

1025

LABORATORY REPORT FOR

TETRA TECH, INC.

LMC BEAUMONT SITE 2

WET CHEMICAL ANALYSES

SDG#: 08E061

CASE NARRATIVE

CLIENT: **TETRA TECH, INC.**

PROJECT: **LMC BEAUMONT SITE 2**

SDG: **08E061**

METHOD 160.1
TOTAL DISSOLVED SOLIDS

One (1) water sample was received on 05/07/08 for Total Dissolved Solids analysis by Method 160.1 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. Holding Time

Analysis met holding time criteria.

2. Method Blank

Method blank was free of contamination at the reporting limit.

3. Lab Control Sample/Lab Control Sample Duplicate

Lab control results were within QC limit.

4. Duplicate

Sample E061-01 was analyzed for duplicate. %RPD was within QC limit was out of the limit.

5. Sample Analysis

Sample was analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 160.1
TOTAL DISSOLVED SOLIDS

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I40706360

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	TDE006WB	ND	1	NA	10.0	5.00	05/13/0817:39	05/12/0812:29	TDE00601	NA	TDE006W	NA	05/12/08
LCS1W	TDE006WL	340	1	NA	10.0	5.00	05/13/0817:39	05/12/0812:29	TDE00602	NA	TDE006W	NA	05/12/08
LCD1W	TDE006WC	295	1	NA	10.0	5.00	05/13/0817:39	05/12/0812:29	TDE00603	NA	TDE006W	NA	05/12/08
TT-MW2-17D	E061-01	670	1	NA	10.0	5.00	05/13/0817:40	05/12/0812:29	TDE00605	NA	TDE006W	05/07/0811:50	05/07/08
TT-MW2-17DDUP	E061-01D	765	1	NA	10.0	5.00	05/13/0817:40	05/12/0812:29	TDE00606	NA	TDE006W	05/07/0811:50	05/07/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 160.1
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: TDE006WL/C

DATE RECEIVED: 05/12/08
DATE EXTRACTED: 05/12/08 12:29
DATE ANALYZED: 05/13/08 17:39/17:39

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
TDS	ND	332	340	102	332	295	89	14	80-120	20

0003

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 160.1
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061
SAMPLE ID: TT-MW2-17DDUP
CONTROL NO.: E061-01D

DATE RECEIVED: 05/07/08
DATE EXTRACTED: 05/12/08 12:29
DATE ANALYZED: 05/13/08 17:40

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
TDS	670	765	13	5

ANALYSIS RUN LOG
for
GRAVIMETRIC

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Book #: AGV-031

Balance ID: 40706360

Analytical Batch: TDE006

SOP #	Rev. #
☑ EMAX-160.1	3
☐ EMAX-160.2	2
☐ EMAX-160.3	1
☑ EMAX-2540C	1
☑ EMAX-2540D SER 05/13/08	0
☐ EMAX-2540B	0

STANDARDS ID	CONC. (mg/L)
LCS SW1-01- 069	332

Analyzed By: SER

Date: 05/13/08

EMAX LABORATORIES, INC.

GRAVIMETRIC ANALYSES
RAW DATA

08TDE006

Analytical Batch: TDE006 Instrument ID: 40706360 Oven Temp IN (℃): 180 Oven Temp OUT (℃): 180 SOP: EMAX160.1 Rev. 3

DATA FILE ID	Sample ID	Sample Amount (ml)	Dish #	Dish (g)	Date	Time	1st Dry Weight + Dish (g)	Date	Time	2nd Dry Weight + Dish (g)	Date	Time	3rd Dry Weight + Dish (g)	Date	Time	Difference 1st & 2nd Dry Wt. Rdg.	Difference 2nd & 3rd Dry Wt. Rdg. (<0.5mg)
TDE006 01	TDE006WB	100	B	80.8845	05/12/08	12:29	80.8846	05/13/08	15:37	80.8846	05/13/08	17:38	80.8846	05/13/08	17:39	0	0.0
TDE006 02	TDE006WL	20	1	12.9931	05/12/08	12:29	12.9999	05/13/08	15:37	12.9999	05/13/08	17:39	12.9999	05/13/08	17:39	0	0.0
TDE006 03	TDE006WC	20	2	12.9992	05/12/08	12:30	13.0051	05/13/08	15:37	13.0051	05/13/08	17:39	13.0051	05/13/08	17:39	0	0.0
TDE006 04	E067-07	20	3	12.9900	05/12/08	12:30	12.9984	05/13/08	15:37	12.9984	05/13/08	17:39	12.9984	05/13/08	17:40	0	0.0
TDE006 05	E061-01	20	4	12.9599	05/12/08	12:30	12.9733	05/13/08	15:37	12.9733	05/13/08	17:40	12.9733	05/13/08	17:40	0	0.0
TDE006 06	E061-01D	20	5	13.0557	05/12/08	12:30	13.0709	05/13/08	15:38	13.071	05/13/08	17:40	13.071	05/13/08	17:40	1E-04	0.0
TDE006 07	E080-01	20	6	12.9497	05/12/08	12:31	12.9522	05/13/08	15:38	12.9523	05/13/08	17:40	12.9523	05/13/08	17:40	1E-04	0.0
TDE006 08	E456-01	20	7	13.0103	05/12/08	12:31	13.0241	05/13/08	15:38	13.0241	05/13/08	17:41	13.0241	05/13/08	17:41	0	0.0
TDE006 09	E455-01	20	8	12.9898	05/12/08	12:31	12.9994	05/13/08	15:38	12.9995	05/13/08	17:41	12.9995	05/13/08	17:41	1E-04	0.0

SER 05/13/08

LCS Conc: 332 mg/L MDL : 5 mg/L RL: 10 mg/L

Initial Reading by: VV

COMMENTS:

Final Reading by: SER

Reviewed by: _____

EMAX LABORATORIES, INC.

GRAVIMETRIC CALCULATION

Analytical Batch: TDE006 | Start Date/Time: 05/12/08 12:29 | Temp IN(°C): 180

Balance ID: 40706360 | End Date/Time: 05/13/08 17:41 | Temp Out(°C): 180

DATA FILE ID	Sample ID	Sample Amount (ml)	Dish (g)	Dry Weight + Dish (g)	SOLIDS (mg)	RESULT (mg/L)	NOTES
TDE006 01	TDE006WB	100	80.8845	80.8846	0.1000	ND	
TDE006 02	TDE006WL	20	12.9931	12.9999	6.8000	340	102
TDE006 03	TDE006WC	20	12.9992	13.0051	5.9000	295	89
TDE006 04	E067-07	20	12.99	12.9984	8.4000	420	
TDE006 05	E061-01	20	12.9599	12.9733	13.4000	670	
TDE006 06	E061-01D	20	13.0557	13.071	15.3000	765	
TDE006 07	E080-01	20	12.9497	12.9523	2.6000	130	
TDE006 08	E456-01	20	13.0103	13.0241	13.8000	690	
TDE006 09	E455-01	20	12.9898	12.9995	9.7000	485	

05/13/08

LCS Concentration: 332 mg/L | MDL(mg/L): 5 | Initial Reading by: VV

SOP: EMAX160.1 Rev. 3 | RL (mg/L): 10 | Final Reading by: SER

COMMENTS:

Reviewed by:

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E061

METHOD 300.0
ANIONS

One (1) water sample was received on 05/07/08 for Sulfate, Chloride and Nitrate-N analyses by Method 300.0 in accordance with "Method for Determination of Inorganic Anions by Ion Chromatography", EPA 600/84-017.

1. **Holding Time**

   Analyses met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limits.

4. **Duplicate**

   Duplicate sample was not designated in this SDG.

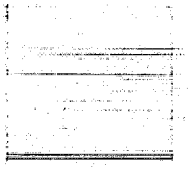
5. **Matrix Spike/Matrix Spike Duplicate**

   MS/MSD sample was not designated in this SDG.

6. **Sample Analysis**

   Sample was analyzed according to the prescribed QC procedures. All criteria were met.

SAMPLE RESULTS



METHOD 300.0
CHLORIDE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I100

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ICE017WB	ND	1	NA	0.200	0.100	05/08/0821:50	NA	AE11-12	AE11-10	ICE017W	NA	NA
LCS1W	ICE017WL	1.92	1	NA	0.200	0.100	05/08/0822:10	NA	AE11-13	AE11-10	ICE017W	NA	NA
LCD1W	ICE017WC	1.91	1	NA	0.200	0.100	05/08/0822:30	NA	AE11-14	AE11-10	ICE017W	NA	NA
TT-MW2-17D	E061-01	305	25	NA	5.00	2.50	05/09/0802:32	NA	AE11-26	AE11-22	ICE017W	05/07/0811:50	05/07/08

8016

METHOD 300.0
NITRATE-N

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I100

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ICE015WB	ND	1	NA	0.100	0.0500	05/07/0817:57	NA	AE09-25	AE09-23	ICE015W	NA	NA
LCS1W	ICE015WL	1.82	1	NA	0.100	0.0500	05/07/0818:12	NA	AE09-26	AE09-23	ICE015W	NA	NA
LCD1W	ICE015WC	1.82	1	NA	0.100	0.0500	05/07/0818:27	NA	AE09-27	AE09-23	ICE015W	NA	NA
TT-MW2-17D	E061-01	7.95	1	NA	0.100	0.0500	05/08/0801:32	NA	AE09-55	AE09-47	ICE015W	05/07/0811:50	05/07/08

3012

METHOD 300.0
SULFATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I100

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ICE017WB	ND	1	NA	0.500	0.250	05/08/0821:50	NA	AE11-12	AE11-10	ICE017W	NA	NA
LCS1W	ICE017WL	4.74	1	NA	0.500	0.250	05/08/0822:10	NA	AE11-13	AE11-10	ICE017W	NA	NA
LCD1W	ICE017WC	4.76	1	NA	0.500	0.250	05/08/0822:30	NA	AE11-14	AE11-10	ICE017W	NA	NA
TT-MW2-17D	E061-01	55.6	5	NA	2.50	1.25	05/09/0802:12	NA	AE11-25	AE11-22	ICE017W	05/07/0811:50	05/07/08

6012

QC SUMMARIES

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E061
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	ICE017WB	ICE017WL	ICE017WC		
LAB FILE ID:	AE11-12	AE11-13	AE11-14		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	05/08/0821:50	05/08/0822:10	05/08/0822:30	DATE RECEIVED:	NA
PREP. BATCH:	ICE017W	ICE017W	ICE017W		
CALIB. REF:	AE11-10	AE11-10	AE11-10		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Chloride-Cl	ND	2.00	1.92	96	2.00	1.91	96	0	90-110	20

8014

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E061
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	ICE015WB	ICE015WL	ICE015WC		
LAB FILE ID:	AE09-25	AE09-26	AE09-27		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	05/07/0817:57	05/07/0818:12	05/07/0818:27	DATE RECEIVED:	NA
PREP. BATCH:	ICE015W	ICE015W	ICE015W		
CALIB. REF:	AE09-23	AE09-23	AE09-23		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Nitrate-N	ND	2.00	1.82	91	2.00	1.82	91	0	90-110	20

8015

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E061
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	ICE017WB	ICE017WL	ICE017WC		
LAB FILE ID:	AE11-12	AE11-13	AE11-14		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	05/08/0821:50	05/08/0822:10	05/08/0822:30	DATE RECEIVED:	NA
PREP. BATCH:	ICE017W	ICE017W	ICE017W		
CALIB. REF:	AE11-10	AE11-10	AE11-10		

ACCESSION:

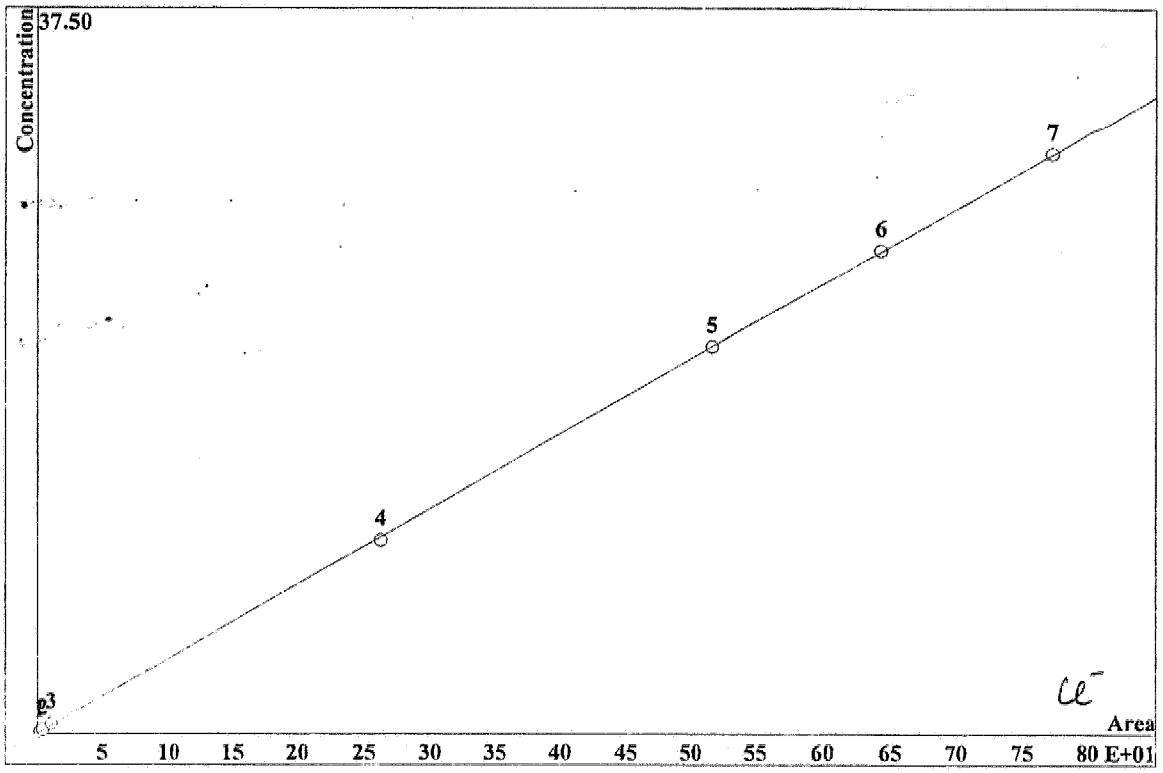
PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Sulfate	ND	5.00	4.74	95	5.00	4.76	95	0	90-110	20

8016

INITIAL CALIBRATION

CALIBRATION OF COMPONENT chloride

Method: IC100-D39.mtw
Equation: Q = 0.0387727·A + 0.00693094
RSD: 0.740 %
Correlation coefficient: 0.999979



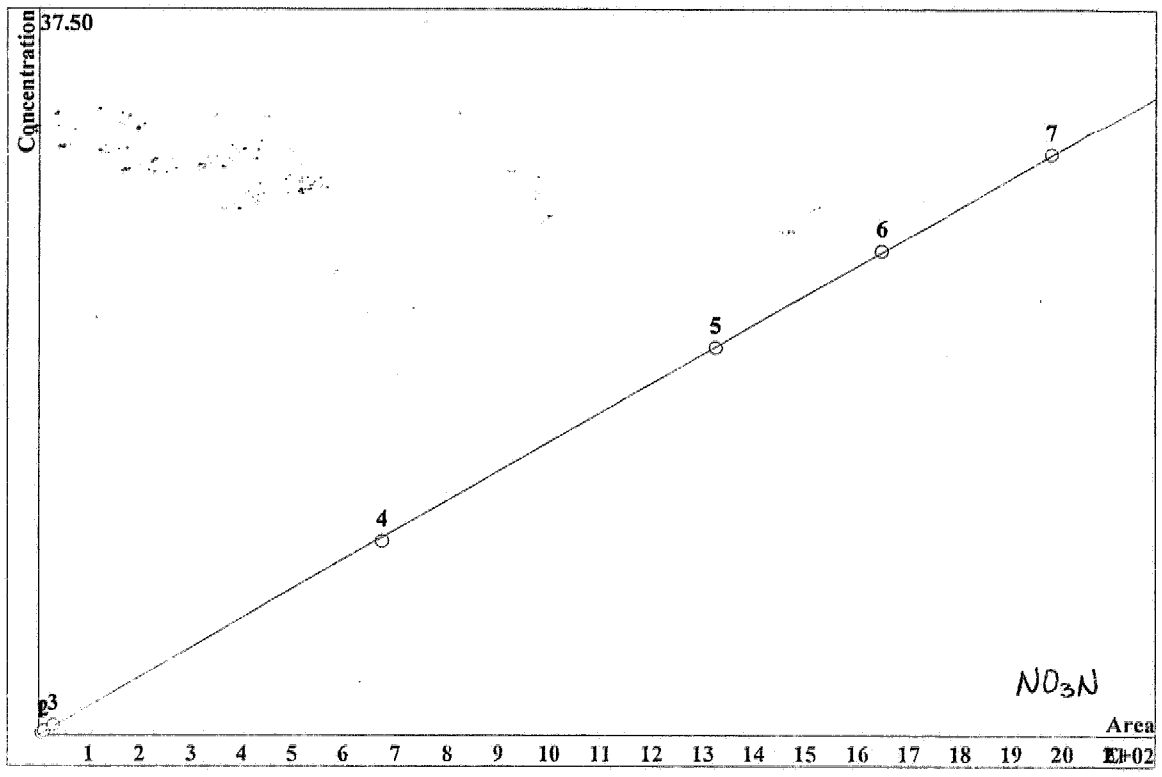
K3 = 0 K2 = 0 K1 = 0.0387727 K0 = 0.00693094
Base: Area
Ref.channel: Cond
ISTD:
Formula: Linear
Weight: 1

Level	Height	Area	Conc.	Vol/Dil	Retention	Used	File
1	0.1903	2.101	0.1	1	4.26	Yes	s4231903.chw
2	0.3816	4.181	0.2	1	4.26	Yes	s4231924.chw
3	1.011	10.87	0.5	1	4.26	Yes	s4231945.chw
4	24.21	262.1	10	1	4.26	Yes	s4232006.chw
5	48.49	516.5	20	1	4.26	Yes	s4232027.chw
6	60.13	643	25	1	4.26	Yes	s4232048.chw
7	72.39	772.9	30	1	4.26	Yes	s4232109.chw

4-25-08

CALIBRATION OF COMPONENT nitrate

Method: IC100-D39.mtw
Equation: Q = 0.0151372·A - 0.00232428
RSD: 0.870 %
Correlation coefficient: 0.999971



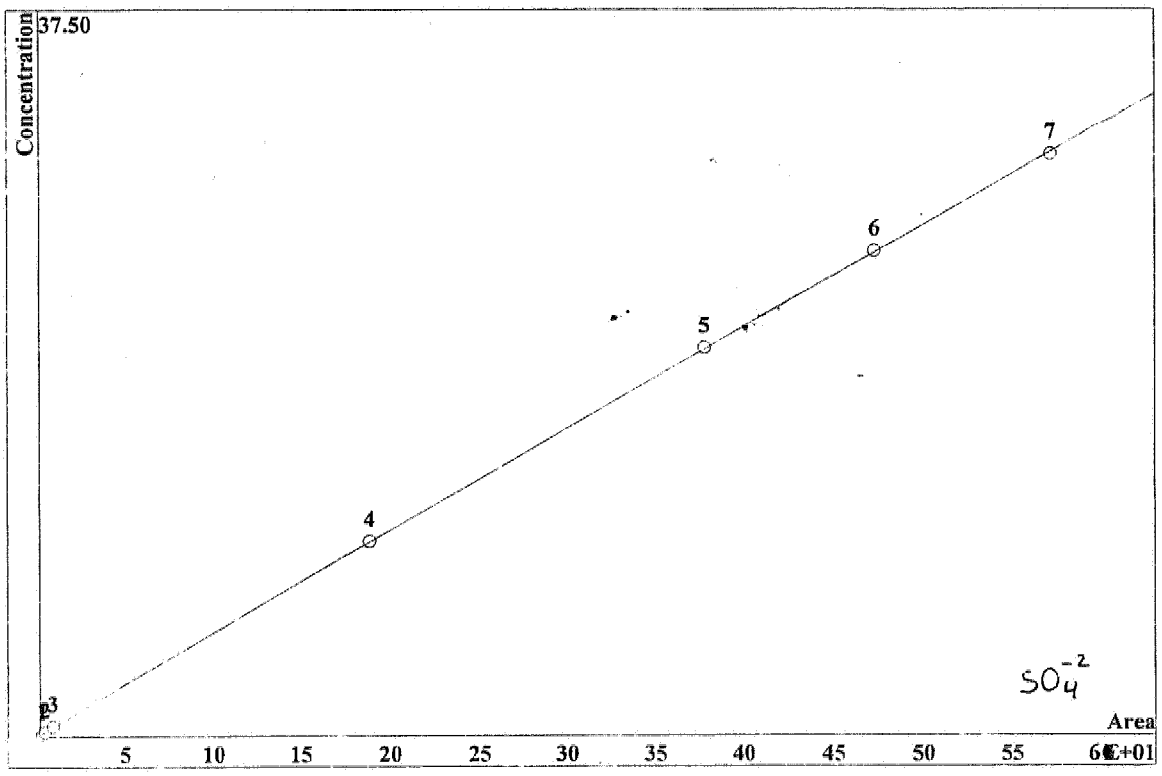
K3 = 0 K2 = 0 K1 = 0.0151372 K0 = -0.00232428
Base: Area
Ref.channel: Cond
ISTD:
Formula: Linear
Weight: 1

Level	Height	Area	Conc.	Vol/Dil	Retention	Used	File
1	0.3108	5.063	0.1	1	6.98	Yes	s4231903.chw
2	0.6496	10.44	0.2	1	6.98	Yes	s4231924.chw
3	1.781	28.68	0.5	1	6.98	Yes	s4231945.chw
4	40.88	674.2	10	1	6.98	Yes	s4232006.chw
5	78.84	1324	20	1	6.98	Yes	s4232027.chw
6	94.41	1647	25	1	6.98	Yes	s4232048.chw
7	108.5	1979	30	1	6.98	Yes	s4232109.chw

4-25-09

CALIBRATION OF COMPONENT sulfate

Method: IC100-D39.mtw
Equation: Q = 0.0525078·A + 0.0706852
RSD: 0.703 %
Correlation coefficient: 0.999981



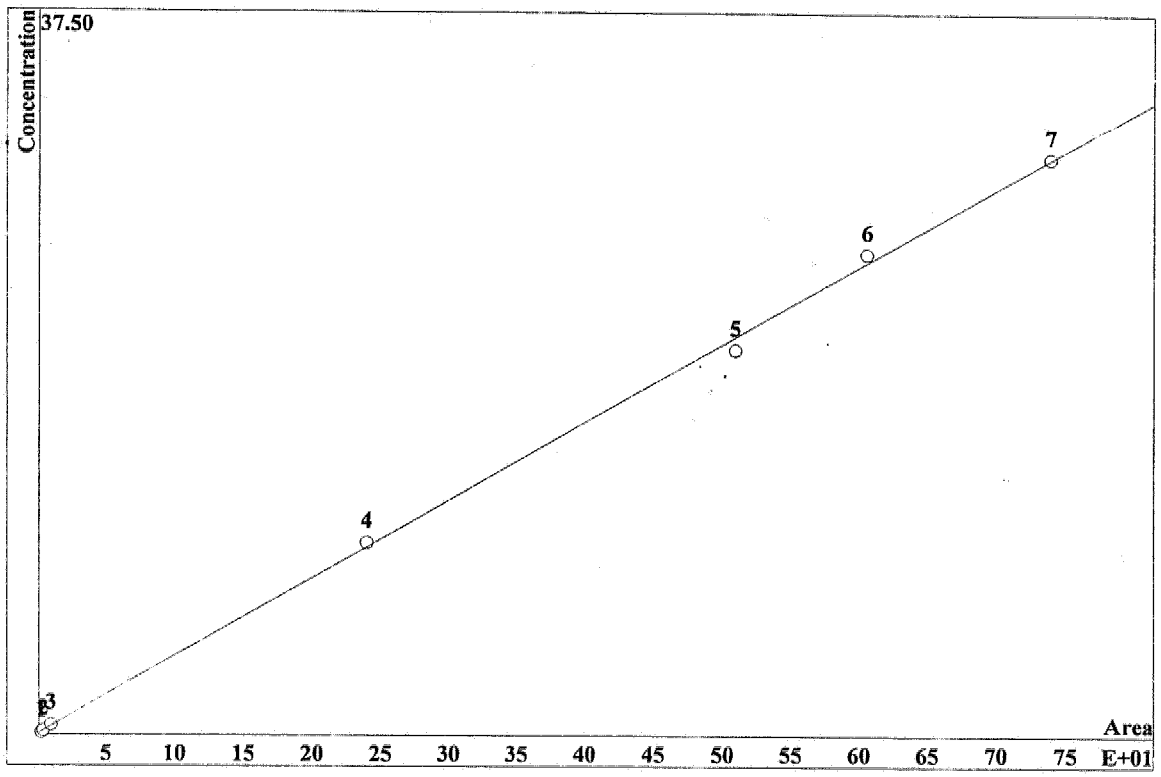
K3 = 0 K2 = 0 K1 = 0.0525078 K0 = 0.0706852
Base: Area
Ref.channel: Cond
ISTD:
Formula: Linear
Weight: 1

Level	Height	Area	Conc.	Vol/Dil	Retention	Used	File
1	0.07302	1.608	0.1	1	10.47	Yes	s4231903.chw
2	0.1402	3.097	0.2	1	10.47	Yes	s4231924.chw
3	0.3557	7.688	0.5	1	10.47	Yes	s4231945.chw
4	8.671	188.5	10	1	10.47	Yes	s4232006.chw
5	17.46	378	20	1	10.47	Yes	s4232027.chw
6	21.73	473.2	25	1	10.47	Yes	s4232048.chw
7	26.13	572.5	30	1	10.47	Yes	s4232109.chw

4/25/08

CALIBRATION OF COMPONENT chloride

Method: IC100-E11.mtw
Equation: Q = 0.0404025·A + 0.0817208
RSD: 3.079 %
Correlation coefficient: 0.999634



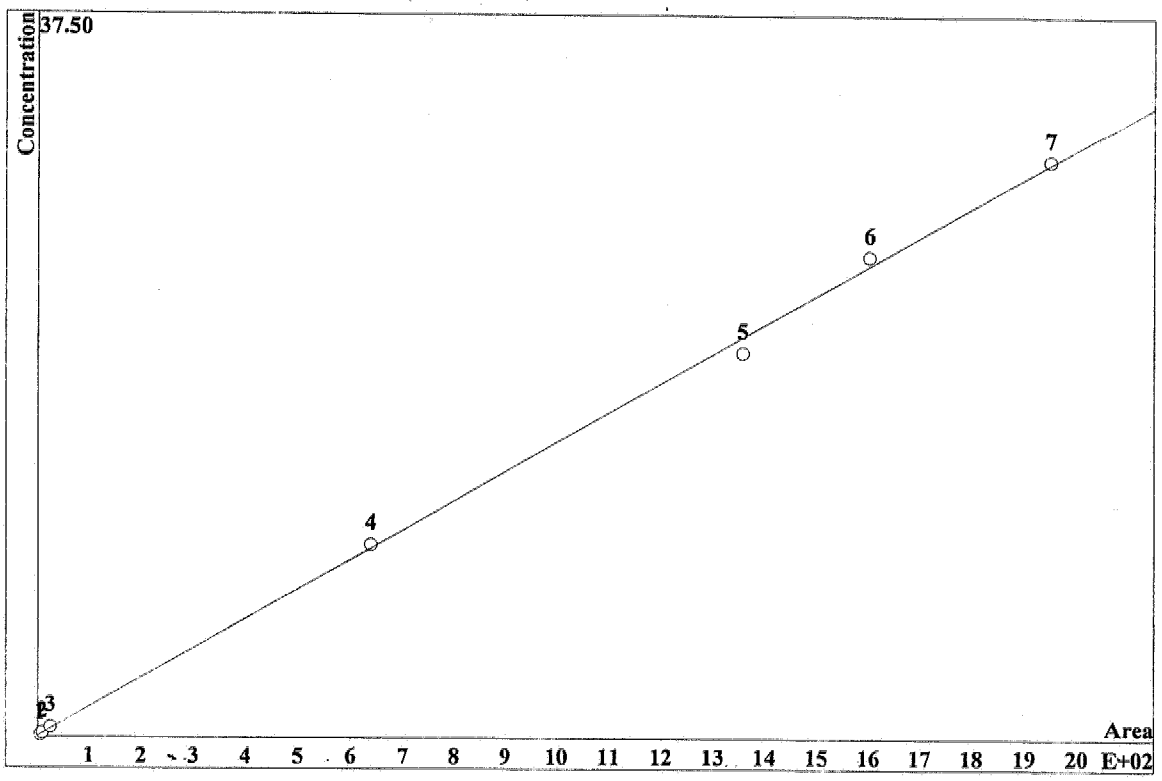
K3 = 0 K2 = 0 K1 = 0.0404025 K0 = 0.0817208
Base: Area
Ref.channel: Cond
ISTD:
Formula: Linear
Weight: 1

Level	Height	Area	Conc.	Vol/Dil	Retention	Used	File
1	0.1546	1.969	0.1	1	4.26	Yes	s5081400.chw
2	0.3078	3.35	0.2	1	4.26	Yes	s5081421.chw
3	0.8579	9.037	0.5	1	4.26	Yes	s5081441.chw
4	22.61	239.7	10	1	4.26	Yes	s5081644.chw
5	46.15	509.8	20	1	4.26	Yes	s5081521.chw
6	56.93	605.9	25	1	4.26	Yes	s5081541.chw
7	69.17	739.7	30	1	4.26	Yes	s5081601.chw

NF 5-15-08

CALIBRATION OF COMPONENT nitrate

Method: IC100-E11.mtw
Equation: Q = 0.0152837·A + 0.0497133
RSD: 3.545 %
Correlation coefficient: 0.999515



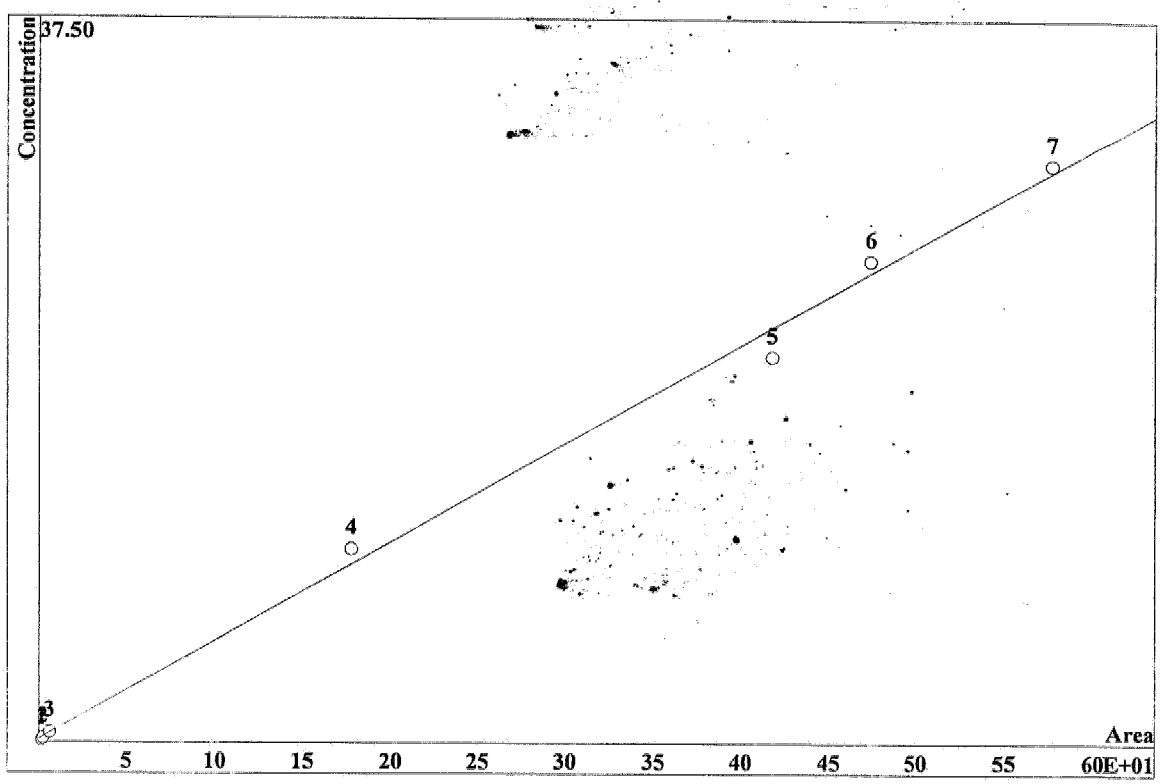
K3 = 0 K2 = 0 K1 = 0.0152837 K0 = 0.0497133
Base: Area
Ref.channel: Cond
ISTD:
Formula: Linear
Weight: 1

Level	Height	Area	Conc.	Vol/Dil	Retention	Used	File
1	0.2764	5.056	0.1	1	6.84	Yes	s5081400.chw
2	0.5716	9.481	0.2	1	6.84	Yes	s5081421.chw
3	1.615	25.32	0.5	1	6.84	Yes	s5081441.chw
4	39.06	638.6	10	1	6.84	Yes	s5081644.chw
5	77.37	1359	20	1	6.84	Yes	s5081521.chw
6	93.87	1603	25	1	6.84	Yes	s5081541.chw
7	109.8	1951	30	1	6.84	Yes	s5081601.chw

5-15-08

CALIBRATION OF COMPONENT sulfate

Method: IC100-E11.mtw
Equation: Q = 0.0510841·A + 0.154054
RSD: 6.812 %
Correlation coefficient: 0.998208



K3 = 0 K2 = 0 K1 = 0.0510841 K0 = 0.154054
Base: Area
Ref.channel: Cond
ISTD:
Formula: Linear
Weight: 1

Level	Height	Area	Conc.	Vol/Dil	Retention	Used	File
1	0.07321	1.991	0.1	1	10.72	Yes	s5081400.chw
2	0.1221	2.674	0.2	1	10.72	Yes	s5081421.chw
3	0.3134	6.46	0.5	1	10.72	Yes	s5081441.chw
4	8.673	177.4	10	1	10.72	Yes	s5081644.chw
5	18.04	418.4	20	1	10.72	Yes	s5081521.chw
6	22.1	474.4	25	1	10.72	Yes	s5081541.chw
7	26.87	577.1	30	1	10.72	Yes	s5081601.chw

5-15-08

SECOND SOURCE

IC Result Check FormVersion : 8E2

LFID	LSID	Selection	bromide	nitrite	phosphate	fluoride	chloride	nitrate	sulfate	RawNetID	DF
AE11-10	ICV	BIPFCNS	90%	108.5%	110%	108.7%	95.8%	97%	90.1%	s5081725	1
AE11-11	ICB	BIPFCNS	0	0	0	0	0	0	0	s5081748	1
AE11-22	CCV1	BIPFCNS	96.1%	104.9%	119.2%*	108.2%	93.2%	96.5%	92.4%	s5090111	1
AE11-23	CCB1	BIPFCNS	0	0	0	0	0	0	0	s5090131	1
AE11-34	CCV3	BIPFCNS	95.6%	105.3%	120.6%*	111.1%*	93.5%	94%	90.7%	s5090513	1
AE11-35	CCB3	BIPFCNS	0	0	0	0	0	0	0	s5090533	1
AE11-45	CCV5	BIPFCNS	94.7%	110.4%*	123.2%*	116.6%*	98.6%	94.4%	91%	s5090846	1
AE11-46	CCB5	BIPFCNS	0	0	0	0	0	0	0	s5090903	1
AE11-56	CCV7	BIPFCNS	94.6%	105.4%	116.6%*	110.2%*	93.8%	93.6%	90%	s5091216	1
AE11-57	CCB7	BIPFCNS	0	0	0	0	0	0	0	s5091231	1

IC Result Check FormVersion : 8D2/AD39

LFID	LSID	Selection	nitrite	phosphate	fluoride	chloride	bromide	nitrate	sulfate	iodide	RawNetID	DF
AD39-10	ICV	IPFCBNSO	102.8%	108.2%	106.6%	94.7%	93.3%	96%	94%	94.3%	s4232130	1
AD39-11	ICB	IPFCBNSO	0	0	0	0	0	0	0	0	s4232152	1
AD39-22	CCV1	IPFCBNSO	104.2%	103%	107.2%	92.5%	97%	92.9%	95.3%	0%*	s4240144	1
AD39-23	CCB1	IPFCBNSO	0	0	0	0	0	0	0	0	s4240205	1
AD39-31	CCV3	IPFCBNSO	104.8%	105.4%	108.4%	93.8%	96.4%	93.6%	95.8%	0%*	s4240454	1
AD39-32	CCB3	IPFCBNSO	0	0	0	0	0	0	0	0	s4240515	1

4-25-08

IC Result Check FormVersion : 8E2

LFID	LSID	Selection	bromide	nitrite	phosphate	fluoride	chloride	nitrate	sulfate	RawNetID	DF
AE11-10	ICV	BIPFCNS	90%	108.5%	110%	108.7%	95.8%	97%	90.1%	s5081725	1
AE11-11	ICB	BIPFCNS	0	0	0	0	0	0	0	s5081748	1
AE11-22	CCV1	BIPFCNS	96.1%	104.9%	119.2%*	108.2%	93.2%	96.5%	92.4%	s5090111	1
AE11-23	CCB1	BIPFCNS	0	0	0	0	0	0	0	s5090131	1
AE11-34	CCV3	BIPFCNS	95.6%	105.3%	120.6%*	111.1%*	93.5%	94%	90.7%	s5090513	1
AE11-35	CCB3	BIPFCNS	0	0	0	0	0	0	0	s5090533	1
AE11-45	CCV5	BIPFCNS	94.7%	110.4%*	123.2%*	116.6%*	98.6%	94.4%	91%	s5090846	1
AE11-46	CCB5	BIPFCNS	0	0	0	0	0	0	0	s5090903	1
AE11-56	CCV7	BIPFCNS	94.6%	105.4%	116.6%*	110.2%*	93.8%	93.6%	90%	s5091216	1
AE11-57	CCB7	BIPFCNS	0	0	0	0	0	0	0	s5091231	1

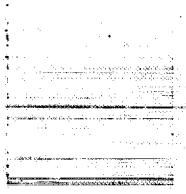
5-15-08

DAILY CALIBRATION

IC Result Check FormVersion : 8D2/AD39

LFID	LSID	Selection	nitrate	chloride	fluoride	iodide	nitrite	bromide	phosphate	sulfate	RawNetID	DF
AE09-01	CCV101	NCFOIBPS	91%	89.1%*	105.9%	0%*	99.6%	94%	123.1%*	91.1%	s5071144	1
AE09-02	CCB101	NCFOIBPS	0	0	0	0	0	0	0	0	s5071201	1
AE09-13	CCV103	NCFOIBPS	90%	88%*	105.6%	0%*	99.3%	91.6%	127.6%*	91.8%	s5071448	1
AE09-14	CCB103	NCFOIBPS	0	0	0	0	0	0	0	0	s5071503	1
AE09-23	CCV105	NCFOIBPS	91.5%	88.2%*	107.7%	0%*	100.8%	92.4%	127.7%*	93.2%	s5071727	1
AE09-24	CCB105	NCFOIBPS	0	0	0	0	0	0	0	0	s5071742	1
AE09-35	CCV107	NCFOIBPS	90%	87%*	106.2%	0%*	98.8%	90.8%	129.6%*	91.7%	s5072029	1
AE09-36	CCB107	NCFOIBPS	0	0	0	0	0	0	0	0	s5072044	1
AE09-47	CCV109	NCFOIBPS	90%	86.8%*	106.5%	0%*	98.8%	90.8%	124.6%*	91.5%	s5072331	1
AE09-48	CCB109	NCFOIBPS	0	0	0	0	0	0	0	0	s5072346	1
AE09-57	CCV111	NCFOIBPS	90.5%	90.9%	109.6%	0%*	100.3%	92.5%	118.2%*	91.7%	s5080203	1
AE09-58	CCB111	NCFOIBPS	0	0	0	0	0	0	0	0	s5080218	1

ANALYTICAL LOG



ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Book #: A100-014

Instrument No.: 100

Analytical Sequence: AE09

Method File: IC100-D39.mtw

Analytical Batch: ICE013W ICE015W

SOP #	Rev. #
☑ EMAX-300.0	4
☐ EMAX-9056	2
☐ EMAX-	

STANDARDS ID	
ICAL	SI1B-09-13-3
ICV	SI1B-09-14-1
CCV	SI1B-09-25-1
LCS	SI1B-09-25-2
MS	ACCUSPEC: Br^-, SO_4^{-2} (5ppm) F^-, Cl^-, NO_2, NO_3^-, PO_4^{-3} (2ppm)

ELECTRONIC DATA ARCHIVAL	
Location	Date
☑ IC-METROHM	5/13/08
☐	

IC Eluent: SW4-01-~~50~~ ~~51~~ 50 wd 5/14/08 (320mM Na_2CO_3/100mM $NaHCO_3$

SW4-01-~~53~~ 59 wd 5/14/08 (100mM $NaHCO_3$)

IC Regenerant: SW4-01-56 (1000mM H_2SO_4)

Analyzed By: YP

Date: 5/7/08

8031

F1

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s5071144.chw	IC100-D39.mtw	AE09-01 CCV101	1	1.0	1.0	1.0	100.0	0		
s5071201.chw	IC100-D39.mtw	AE09-02 CCB101	2	1.0	1.0	1.0	100.0	0		
s5071216.chw	IC100-D39.mtw	AE09-03 ICE013WB	3	1.0	1.0	1.0	100.0	0		
s5071231.chw	IC100-D39.mtw	AE09-04 ICE013WL	4	1.0	1.0	1.0	100.0	0		
s5071247.chw	IC100-D39.mtw	AE09-05 ICE013WC	5	1.0	1.0	1.0	100.0	0		
s5071302.chw	IC100-D39.mtw	AE09-06 E052-03	6	1.0	1.0	1.0	100.0	0		
s5071317.chw	IC100-D39.mtw	AE09-07 E052-04	7	1.0	1.0	1.0	100.0	0		
s5071332.chw	IC100-D39.mtw	AE09-08 E052-02	8	1.0	1.0	1.0	100.0	0		
s5071347.chw	IC100-D39.mtw	AE09-09 E052-02D	9	1.0	1.0	1.0	100.0	0		
s5071402.chw	IC100-D39.mtw	AE09-10 E052-02M	10	1.0	1.0	1.0	100.0	0		
s5071418.chw	IC100-D39.mtw	AE09-11 E052-02S	11	1.0	1.0	1.0	100.0	0		
s5071433.chw	IC100-D39.mtw	AE09-12 RINSE	12	1.0	1.0	1.0	100.0	0		
s5071448.chw	IC100-D39.mtw	AE09-13 CCV103	13	1.0	1.0	1.0	100.0	0		
s5071503.chw	IC100-D39.mtw	AE09-14 CCB103	14	1.0	1.0	1.0	100.0	0		
s5071518.chw	IC100-D39.mtw	AE09-15 E052-01	15	1.0	1.0	1.0	100.0	0		
s5071541.chw	IC100-D39.mtw	AE09-16 E806-01	16	1.0	1.0	1.0	100.0	0		
s5071556.chw	IC100-D39.mtw	AE09-17 E806-02	17	1.0	1.0	1.0	100.0	0		
s5071611.chw	IC100-D39.mtw	AE09-18 E809-01	18	1.0	1.0	1.0	100.0	0		
s5071626.chw	IC100-D39.mtw	AE09-19 E810-01	19	1.0	1.0	1.0	100.0	0		
s5071641.chw	IC100-D39.mtw	AE09-20 E810-02	20	1.0	1.0	1.0	100.0	0		
s5071656.chw	IC100-D39.mtw	AE09-21 E810-03	21	1.0	1.0	1.0	100.0	0		
s5071712.chw	IC100-D39.mtw	AE09-22 RINSE	22	1.0	1.0	1.0	100.0	0		
s5071727.chw	IC100-D39.mtw	AE09-23 CCV105	23	1.0	1.0	1.0	100.0	0		
s5071742.chw	IC100-D39.mtw	AE09-24 CCB105	24	1.0	1.0	1.0	100.0	0		
s5071757.chw	IC100-D39.mtw	AE09-25 ICE015WB	25	1.0	1.0	1.0	100.0	0		
s5071812.chw	IC100-D39.mtw	AE09-26 ICE015WL	26	1.0	1.0	1.0	100.0	0		
s5071827.chw	IC100-D39.mtw	AE09-27 ICE015WC	27	1.0	1.0	1.0	100.0	0		
s5071843.chw	IC100-D39.mtw	AE09-28 E058-02	28	1.0	1.0	1.0	100.0	0		
s5071858.chw	IC100-D39.mtw	AE09-29 E058-10	29	1.0	1.0	1.0	100.0	0		
s5071913.chw	IC100-D39.mtw	AE09-30 E058-08	30	1.0	1.0	1.0	100.0	0		
s5071928.chw	IC100-D39.mtw	AE09-31 E058-16	31	1.0	1.0	1.0	100.0	0		
s5071943.chw	IC100-D39.mtw	AE09-32 E058-06	32	1.0	1.0	1.0	100.0	0		
s5071958.chw	IC100-D39.mtw	AE09-33 E058-07	33	1.0	1.0	1.0	100.0	0		
s5072014.chw	IC100-D39.mtw	AE09-34 RINSE	34	1.0	1.0	1.0	100.0	0		
s5072029.chw	IC100-D39.mtw	AE09-35 CCV107	35	1.0	1.0	1.0	100.0	0		
s5072044.chw	IC100-D39.mtw	AE09-36 CCB107	36	1.0	1.0	1.0	100.0	0		
s5072059.chw	IC100-D39.mtw	AE09-37 E058-12	37	1.0	1.0	1.0	100.0	0		
s5072114.chw	IC100-D39.mtw	AE09-38 E058-01	38	1.0	1.0	1.0	100.0	0		
s5072129.chw	IC100-D39.mtw	AE09-39 E058-04	39	1.0	1.0	1.0	100.0	0		
s5072145.chw	IC100-D39.mtw	AE09-40 E058-14	40	1.0	1.0	1.0	100.0	0		
s5072200.chw	IC100-D39.mtw	AE09-41 E058-09	41	1.0	1.0	1.0	100.0	0		
s5072215.chw	IC100-D39.mtw	AE09-42 E058-18	42	1.0	1.0	1.0	100.0	0		
s5072230.chw	IC100-D39.mtw	AE09-43 E058-03	43	1.0	1.0	1.0	100.0	0		
s5072245.chw	IC100-D39.mtw	AE09-44 E058-15	44	1.0	1.0	1.0	100.0	0		
s5072300.chw	IC100-D39.mtw	AE09-45 E058-05	45	1.0	1.0	1.0	100.0	0		
s5072316.chw	IC100-D39.mtw	AE09-46 RINSE	46	1.0	1.0	1.0	100.0	0		
s5072331.chw	IC100-D39.mtw	AE09-47 CCV109	47	1.0	1.0	1.0	100.0	0		
s5072346.chw	IC100-D39.mtw	AE09-48 CCB109	48	1.0	1.0	1.0	100.0	0		
s5080001.chw	IC100-D39.mtw	AE09-49 E058-13	49	1.0	1.0	1.0	100.0	0		
s5080016.chw	IC100-D39.mtw	AE09-50 E058-17	50	1.0	1.0	1.0	100.0	0		
s5080032.chw	IC100-D39.mtw	AE09-51 E058-17D	51	1.0	1.0	1.0	100.0	0		
s5080047.chw	IC100-D39.mtw	AE09-52 E058-17M	52	1.0	1.0	1.0	100.0	0		
s5080102.chw	IC100-D39.mtw	AE09-53 E058-17S	53	1.0	1.0	1.0	100.0	0		
s5080117.chw	IC100-D39.mtw	AE09-54 E058-11	54	1.0	1.0	1.0	100.0	0		
s5080132.chw	IC100-D39.mtw	AE09-55 E061-01	55	1.0	1.0	1.0	100.0	0		
s5080147.chw	IC100-D39.mtw	AE09-56 RINSE	56	1.0	1.0	1.0	100.0	0		
s5080203.chw	IC100-D39.mtw	AE09-57 CCV111	57	1.0	1.0	1.0	100.0	0		
s5080218.chw	IC100-D39.mtw	AE09-58 CCB111	58	1.0	1.0	1.0	100.0	0		

FINAL

2598

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Concentration of

S1 — 0.1 ppm
S2 — 0.2
S3 — 0.5
S4 — 10.0
S5 — 20.0
S6 — 25.0
S7 — 30.0

Linearity (ppm)

F^- — 10 ✓
Cl^- — 30 ✓
NO_2N — 20 ✓
Br^- — 30 ✓
NO_3N — 30 ✓
PO_4P — 25 ✓
SO_4^{2-} — 30 ✓

Bad injection for S4, re-ran after S7
~~S0~~ ~~S7~~ S9 5/14/08

IC Eluent: SW4-01-~~S6~~/320 mM Na_2CO_3/100 mM $NaHCO_3$)
S9 S9 5/14/08

SW4-01-~~S7~~ (100 mM $NaHCO_3$)

IC Regenerant: SW4-01-~~S6~~ (~~44~~ mM H_2SO_4)
S8 1000
S9 5/14/08 HL 5/8/08

Book #: A100-014
Instrument No.: 100
Analytical Sequence: AE11
Method File: IC1000-E11.mtw
Analytical Batch: ICE017W, ICE019W

SOP #	Rev. #
☑ EMAX-300.0	4
☐ EMAX-9056	2
☐ EMAX-	

STANDARDS ID	
ICAL	SIB-09-27-1
ICV	SIB-09-27-2
CCV	SIB-09-25-1
LCS	SIB-09-25-2
MS	Accuspec: Br^-, SO_4^{2-} (5 ppm) F^-, Cl^-, NO_2^-, NO_3^-, PO_3^{2-} (20 ppm

ELECTRONIC DATA ARCHIVAL	
Location	Date
☑ IC-METROHM	5/13/08
☐	

Analyzed By: HL/sd

Date: 5/8/08

F1

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s5081319.chw	IC100-E11.mtw	AE11-01 IB	1	1.0	1.0	1.0	100.0	0		
s5081340.chw	IC100-E11.mtw	AE11-02 S0	2	1.0	1.0	1.0	100.0	0		
s5081400.chw	IC100-E11.mtw	AE11-03 S1	3	1.0	1.0	1.0	100.0	1		
s5081421.chw	IC100-E11.mtw	AE11-04 S2	4	1.0	1.0	1.0	100.0	2		
s5081441.chw	IC100-E11.mtw	AE11-05 S3	5	1.0	1.0	1.0	100.0	3		
s5081521.chw	IC100-E11.mtw	AE11-06 S5	7	1.0	1.0	1.0	100.0	5		
s5081541.chw	IC100-E11.mtw	AE11-07 S6	8	1.0	1.0	1.0	100.0	6		
s5081601.chw	IC100-E11.mtw	AE11-08 S7	9	1.0	1.0	1.0	100.0	7		
s5081644.chw	IC100-E11.mtw	AE11-09 S4	6	1.0	1.0	1.0	100.0	4		
s5081725.chw	IC100-E11.mtw	AE11-10 ICV	10	1.0	1.0	1.0	100.0	0		
s5081748.chw	IC100-E11.mtw	AE11-11 ICB	11	1.0	1.0	1.0	100.0	0		
s5082150.chw	IC100-E11.mtw	AE11-12 ICE017WB	12	1.0	1.0	1.0	100.0	0		
s5082210.chw	IC100-E11.mtw	AE11-13 ICE017WL	13	1.0	1.0	1.0	100.0	0		
s5082230.chw	IC100-E11.mtw	AE11-14 ICE017WC	14	1.0	1.0	1.0	100.0	0		
s5082250.chw	IC100-E11.mtw	AE11-15 E047-01 DF=20	15	1.0	20.0	1.0	100.0	0		
s5082310.chw	IC100-E11.mtw	AE11-16 E047-02 DF=20	16	1.0	20.0	1.0	100.0	0		
s5082330.chw	IC100-E11.mtw	AE11-17 E047-03 DF=20	17	1.0	20.0	1.0	100.0	0		
s5082350.chw	IC100-E11.mtw	AE11-18 E047-03D DF=20	18	1.0	20.0	1.0	100.0	0		
s5090011.chw	IC100-E11.mtw	AE11-19 E047-03M DF=20	19	1.0	20.0	1.0	100.0	0		
s5090031.chw	IC100-E11.mtw	AE11-20 E047-03S DF=20	20	1.0	20.0	1.0	100.0	0		
s5090051.chw	IC100-E11.mtw	AE11-21 RINSE	21	1.0	1.0	1.0	100.0	0		
s5090111.chw	IC100-E11.mtw	AE11-22 CCV1	22	1.0	1.0	1.0	100.0	0		
s5090131.chw	IC100-E11.mtw	AE11-23 CCB1	23	1.0	1.0	1.0	100.0	0		
s5090151.chw	IC100-E11.mtw	AE11-24 E047-06 DF=20	24	1.0	20.0	1.0	100.0	0		
s5090212.chw	IC100-E11.mtw	AE11-25 E061-01 DF=5	25	1.0	5.0	1.0	100.0	0		
s5090232.chw	IC100-E11.mtw	AE11-26 E061-01 DF=25	26	1.0	25.0	1.0	100.0	0		
s5090252.chw	IC100-E11.mtw	AE11-27 E049-01 DF=20	27	1.0	20.0	1.0	100.0	0		
s5090312.chw	IC100-E11.mtw	AE11-28 E049-02 DF=25	28	1.0	25.0	1.0	100.0	0		
s5090332.chw	IC100-E11.mtw	AE11-29 E049-03 DF=40	29	1.0	40.0	1.0	100.0	0		
s5090352.chw	IC100-E11.mtw	AE11-30 E049-05 DF=25	30	1.0	25.0	1.0	100.0	0		
s5090412.chw	IC100-E11.mtw	AE11-31 E049-06 DF=20	31	1.0	20.0	1.0	100.0	0		
s5090433.chw	IC100-E11.mtw	AE11-32 E049-01 DF=40	32	1.0	40.0	1.0	100.0	0		
s5090453.chw	IC100-E11.mtw	AE11-33 RINSE	33	1.0	1.0	1.0	100.0	0		
s5090513.chw	IC100-E11.mtw	AE11-34 CCV3	34	1.0	1.0	1.0	100.0	0		
s5090533.chw	IC100-E11.mtw	AE11-35 CCB3	35	1.0	1.0	1.0	100.0	0		
s5090553.chw	IC100-E11.mtw	AE11-36 E049-02 DF=40	36	1.0	40.0	1.0	100.0	0		
s5090613.chw	IC100-E11.mtw	AE11-37 E049-03 DF=50	37	1.0	50.0	1.0	100.0	0		
s5090633.chw	IC100-E11.mtw	AE11-38 E049-04 DF=40	38	1.0	40.0	1.0	100.0	0		
s5090654.chw	IC100-E11.mtw	AE11-39 E049-05 DF=80	39	1.0	80.0	1.0	100.0	0		
s5090714.chw	IC100-E11.mtw	AE11-40 E049-06 DF=80	40	1.0	80.0	1.0	100.0	0		
s5090734.chw	IC100-E11.mtw	AE11-41 E052-01 DF=5	41	1.0	5.0	1.0	100.0	0		
s5090754.chw	IC100-E11.mtw	AE11-42 E052-03 DF=10	42	1.0	10.0	1.0	100.0	0		
s5090814.chw	IC100-E11.mtw	AE11-43 E052-04 DF=10	43	1.0	10.0	1.0	100.0	0		
s5090830.chw	IC100-E11.mtw	AE11-44 RINSE	44	1.0	1.0	1.0	100.0	0		
s5090846.chw	IC100-E11.mtw	AE11-45 CCV5	45	1.0	1.0	1.0	100.0	0		
s5090903.chw	IC100-E11.mtw	AE11-46 CCB5	46	1.0	1.0	1.0	100.0	0		
s5090919.chw	IC100-E11.mtw	AE11-47 ICE019WB	47	1.0	1.0	1.0	100.0	0		
s5090939.chw	IC100-E11.mtw	AE11-48 ICE019WL	48	1.0	1.0	1.0	100.0	0		
s5090956.chw	IC100-E11.mtw	AE11-49 ICE019WC	49	1.0	1.0	1.0	100.0	0		
s5091016.chw	IC100-E11.mtw	AE11-50 E811-01	50	1.0	1.0	1.0	100.0	0		
s5091040.chw	IC100-E11.mtw	AE11-51 E052-02	51	1.0	5.0	1.0	100.0	0		
s5091100.chw	IC100-E11.mtw	AE11-52 E052-02D	52	1.0	5.0	1.0	100.0	0		
s5091120.chw	IC100-E11.mtw	AE11-53 E052-02M	53	1.0	5.0	1.0	100.0	0		
s5091141.chw	IC100-E11.mtw	AE11-54 E052-02S	54	1.0	5.0	1.0	100.0	0		
s5091201.chw	IC100-E11.mtw	AE11-55 RINSE	55	1.0	1.0	1.0	100.0	0		
s5091216.chw	IC100-E11.mtw	AE11-56 CCV7	56	1.0	1.0	1.0	100.0	0		
s5091231.chw	IC100-E11.mtw	AE11-57 CCB7	57	1.0	1.0	1.0	100.0	0		

FINAL

RU 5/15/08

hc09

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

concentration of:

S1 — 0.1 ppm
S2 — 0.2
S3 — 0.5
S4 — 10.0
S5 — 20.0
S6 — 25.0
S7 — 30.0

linearity (ppm):

F^- — 10
Cl^- — 30
NO_2N — 10
Br^- — 30
NO_3N — 30
PO_4P — 10
SO_4^{2-} — 30
I^- — 25

IC Eluent: SW4-01-50 (320mM Na_2CO_3 / 100mM $NaHCO_3$)
SW4-01-53 (100mM $NaHCO_3$)

IC Regenerant: SW4-01-56 (1000mM H_2SO_4)

Book #: A100-014

Instrument No.: 100

Analytical Sequence: AD39

Method File: IC100-D39.mtw

Analytical Batch: ICD077w

SOP #	Rev. #
☑ EMAX-300.0	4
☐ EMAX-9056	2
☐ EMAX-	

STANDARDS ID	
ICAL	SI/B-09-13-3
ICV	SI/B-09-14-1
CCV	SI/B-09-12-2
LCS	SI/B-09-12-3
MS	AccuSREC: Br-, SO_4^{2-} (5ppm) F-, Cl-, NO_2^-, NO_3^-, PO_4^{3-} (2ppm)

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ IC-METROHM	
☐	

Analyzed By: SD

Date: 4/23/08

8035

E1

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s4231820.chw	IC100-D39.mtw	AD39-01 IB	79	1.0	1.0	1.0	100.0	0		
s4231841.chw	IC100-D39.mtw	AD39-02 S0	80	1.0	1.0	1.0	100.0	0		
s4231903.chw	IC100-D39.mtw	AD39-03 S1	81	1.0	1.0	1.0	100.0	1		
s4231924.chw	IC100-D39.mtw	AD39-04 S2	82	1.0	1.0	1.0	100.0	2		
s4231945.chw	IC100-D39.mtw	AD39-05 S3	83	1.0	1.0	1.0	100.0	3		
s4232006.chw	IC100-D39.mtw	AD39-06 S4	84	1.0	1.0	1.0	100.0	4		
s4232027.chw	IC100-D39.mtw	AD39-07 S5	85	1.0	1.0	1.0	100.0	5		
s4232048.chw	IC100-D39.mtw	AD39-08 S6	86	1.0	1.0	1.0	100.0	6		
s4232109.chw	IC100-D39.mtw	AD39-09 S7	87	1.0	1.0	1.0	100.0	7		
s4232130.chw	IC100-D39.mtw	AD39-10 ICV	88	1.0	1.0	1.0	100.0	0		
s4232152.chw	IC100-D39.mtw	AD39-11 ICB	89	1.0	1.0	1.0	100.0	0		
s4232213.chw	IC100-D39.mtw	AD39-12 ICD077WB	90	1.0	1.0	1.0	100.0	0		
s4232234.chw	IC100-D39.mtw	AD39-13 ICD077WL	91	1.0	1.0	1.0	100.0	0		
s4232255.chw	IC100-D39.mtw	AD39-14 ICD077WC	92	1.0	1.0	1.0	100.0	0		
s4232316.chw	IC100-D39.mtw	AD39-15 D899-01	93	1.0	1.0	1.0	100.0	0		
s4232337.chw	IC100-D39.mtw	AD39-16 D899-02	94	1.0	1.0	1.0	100.0	0		
s4232358.chw	IC100-D39.mtw	AD39-17 D899-03	95	1.0	1.0	1.0	100.0	0		
s4240020.chw	IC100-D39.mtw	AD39-18 D900-01	96	1.0	1.0	1.0	100.0	0		
s4240041.chw	IC100-D39.mtw	AD39-19 D900-02	97	1.0	1.0	1.0	100.0	0		
s4240102.chw	IC100-D39.mtw	AD39-20 D904-01	98	1.0	1.0	1.0	100.0	0		
s4240123.chw	IC100-D39.mtw	AD39-21 RINSE	99	1.0	1.0	1.0	100.0	0		
s4240144.chw	IC100-D39.mtw	AD39-22 CCV1	100	1.0	1.0	1.0	100.0	0		
s4240205.chw	IC100-D39.mtw	AD39-23 CCB1	101	1.0	1.0	1.0	100.0	0		
s4240226.chw	IC100-D39.mtw	AD39-24 D905-01	102	1.0	1.0	1.0	100.0	0		
s4240248.chw	IC100-D39.mtw	AD39-25 D905-02	103	1.0	1.0	1.0	100.0	0		
s4240309.chw	IC100-D39.mtw	AD39-26 D905-03	104	1.0	1.0	1.0	100.0	0		
s4240330.chw	IC100-D39.mtw	AD39-27 D905-04	105	1.0	1.0	1.0	100.0	0		
s4240351.chw	IC100-D39.mtw	AD39-28 D905-04D	106	1.0	1.0	1.0	100.0	0		
s4240412.chw	IC100-D39.mtw	AD39-29 D905-04M	107	1.0	1.0	1.0	100.0	0		
s4240433.chw	IC100-D39.mtw	AD39-30 RINSE	108	1.0	1.0	1.0	100.0	0		
s4240454.chw	IC100-D39.mtw	AD39-31 CCV3	109	1.0	1.0	1.0	100.0	0		
s4240515.chw	IC100-D39.mtw	AD39-32 CCB3	110	1.0	1.0	1.0	100.0	0		

FINAL

4-25-08

8036

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Concentration of
S1 — 0.1 ppm
S2 — 0.2
S3 — 0.5
S4 — 10.0
S5 — 20.0
S6 — 25.0
S7 — 30.0

Linearity (ppm)
F^- — 10 ✓
Cl^- — 30 ✓
NO_2N — 20 ✓
Br^- — 30 ✓
NO_3N — 30 ✓
PO_4P — 25 ✓
SO_4^{2-} — 30 ✓

Bad injection for S4, re-ran after S7
S0 ~~S4~~ S4 5/14/08

IC Eluent: SW4-01-~~56~~ 59 (320 mM Na_2CO_3 / 100 mM $NaHCO_3$) S9 5/14/08

SW4-01-~~57~~ (100 mM $NaHCO_3$)

IC Regenerant: SW4-01-~~56~~ 58 (~~100~~ mM H_2SO_4) 100 S9 5/14/08 HL 5/8/08

Book #: A100-014

Instrument No.: 100

Analytical Sequence: AE11

Method File: IC100-E11.mtw

Analytical Batch: ICE017W, ICE019W

SOP #	Rev. #
☑ EMAX-300.0	4
☐ EMAX-9056	2
☐ EMAX-	

STANDARDS ID	
ICAL	SIIB-09-27-1
ICV	SIIB-09-27-2
CCV	SIIB-09-25-1
LCS	SIIB-09-25-2
MS	Accuspec: Br^-, SO_4^{2-} (5 ppm) F^-, Cl^-, NO_2^-, NO_3^-, PO_4^{3-} (2 ppm)

ELECTRONIC DATA ARCHIVAL	
Location	Date
☑ IC-METROHM	5/13/08
☐	

Analyzed By: HL/SJ

Date: 5/8/08

F1

File Name	Method	Ident	Vial	Volume	Dilution	Amount	Internal Standard Amount	Calibration Level	Sample Info 1	Sample Info 2
s5081319.chw	IC100-E11.mtw	AE11-01 IB	1	1.0	1.0	1.0	100.0	0		
s5081340.chw	IC100-E11.mtw	AE11-02 S0	2	1.0	1.0	1.0	100.0	0		
s5081400.chw	IC100-E11.mtw	AE11-03 S1	3	1.0	1.0	1.0	100.0	1		
s5081421.chw	IC100-E11.mtw	AE11-04 S2	4	1.0	1.0	1.0	100.0	2		
s5081441.chw	IC100-E11.mtw	AE11-05 S3	5	1.0	1.0	1.0	100.0	3		
s5081521.chw	IC100-E11.mtw	AE11-06 S5	7	1.0	1.0	1.0	100.0	5		
s5081541.chw	IC100-E11.mtw	AE11-07 S6	8	1.0	1.0	1.0	100.0	6		
s5081601.chw	IC100-E11.mtw	AE11-08 S7	9	1.0	1.0	1.0	100.0	7		
s5081644.chw	IC100-E11.mtw	AE11-09 S4	6	1.0	1.0	1.0	100.0	4		
s5081725.chw	IC100-E11.mtw	AE11-10 ICV	10	1.0	1.0	1.0	100.0	0		
s5081748.chw	IC100-E11.mtw	AE11-11 ICB	11	1.0	1.0	1.0	100.0	0		
s5082150.chw	IC100-E11.mtw	AE11-12 ICE017WB	12	1.0	1.0	1.0	100.0	0		
s5082210.chw	IC100-E11.mtw	AE11-13 ICE017WL	13	1.0	1.0	1.0	100.0	0		
s5082230.chw	IC100-E11.mtw	AE11-14 ICE017WC	14	1.0	1.0	1.0	100.0	0		
s5082250.chw	IC100-E11.mtw	AE11-15 E047-01 DF=20	15	1.0	20.0	1.0	100.0	0		
s5082310.chw	IC100-E11.mtw	AE11-16 E047-02 DF=20	16	1.0	20.0	1.0	100.0	0		
s5082330.chw	IC100-E11.mtw	AE11-17 E047-03 DF=20	17	1.0	20.0	1.0	100.0	0		
s5082350.chw	IC100-E11.mtw	AE11-18 E047-03D DF=20	18	1.0	20.0	1.0	100.0	0		
s5090011.chw	IC100-E11.mtw	AE11-19 E047-03M DF=20	19	1.0	20.0	1.0	100.0	0		
s5090031.chw	IC100-E11.mtw	AE11-20 E047-03S DF=20	20	1.0	20.0	1.0	100.0	0		
s5090051.chw	IC100-E11.mtw	AE11-21 RINSE	21	1.0	1.0	1.0	100.0	0		
s5090111.chw	IC100-E11.mtw	AE11-22 CCV1	22	1.0	1.0	1.0	100.0	0		
s5090131.chw	IC100-E11.mtw	AE11-23 CCB1	23	1.0	1.0	1.0	100.0	0		
s5090151.chw	IC100-E11.mtw	AE11-24 E047-06 DF=20	24	1.0	20.0	1.0	100.0	0		
s5090212.chw	IC100-E11.mtw	AE11-25 E061-01 DF=5	25	1.0	5.0	1.0	100.0	0		
s5090232.chw	IC100-E11.mtw	AE11-26 E061-01 DF=25	26	1.0	25.0	1.0	100.0	0	FINAL	
s5090252.chw	IC100-E11.mtw	AE11-27 E049-01 DF=20	27	1.0	20.0	1.0	100.0	0		
s5090312.chw	IC100-E11.mtw	AE11-28 E049-02 DF=25	28	1.0	25.0	1.0	100.0	0		
s5090332.chw	IC100-E11.mtw	AE11-29 E049-03 DF=40	29	1.0	40.0	1.0	100.0	0		
s5090352.chw	IC100-E11.mtw	AE11-30 E049-05 DF=25	30	1.0	25.0	1.0	100.0	0		
s5090412.chw	IC100-E11.mtw	AE11-31 E049-06 DF=20	31	1.0	20.0	1.0	100.0	0		
s5090433.chw	IC100-E11.mtw	AE11-32 E049-01 DF=40	32	1.0	40.0	1.0	100.0	0		
s5090453.chw	IC100-E11.mtw	AE11-33 RINSE	33	1.0	1.0	1.0	100.0	0		
s5090513.chw	IC100-E11.mtw	AE11-34 CCV3	34	1.0	1.0	1.0	100.0	0		
s5090533.chw	IC100-E11.mtw	AE11-35 CCB3	35	1.0	1.0	1.0	100.0	0		
s5090553.chw	IC100-E11.mtw	AE11-36 E049-02 DF=40	36	1.0	40.0	1.0	100.0	0		
s5090613.chw	IC100-E11.mtw	AE11-37 E049-03 DF=50	37	1.0	50.0	1.0	100.0	0		
s5090633.chw	IC100-E11.mtw	AE11-38 E049-04 DF=40	38	1.0	40.0	1.0	100.0	0		
s5090654.chw	IC100-E11.mtw	AE11-39 E049-05 DF=80	39	1.0	80.0	1.0	100.0	0		
s5090714.chw	IC100-E11.mtw	AE11-40 E049-06 DF=80	40	1.0	80.0	1.0	100.0	0		
s5090734.chw	IC100-E11.mtw	AE11-41 E052-01 DF=5	41	1.0	5.0	1.0	100.0	0		
s5090754.chw	IC100-E11.mtw	AE11-42 E052-03 DF=10	42	1.0	10.0	1.0	100.0	0		
s5090814.chw	IC100-E11.mtw	AE11-43 E052-04 DF=10	43	1.0	10.0	1.0	100.0	0		
s5090830.chw	IC100-E11.mtw	AE11-44 RINSE	44	1.0	1.0	1.0	100.0	0		
s5090846.chw	IC100-E11.mtw	AE11-45 CCV5	45	1.0	1.0	1.0	100.0	0		
s5090903.chw	IC100-E11.mtw	AE11-46 CCB5	46	1.0	1.0	1.0	100.0	0		
s5090919.chw	IC100-E11.mtw	AE11-47 ICE019WB	47	1.0	1.0	1.0	100.0	0		
s5090939.chw	IC100-E11.mtw	AE11-48 ICE019WL	48	1.0	1.0	1.0	100.0	0		
s5090956.chw	IC100-E11.mtw	AE11-49 ICE019WC	49	1.0	1.0	1.0	100.0	0		
s5091016.chw	IC100-E11.mtw	AE11-50 E811-01	50	1.0	1.0	1.0	100.0	0		
s5091040.chw	IC100-E11.mtw	AE11-51 E052-02	51	1.0	5.0	1.0	100.0	0		
s5091100.chw	IC100-E11.mtw	AE11-52 E052-02D	52	1.0	5.0	1.0	100.0	0		
s5091120.chw	IC100-E11.mtw	AE11-53 E052-02M	53	1.0	5.0	1.0	100.0	0		
s5091141.chw	IC100-E11.mtw	AE11-54 E052-02S	54	1.0	5.0	1.0	100.0	0		
s5091201.chw	IC100-E11.mtw	AE11-55 RINSE	55	1.0	1.0	1.0	100.0	0		
s5091216.chw	IC100-E11.mtw	AE11-56 CCV7	56	1.0	1.0	1.0	100.0	0		
s5091231.chw	IC100-E11.mtw	AE11-57 CCB7	57	1.0	1.0	1.0	100.0	0		

CC-03

RM 5/15/08

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E061

METHOD 314.0
PERCHLORATE

One (1) water sample was received on 05/07/08 for Perchlorate analysis by Method 314.0 in accordance with "Method for Determination of Perchlorate by Ion Chromatography", EPA 600/98-118.

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control sample results were within QC limits.

4. **Duplicate**

   Duplicate sample was not designated in this SDG.

5. **Matrix Spike/Matrix Spike Duplicate**

   MS/MSD sample was not designated in this SDG.

6. **Sample Analysis**

   Sample was analyzed according to the prescribed QC procedures. All criteria were met.

SAMPLE

METHOD 314.0
PERCHLORATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I57

SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/L)	DLF	MOIST	RL (ug/L)	MDL (ug/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	PCE007WB	ND	1	NA	2.00	0.500	05/09/0815:04	NA	JE09002	JE09001	PCE007W	NA	NA
LCS1W	PCE007WL	24.7	1	NA	2.00	0.500	05/09/0815:46	NA	JE09004	JE09001	PCE007W	NA	NA
LCD1W	PCE007WC	24.3	1	NA	2.00	0.500	05/09/0816:07	NA	JE09005	JE09001	PCE007W	NA	NA
TT-MW2-17D	E061-01	57800	2000	NA	4000	1000	05/09/0817:15	NA	JE09007	JE09001	PCE007W	05/07/0811:50	05/07/08

Shaw

QC SUMMARY

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E061
METHOD: METHOD 314.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	PCE007WB	PCE007WL	PCE007WC		
LAB FILE ID:	JE09002	JE09004	JE09005		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	05/09/0815:04	05/09/0815:46	05/09/0816:07	DATE RECEIVED:	NA
PREP. BATCH:	PCE007W	PCE007W	PCE007W		
CALIB. REF:	JE09001	JE09001	JE09001		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Perchlorate	ND	25.0	24.7	99	25.0	24.3	97	2	85-115	20

8693

INITIAL CALIBRATION

IC SEQ FORM (ESD)

LFID	LSID	SELCOMP	METHOD	DateTime	DF
JA25001	IB	P	IC57A25	01/25/0815:37	1
JA25002	S-0	P	IC57A25	01/25/0815:58	1
JA25003	S-1	P	IC57A25	01/25/0816:19	1
JA25004	S-2	P	IC57A25	01/25/0816:40	1
JA25005	S-3	P	IC57A25	01/25/0817:01	1
JA25006	S-4	P	IC57A25	01/25/0817:22	1
JA25007	S-5	P	IC57A25	01/25/0817:43	1
JA25008	ICV	P	IC57A25	01/25/0818:05	1
JA25009	ICB	P	IC57A25	01/25/0818:26	1

1-30-08

Method : c:\ezchrom\methods\ic57a25.met
Printed : Jan 28, 2008 10:18:46
Channel : A
Peak : PERCHLORATE

* - Replicate Not Used

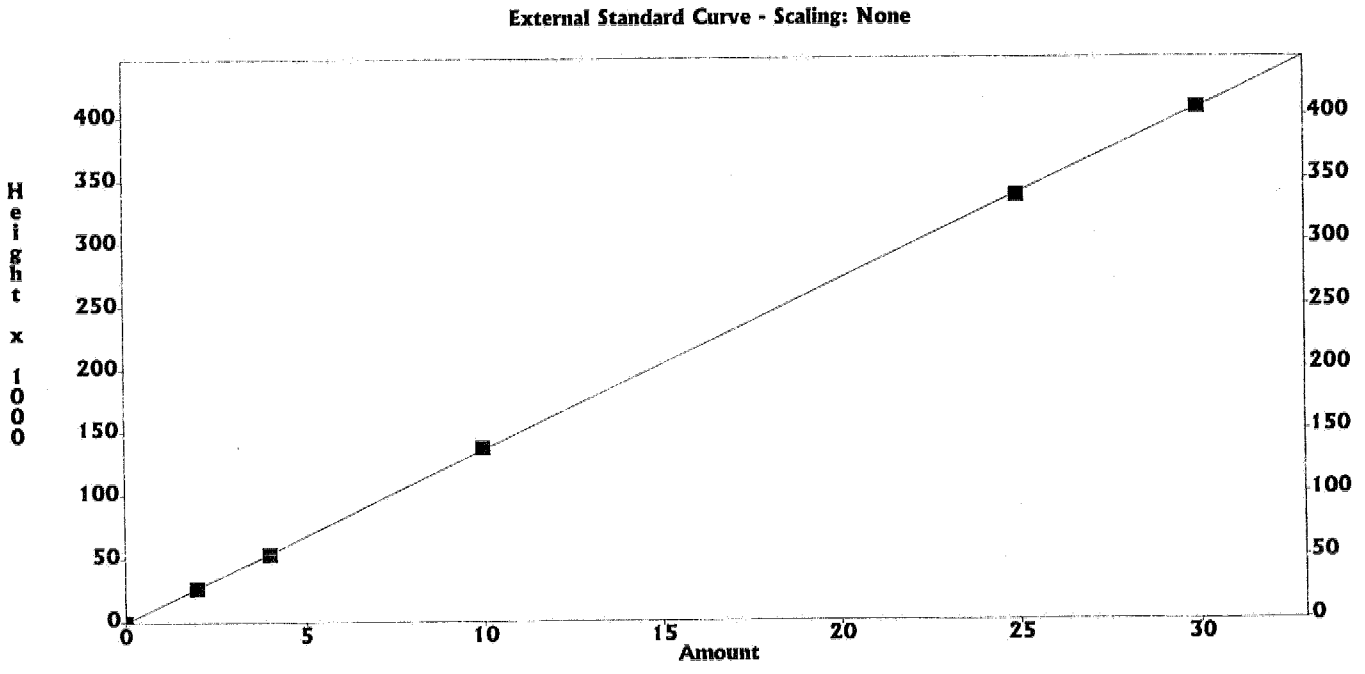
Level	Height	Amount	RF	Rep Hgt 1	Rep Hgt 2	Rep Hgt 3	Rep Hgt 4	Rep Hgt 5	Replic STD	Replic %RSD	Old Height
2	26911	2	13455.50	26911							0
3	53679	4	13419.75	53679							0
4	137051	10	13705.10	137051							0
5	336919	25	13476.76	336919							0
6	406525	30	13550.83	406525							0

Calib Flag: Replace

Average RF: 13521.6
RF StdDev: 113.225
RF %RSD: 0.837

RF Definition: Height / Amount
Weighting Method: None
Fit Through Zero: No

Linear Fit: Amount = 7.3954e-005 x Height - 0.0152094
R^2 = 0.999954



1-30-08

8046

SECOND SOURCE

IC RESULT FORM CalVersion: PCHL0314.A25

LFID	LSID	SELCOMP	PERCHLORATE	DateTime	Df
JA25001	IB	P	.000	01/25/0815:37	1
JA25002	S-0	P	.0000	01/25/0815:58	1
JA25003	S-1	P	2	01/25/0816:19	1
JA25004	S-2	P	4	01/25/0816:40	1
JA25005	S-3	P	10	01/25/0817:01	1
JA25006	S-4	P	25	01/25/0817:22	1
JA25007	S-5	P	30	01/25/0817:43	1
JA25008	ICV	P	104%	01/25/0818:05	1
JA25009	ICB	P	.000	01/25/0818:26	1

1-30-08

DAILY CALIBRATION

IC RESULT FORM CalVersion: PCHL0314.A25

LFID	LSID	SELCOMP	PERCHLORATE	DateTime	Df
JE09001	IPCS	P	86.3%	05/09/0814:43	1
JE09002	PCE007WB	P	.000	05/09/0815:04	1
JE09003	MRL	P	95.4%	05/09/0815:25	1
JE09004	PCE007WL	P	24.7	05/09/0815:46	1
JE09005	PCE007WC	P	24.3	05/09/0816:07	1
JE09006	E061-01	*	.000	05/09/0816:28	1
JE09007	E061-01	P	57800	05/09/0817:15	2000
JE09008	E040-02	P	.000	05/09/0817:36	10
JE09009	E041-12	P	1390	05/09/0818:00	100
JE09010	E041-13	P	894	05/09/0818:21	100
JE09011	E041-15	P	1550	05/09/0818:42	100
JE09012	CCV177-30	P	97%	05/09/0819:03	1
JE09013	E040-02	*	138000E	05/09/0819:24	2000
JE09014	CCV178-15	P	99.3%	05/09/0819:45	1

ANALYTICAL LOG

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

NaOH: SW9A - 03-013

Book #:	A57-016
Instrument No.:	57
Analytical Sequence:	JE09
Method File:	IC57a25
Analytical Batch:	PCE0074W

SOP #	Rev. #
☐ EMAX-300.0	3
☐ EMAX-300.0M	0
☑ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

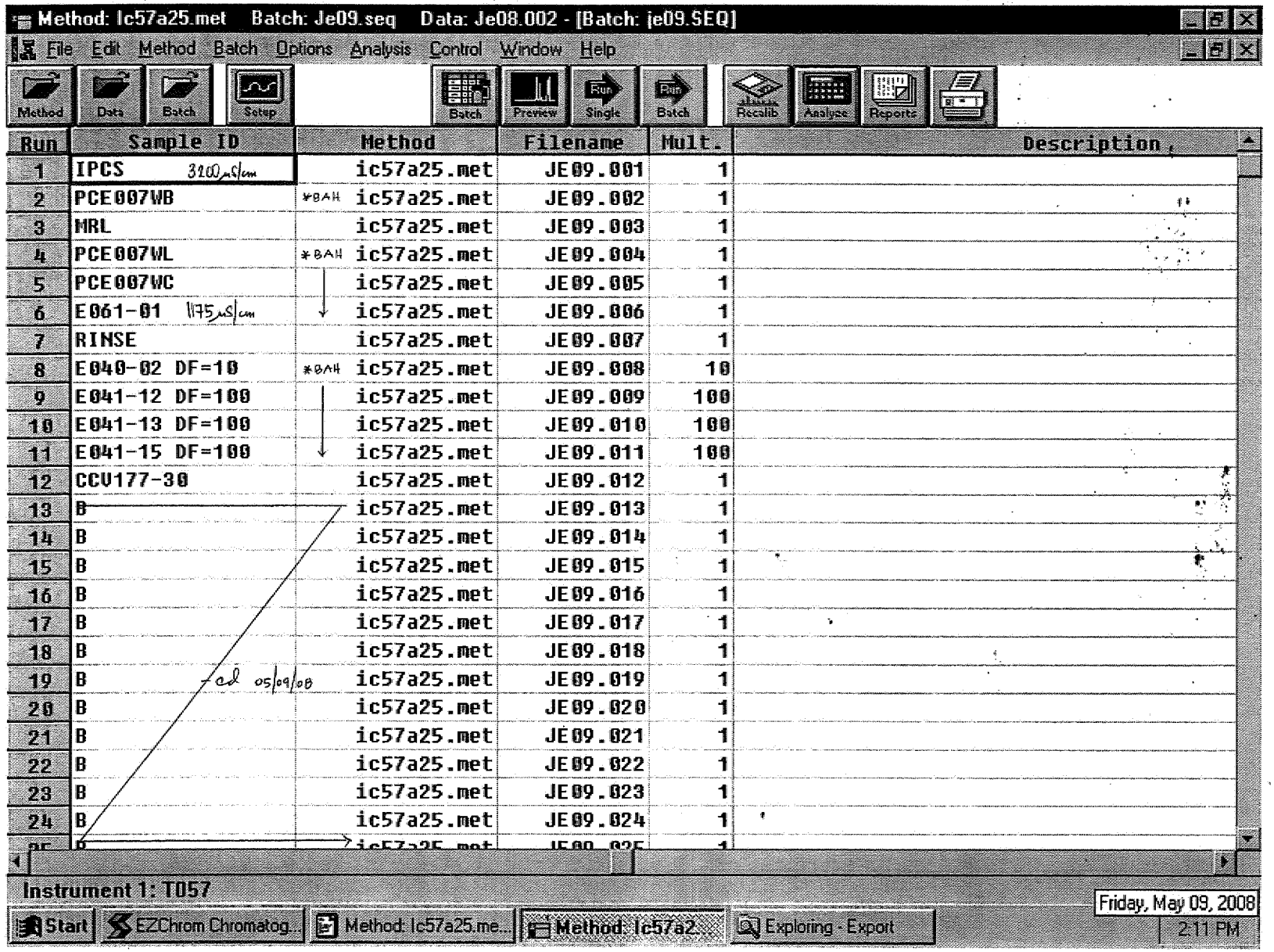
STANDARDS ID	
ICAL	SW88 - 02 - 1063
ICV	1064
CCV-15	1095
CCV-30	1094
LCS	1096
MS	1090
IPC	1097
CMC	SWPI - 01 - 127
MRL	SW 88 - 02 - 1091

CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
145.8	(±) 30	20°C

ELECTRONIC DATA ARCHIVAL	
Location	Date
☑ EZ-CHROM	
☐	

Analyzed By: ad

Date: 05/09/08


Method: Ic57a25.met Batch: Je09.seq Data: Je08.002 - [Batch: je09.SEQ]
File Edit Method Batch Options Analysis Control Window Help
Method Data Batch Setup Batch Preview Run Single Run Batch Recalib Analyse Reports
Run Sample ID Method Filename Mult. Description
1 IPCS 3100 µS/cm ic57a25.met JE09.001 1
2 PCE007WB *BAH ic57a25.met JE09.002 1
3 MRL ic57a25.met JE09.003 1
4 PCE007WL *BAH ic57a25.met JE09.004 1
5 PCE007WC ic57a25.met JE09.005 1
6 E061-01 1175 µS/cm ic57a25.met JE09.006 1
7 RINSE ic57a25.met JE09.007 1
8 E040-02 DF=10 *BAH ic57a25.met JE09.008 10
9 E041-12 DF=100 ic57a25.met JE09.009 100
10 E041-13 DF=100 ic57a25.met JE09.010 100
11 E041-15 DF=100 ic57a25.met JE09.011 100
12 CCV177-30 ic57a25.met JE09.012 1
13 B ic57a25.met JE09.013 1
14 B ic57a25.met JE09.014 1
15 B ic57a25.met JE09.015 1
16 B ic57a25.met JE09.016 1
17 B ic57a25.met JE09.017 1
18 B ic57a25.met JE09.018 1
19 B ad 05/09/08 ic57a25.met JE09.019 1
20 B ic57a25.met JE09.020 1
21 B ic57a25.met JE09.021 1
22 B ic57a25.met JE09.022 1
23 B ic57a25.met JE09.023 1
24 B ic57a25.met JE09.024 1
Instrument 1: T057
Start EZChrom Chromatog... Method: Ic57a25.me... Method: Ic57a2... Exploring - Export
Friday, May 09, 2008
2:11 PM

ANALYSIS RUN LOG
for
ION CHROMATOGRAPHY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

NaOH : SW9A-03-013

Book #:	A57-016
Instrument No.:	57
Analytical Sequence:	3A25
Method File:	IC57A25
Analytical Batch:	N/A

SOP #	Rev. #
☐ EMAX-300.0	3
☐ EMAX-300.0M	0
☑ EMAX-314.0	1
☐ EMAX-9056	2
☐ EMAX-	

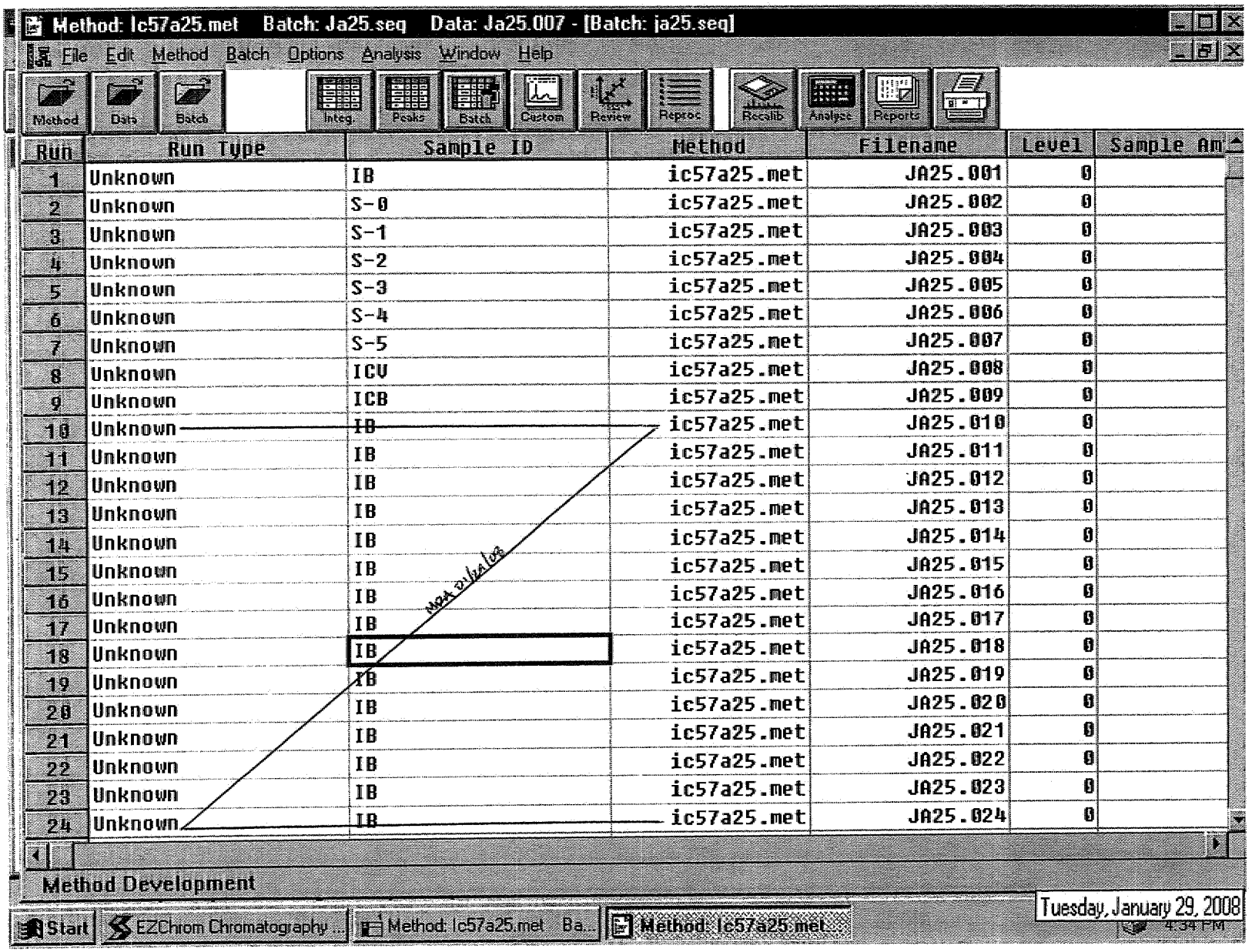
STANDARDS ID	
ICAL	SW8B-02-1063
ICV	↓ -1064
CCV-15	N/A
CCV-30	
LCS	
MS	
IPC	
CMC	
MRL	

CMC Reading (µS/cm)	QC Criteria (µS/cm)	Temp. (°C)
	(±) 30	

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ EZ-CHROM	
☐	

Analyzed By: MRA /al

Date: 01/25/08



Run	Run Type	Sample ID	Method	Filename	Level	Sample Am
1	Unknown	IB	ic57a25.met	JA25.001	0	
2	Unknown	S-0	ic57a25.met	JA25.002	0	
3	Unknown	S-1	ic57a25.met	JA25.003	0	
4	Unknown	S-2	ic57a25.met	JA25.004	0	
5	Unknown	S-3	ic57a25.met	JA25.005	0	
6	Unknown	S-4	ic57a25.met	JA25.006	0	
7	Unknown	S-5	ic57a25.met	JA25.007	0	
8	Unknown	ICV	ic57a25.met	JA25.008	0	
9	Unknown	ICB	ic57a25.met	JA25.009	0	
10	Unknown	IB	ic57a25.met	JA25.010	0	
11	Unknown	IB	ic57a25.met	JA25.011	0	
12	Unknown	IB	ic57a25.met	JA25.012	0	
13	Unknown	IB	ic57a25.met	JA25.013	0	
14	Unknown	IB	ic57a25.met	JA25.014	0	
15	Unknown	IB	ic57a25.met	JA25.015	0	
16	Unknown	IB	ic57a25.met	JA25.016	0	
17	Unknown	IB	ic57a25.met	JA25.017	0	
18	Unknown	IB	ic57a25.met	JA25.018	0	
19	Unknown	IB	ic57a25.met	JA25.019	0	
20	Unknown	IB	ic57a25.met	JA25.020	0	
21	Unknown	IB	ic57a25.met	JA25.021	0	
22	Unknown	IB	ic57a25.met	JA25.022	0	
23	Unknown	IB	ic57a25.met	JA25.023	0	
24	Unknown	IB	ic57a25.met	JA25.024	0	

MRA 01/29/08

8955

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E061

METHOD 350.2
AMMONIA AS N

One (1) water sample was received on 05/07/08 for Ammonia (NH3-N) analysis by Method 350.2 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   No duplicate sample was designated in this SDG.

5. **Matrix Spike**

   No MS sample was designated in this SDG.

6. **Sample Analysis**

   Sample was analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 350.2
AMMONIA as N

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	NHE003WB	ND	1	NA	0.100	0.0500	05/09/0818:19	05/09/0813:10	NHE00314	NHE00310	NHE003W	NA	05/09/08
LCS1W	NHE003WL	0.927	1	NA	0.100	0.0500	05/09/0818:19	05/09/0813:10	NHE00315	NHE00310	NHE003W	NA	05/09/08
LCD1W	NHE003WC	0.948	1	NA	0.100	0.0500	05/09/0818:19	05/09/0813:10	NHE00316	NHE00310	NHE003W	NA	05/09/08
TT-MW2-17D	E061-01	0.135	1	NA	0.100	0.0500	05/09/0818:26	05/09/0813:10	NHE00331	NHE00322	NHE003W	05/07/0811:50	05/07/08

8057

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 350.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: NHE003WL/C

DATE RECEIVED: 05/09/08
DATE EXTRACTED: 05/09/08 13:10
DATE ANALYZED: 05/09/08 18:19/18:19

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Ammonia (NH3-N)	ND	1.00	0.927	93	1.00	0.948	95	2	80-120	20

ANALYSIS RUN LOG
for
AMMONIA

ICAL stock conc. 10 ppm	ICAL stock exp Date: 9/28/08
ICV/LCS/MS stock conc: 10 ppm	ICV/LCS/MS exp Date: 7/9/08

Book #: A70-NH3-010

Instrument No.: 70

Analytical Batch: NAE003

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

SOP #	Rev. #
☑ EMAX-350.2	2
☐ EMAX-4500 NH3F	

STANDARDS ID	☐ 350.2		☐ 4500	
	Conc. ppm	Vol of std used 5 mL Final Vol	Conc. ppm	Vol of std used ___mL Final Vol
S0 SWP1-02-62	0	0	0	
S1 SW2-01-427	0.1	0.25	0.05	
S2	0.2	0.5	0.1	
S3	0.4	1.0	0.2	
S4	0.6	1.5	0.4	
S5	0.8	2.0	0.6	
S6	1.0	2.5	0.8	
S7	1.6	4.0		
S8	2.0	5.0		
ICV/LCS/MS SW2-01-354	1.0	2.5	0.4	
CCV SW2-01-427	1.0	2.5	0.4	

Prep Date: 5/9/08 Exp Date: 5/9/08

REAGENT	ID
Color Reagent	SWR1-01-E37
Phenol Solution	NA
Sodium Nitroprusside	NA
Oxidizing Solution	NA

Analyzed By: [signature]

Date: 5/9/08

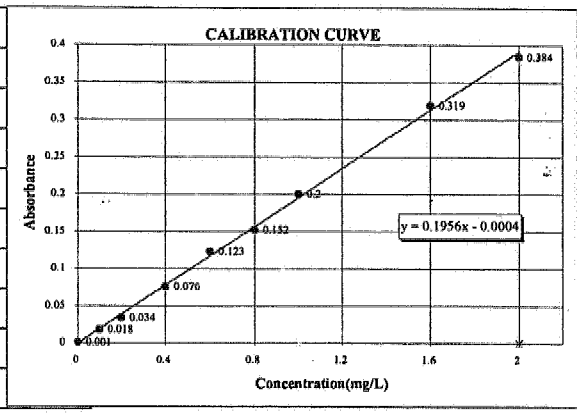
EMAX LABORATORIES, INC.

AMMONA-N ANALYSIS

Instrument ID: 70 **Book #:** A70-NH-010 **Page:** 21

SOP: EMAX-350.2 Rev. 2 **Calibration Reference:** 08NH70E9 **Analytical Batch:** NHE003

ICAL	mg/L
S0	0
S1	0.1
S2	0.2
S3	0.4
S4	0.6
S5	0.8
S6	1
S7	1.6
S8	2



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.05 mg/L	0.5 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
MB	0 mg/L	0 mg/Kg	< RL
LCS/LCD	1 mg/L	10 mg/Kg	80-120 %
MS	1 mg/L	10 mg/Kg	75-125 %
DUPLICATE	Sample Concentration		RPD: ≤20%
ICV	1 mg/L		85-115%
STD. HIGH	1.6 mg/L		90-110%
STD. LOW	0.4 mg/L		90-110%

r (Coeff. Correl.)= 0.99933 CF= 5.112416082 Y= -0.00201 $FC = [(A * CF) - Y] * DF$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
NHE00301	S0	425nm	0.001 a	05/09/08	18:12:31	0	1	0.007120436	mg/L	25	ml	25
NHE00302	S1	425nm	0.018 a	05/09/08	18:12:42	0	1	0.09403151	mg/L	25	ml	25
NHE00303	S2	425nm	0.034 a	05/09/08	18:12:54	0	1	0.175830167	mg/L	25	ml	25
NHE00304	S3	425nm	0.076 a	05/09/08	18:13:29	0	1	0.390551642	mg/L	25	ml	25
NHE00305	S4	425nm	0.123 a	05/09/08	18:13:54	0	1	0.630835198	mg/L	25	ml	25
NHE00306	S5	425nm	0.152 a	05/09/08	18:14:17	0	1	0.779095265	mg/L	25	ml	25
NHE00307	S6	425nm	0.2 a	05/09/08	18:14:29	0	1	1.024491237	mg/L	25	ml	25
NHE00308	S7	425nm	0.319 a	05/09/08	18:14:46	0	1	1.63286875	mg/L	25	ml	25
NHE00309	S8	425nm	0.384 a	05/09/08	18:14:55	0	1	1.965175796	mg/L	25	ml	25
NHE00310	ICV	425nm	0.205 a	05/09/08	18:15:26	0	1	1.050053317	mg/L	25	ml	25
NHE00311	ICB	425nm	0 a	05/09/08	18:15:37	0	1	0.00200802	mg/L	25	ml	25
NHE00312	STD HIGH	425nm	0.292 a	05/09/08	18:18:44	0	1	1.494833516	mg/L	25	ml	25
NHE00313	STD LOW	425nm	0.074 a	05/09/08	18:19:05	0	1	0.38032681	mg/L	25	ml	25
NHE00314	NHE003WB ✓	425nm	0.004 a	05/09/08	18:19:14	0	1	0.022457684	mg/L	25	ml	25
NHE00315	NHE003WL ✓	425nm	0.181 a	05/09/08	18:19:25	0	1	0.927355331	mg/L	25	ml	25
NHE00316	NHE003WC ✓	425nm	0.185 a	05/09/08	18:19:32	0	1	0.947804995	mg/L	25	ml	25
NHE00317	E047-01	425nm	0.008 a	05/09/08	18:19:43	0	1	0.042907349	mg/L	25	ml	25
NHE00318	E047-02	425nm	0.002 a	05/09/08	18:19:54	0	1	0.012232852	mg/L	25	ml	25
NHE00319	E047-03 ✓	425nm	0.009 a	05/09/08	18:20:05	0	1	0.048019765	mg/L	25	ml	25
NHE00320	E047-03D ✓	425nm	0.011 a	05/09/08	18:20:16	0	1	0.058244597	mg/L	25	ml	25
NHE00321	E047-03M ✓	425nm	0.166 a	05/09/08	18:21:13	0	1	0.85066909	mg/L	25	ml	25
NHE00322	CCV1	425nm	0.206 a	05/09/08	18:21:36	0	1	1.055165733	mg/L	25	ml	25
NHE00323	CCB1	425nm	0 a	05/09/08	18:21:48	0	1	0.00200802	mg/L	25	ml	25
NHE00324	E047-06	425nm	0.009 a	05/09/08	18:25:16	0	1	0.048019765	mg/L	25	ml	25
NHE00325	E052-01	425nm	0.003 a	05/09/08	18:25:34	0	1	0.017345268	mg/L	25	ml	25
NHE00326	E052-02 ✓	425nm	0.004 a	05/09/08	18:25:55	0	1	0.022457684	mg/L	25	ml	25
NHE00327	E052-02D ✓	425nm	0.007 a	05/09/08	18:26:07	0	1	0.037794933	mg/L	25	ml	25
NHE00328	E052-02M ✓	425nm	0.186 a	05/09/08	18:26:19	0	1	0.952917411	mg/L	25	ml	25
NHE00329	E052-03	425nm	0.005 a	05/09/08	18:26:29	0	1	0.0275701	mg/L	25	ml	25
NHE00330	E052-04	425nm	0.004 a	05/09/08	18:26:40	0	1	0.022457684	mg/L	25	ml	25
NHE00331	E061-01	425nm	0.026 a	05/09/08	18:26:52	0	1	0.134930838	mg/L	25	ml	25
NHE00332	CCV2	425nm	0.205 a	05/09/08	18:27:30	0	1	1.050053317	mg/L	25	ml	25
NHE00333	CCB2	425nm	0 a	05/09/08	18:27:40	0	1	0.00200802	mg/L	25	ml	25

CF= Calibration Factor
DF=Dilution Factor
FC= Found Concentration

Analyzed by: 8060

DISTILLATION LOG FOR NH_3

SOP ☒ EMAX-350.2 Rev. No.: 2 ☐ EMAX-4500-NH_3F Rev. No.: 0 ☐ Book # A70-NH3-010B

Start Date 5/9/08 Time 13:10 End Date 5/9/08 Time 14:30

PREPARATION BATCH * NHE003

Sample Prep ID	Lab Sample ID	Sample pH	NaOH Added (ml)	Boric Acid (ml)	0.04N H_2SO4 (ml)	Borate Buffer (ml)	Sample Amount (ml)	Extract Volume (ml)	Notes
*01	S-1.6	9.5	1ml	2.5	NA	1-25	25	25	
*02	S-0.4								
*03	NHE003WB								
*04	WL								
*05	WC								
*06	E047-01								
*07	-02								
*08	-03								
*09	-03D								
*10	-03M								
*11	E047-06								
*12	E052-01								
*13	-02								
*14	-02D								
*15	-02M								
*16	-03								
*17	-04								
*18	E061-01								
*19									
*20									
*21									
*22									
*23									
*24									
*25									
*26									
*27									

CTL 5/9/08

Standards	ID	Amount Added (ml)
ICV/MS	SWR-01-384	2.5ml/10ml
LCS	↓	↓

Reagent	Lot# / ID
NaOH	SWP1-02-008
Digestion Mixture	NA
Borate Buffer	~~SWR~~ SWP1-01-317 CTL 5/9/08
0.04N H_2SO4	NA
H_3BO_3	SWR1-01-031
Distilling Soln.	NA

Comments:

Prepared By: CTL

Standard Added By: CTL

Checked By:

8061

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E061

METHOD 351.3
TKN

One (1) water sample was received on 05/07/08 for TKN analysis by Method 351.3 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Duplicate sample was not designated in this SDG.

5. **Matrix Spike**

   MS sample was not designated in this SDG.

6. **Sample Analysis**

   Sample was analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 351.3
TKN

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	KNE003WB	ND	1	NA	0.100	0.0500	05/13/0813:55	05/09/0811:15	KNE00313	KNE00309	KNE003W	NA	05/09/08
LCS1W	KNE003WL	0.988	1	NA	0.100	0.0500	05/13/0813:55	05/09/0811:15	KNE00314	KNE00309	KNE003W	NA	05/09/08
LCD1W	KNE003WC	1.01	1	NA	0.100	0.0500	05/13/0813:55	05/09/0811:15	KNE00315	KNE00309	KNE003W	NA	05/09/08
TT-MW2-17D	E061-01	0.462	1	NA	0.100	0.0500	05/13/0814:03	05/09/0811:15	KNE00330	KNE00321	KNE003W	05/07/0811:50	05/07/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 351.3
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: KNE003WL/C

DATE RECEIVED: 05/09/08
DATE EXTRACTED: 05/09/08 11:15
DATE ANALYZED: 05/13/08 13:55/13:55

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
TKN	ND	1.00	0.988	99	1.00	1.01	101	2	80-120	20

3951

ANALYSIS RUN LOG
for
TKN

Book #:	A70-KN-010
Instrument No.:	70
Analytical Batch:	KNE0-3

ICAL stock conc.	10 ppm
ICAL stock exp Date:	9/28/08
ICV/LCS/MS stock conc:	10 ppm
ICV/LCS/MS exp Date:	7/9/08

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

SOP #	
☒ EMAX-351.3	
☐ EMAX-4500 NOrgC	

STANDARDS ID	☒ 351.3		☐ 4500	
	Conc. ppm	Vol of std used 10mL Final Vol	Conc. ppm	Vol of std used __mL Final Vol
S0 SWP1-02-005	0.00	0	0.00	
S1 SWR-01-427	0.10	0.1	0.05	
S2	0.20	0.2	0.10	
S3	0.50	0.5	0.20	
S4	0.80	0.9	0.40	
S5	1.00	1.0	0.60	
S6	1.60	1.6	0.80	
S7	2.00	2.0		
ICV/LCS/MS SWR-01-364	1.00	1.0	0.40	
CCV SWR-01-427	1.00	1.0	0.40	

Prep Date: Exp Date:

REAGENT	ID
Color Reagent	SWR1-01-037
Phenol Solution	NA
Sodium Nitroprusside	NA
Oxidizing Solution	NA

Analyzed By: CDL

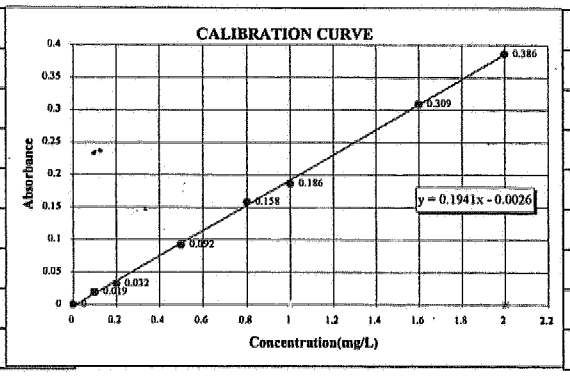
Date: 5/13/08

EMAX LABORATORIES, INC.
TKN ANALYSIS

Instrument ID: 70 Book #: A70-KN-019 Page: 13

SOP: EMAX-351.3 Rev. 1 Calibration Reference: 08KN70E13 Analytical Batch: KNE003

ICAL	mg/L
S0	0
S1	0.1
S2	0.2
S3	0.5
S4	0.8
S5	1
S6	1.6
S7	2



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.03 mg/L	0.5 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	1 mg/L	5 mg/Kg	80-120 %
MS/MSD	1 mg/L	5 mg/Kg	75-125 %
ICV	1 mg/L		85-115%
CCV	1 mg/L		90-110%
STD LOW	0.5 mg/L		90-110%
STD HIGH	1.6 mg/L		90-110%

r (Coeff. Correl.)= 0.99966 CF= 5.153057667 Y= -0.01363573 $FC = [(A * CF) - Y] * DF$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
KNE00301	S0	425NM	0 A	05/13/08	13:49:05	0	1	0.01363573	mg/L	50	ml	50
KNE00302	S1	425NM	0.019 A	05/13/08	13:49:15	0	1	0.111543825	mg/L	50	ml	50
KNE00303	S2	425NM	0.032 A	05/13/08	13:49:24	0	1	0.178533575	mg/L	50	ml	50
KNE00304	S3	425NM	0.092 A	05/13/08	13:49:34	0	1	0.487717035	mg/L	50	ml	50
KNE00305	S4	425NM	0.158 A	05/13/08	13:49:43	0	1	0.827818841	mg/L	50	ml	50
KNE00306	S5	425NM	0.186 A	05/13/08	13:49:52	0	1	0.972104456	mg/L	50	ml	50
KNE00307	S6	425NM	0.309 A	05/13/08	13:50:21	0	1	1.605930549	mg/L	50	ml	50
KNE00308	S7	425NM	0.386 A	05/13/08	13:50:30	0	1	2.002715989	mg/L	50	ml	50
KNE00309	ICV	425NM	0.193 A	05/13/08	13:51:03	0	1	1.008175859	mg/L	50	ml	50
KNE00310	ICB	425NM	0 A	05/13/08	13:51:12	0	1	0.01363573	mg/L	50	ml	50
KNE00311	STD HIGH	425NM	0.31 A	05/13/08	13:54:35	0	1	1.611083606	mg/L	50	ml	50
KNE00312	STD LOW	425NM	0.099 A	05/13/08	13:54:44	0	1	0.52378843°	mg/L	50	ml	50
KNE00313	KNE003WB	425NM	0.008 A	05/13/08	13:55:02	0	1	0.054860191	mg/L	50	ml	50
KNE00314	KNE003WL	425NM	0.189 A	05/13/08	13:55:19	0	1	0.987563629	mg/L	50	ml	50
KNE00315	KNE003WC	425NM	0.193 A	05/13/08	13:55:27	0	1	1.008175859	mg/L	50	ml	50
KNE00316	E047-01	425NM	0.028 A	05/13/08	13:55:51	0	1	0.157921344	mg/L	50	ml	50
KNE00317	E047-02	425NM	0.026 A	05/13/08	13:56:01	0	1	0.147615229	mg/L	50	ml	50
KNE00318	E047-03	425NM	0.024 A	05/13/08	13:56:44	0	1	0.137309114	mg/L	50	ml	50
KNE00319	E047-03D	425NM	0.026 A	05/13/08	13:57:05	0	1	0.147615229	mg/L	50	ml	50
KNE00320	E047-03M	425NM	0.214 A	05/13/08	13:57:20	0	1	1.11639007	mg/L	50	ml	50
KNE00321	CCV1	425NM	0.184 A	05/13/08	13:57:31	0	1	0.96179834	mg/L	50	ml	50
KNE00322	CCB1	425NM	0 A	05/13/08	13:57:42	0	1	0.01363573	mg/L	50	ml	50
KNE00323	E047-06	425NM	0.046 A	05/13/08	14:00:29	0	1	0.250676382	mg/L	50	ml	50
KNE00324	E052-01	425NM	0.014 A	05/13/08	14:00:46	0	1	0.085778537	mg/L	50	ml	50
KNE00325	E052-02	425NM	0.025 A	05/13/08	14:01:12	0	1	0.142462171	mg/L	50	ml	50
KNE00326	E052-02D	425NM	0.027 A	05/13/08	14:01:35	0	1	0.152768287	mg/L	50	ml	50
KNE00327	E052-02M	425NM	0.199 A	05/13/08	14:01:46	0	1	1.039094205	mg/L	50	ml	50
KNE00328	E052-03	425NM	0.025 A	05/13/08	14:01:56	0	1	0.142462171	mg/L	50	ml	50
KNE00329	E052-04	425NM	0.018 A	05/13/08	14:02:15	0	1	0.106390768	mg/L	50	ml	50
KNE00330	E061-01	425NM	0.087 A	05/13/08	14:03:08	0	1	0.461951747	mg/L	50	ml	50
KNE00331	CCV2	425NM	0.186 A	05/13/08	14:03:18	0	1	0.972104456	mg/L	50	ml	50
KNE00332	CCB2	425NM	0 A	05/13/08	14:03:29	0	1	0.01363573	mg/L	50	ml	50

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

Analyzed by: 8065

DIGESTION AND DISTILLATION LOG FOR TKN

SOP ☒ EMAX-351.3 Rev. No.: ☐ EMAX-4500(ORGANIC)C Rev. No.: ☐ Book # A70-KN-010B

Start Date 5/9/08 Time 11:15 End Date 5/12/08 Time 14:00

PREPARATION BATCH * KNE003

Sample Prep ID	Lab Sample ID	Sample pH	Boric Acid (ml)	0.04N H_2SO4 (ml)	Sample Amount (ml)	Extract Volume (ml)	Notes
*01	S-1.6	9.8	5.0	NA	50	50	
*02	S-0.5						
*03	KNE003WB						
*04	WL						
*05	WL						
*06	E047-01						
*07	-02						
*08	-03						
*09	-03D						
*10	-03M						
*11	E047-06						
*12	E052-01						
*13	-02						
*14	-02D						
*15	-02M						
*16	-03						
*17	-04						
*18	E061-01						
*19							
*20							
*21							
*22							
*23							
*24							
*25							
*26							
*27							

cm 5/9/08

Standards	ID	Amount Added (ml)
ICV/MS	SW2-01394	5.0 ml of 10 ppm
LCS	↓	5.0 ml of 10 ppm

Reagent	Lot# / ID
Digestion Mixture	SW2A-02-205
0.04N H_2SO4	NA
H_3BO_3	SWR1-01-031
Distilling Soln.	SWD1-02-007

Comments:

Prepared By: CM

Standard Added By:

Checked By: CM

8067

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E061

METHOD 365.2
TOTAL PHOSPHORUS

One (1) water sample was received on 05/07/08 for Total Phosphorus analysis by Method 365.2 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Sample E061-01 was analyzed for duplicate. %RPD was within QC limit.

5. **Sample Analysis**

   Sample was analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 365.2
TOTAL PHOSPHORUS

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	POE005WB	ND	1	NA	0.100	0.0200	05/12/0818:51	05/09/0816:00	POE00512	POE00508	POE005W	NA	05/09/08
LCS1W	POE005WL	0.507	1	NA	0.100	0.0200	05/12/0818:51	05/09/0816:00	POE00513	POE00508	POE005W	NA	05/09/08
LCD1W	POE005WC	0.524	1	NA	0.100	0.0200	05/12/0818:52	05/09/0816:00	POE00514	POE00508	POE005W	NA	05/09/08
TT-MW2-17D	E061-01	0.107	1	NA	0.100	0.0200	05/12/0818:53	05/09/0816:00	POE00515	POE00508	POE005W	05/07/0811:50	05/07/08
TT-MW2-17DDUP	E061-01D	0.105	1	NA	0.100	0.0200	05/12/0818:53	05/09/0816:00	POE00516	POE00508	POE005W	05/07/0811:50	05/07/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: POE005WL/C

DATE RECEIVED: 05/09/08
DATE EXTRACTED: 05/09/08 16:00
DATE ANALYZED: 05/12/08 18:51/18:52

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Phosphorus	ND	0.500	0.507	101	0.500	0.524	105	3	80-120	20

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: WATER
% MOISTURE: NA

==========

BATCH NO.: 08E061
SAMPLE ID: TT-MW2-17DDUP
CONTROL NO.: E061-01D

DATE RECEIVED: 05/07/08
DATE EXTRACTED: 05/09/08 16:00
DATE ANALYZED: 05/12/08 18:53

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
Phosphorus	0.107	0.105	2	20

ANALYSIS RUN LOG
for
PHOSPHORUS

ICAL stock conc. 10 ppm	ICAL stock exp Date: 11/1/08
ICV/LCS/MS stock conc: 10 ppm	ICV/LCS/MS exp Date: 11/1/08

Book #: A70-PO-006A

Instrument No.: 70

Analytical Batch: PO E005

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

SOP #	Rev. #
☒ EMAX-365.2	3
☐ EMAX-	

STANDARDS ID	aliquot (mL) in 50 final vol.	CONC. (mg/L)
S0 Nanopure	0	0.0
S1 Suz-01-440	0.25	0.05
S2	0.5	0.10
S3	1.0	0.20
S4	2.5	0.50
S5	3.5	0.70
S6	5.0	1.00
ICV/LCS/MS Suz-01-441	2.5	0.5
CCV Suz-01-440	2.5	0.5

Prep Date: 5/12/08 Exp Date: 5/12/08

REAGENT	ID
Ammonium Persulfate	Su7A-06-233
Coloring Reagent	SuP1-02-66
H_2SO_4, 5 N	SuP1-02-63
H_2SO_4, 11 N	SuP1-01-305
NaOH, ~~1.N~~ 20%	SuP1-02-45

Analyzed By: CJJ

Date: 5/12/08

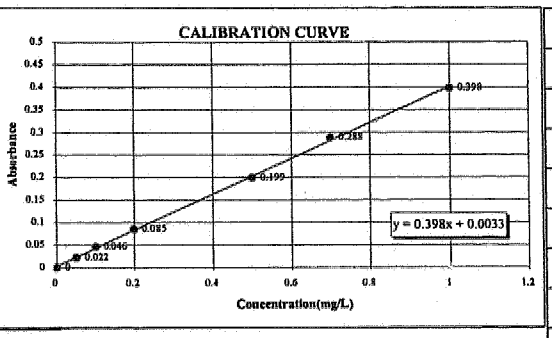
EMAX LABORATORIES, INC.

PHOSPHORUS ANALYSIS

Instrument ID: 70 **Book #:** A70-PO-006 **Page:** 13

SOP: EMAX-365.2 Rev. 3 **Calibration Reference:** 70PO08E12 **Analytical Batch:** POE005

ICAL	mg/L
S0	0
S1	0.05
S2	0.1
S3	0.2
S4	0.5
S5	0.7
S6	1



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.02 mg/L	0.1 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	0.5 mg/L	5 mg/Kg	80-120 %
MS/MSD	0.5 mg/L	5 mg/Kg	75-125 %
ICV	0.5 mg/L		80-120%
CCV	0.5 mg/L		80-120%
STD LOW	0.1 mg/L		80-120%
STD HIGH	0.8 mg/L		80-120%

r (Coeff. Correl.)= 0.99969 ✓ CF= 2.512782142 Y= 0.00832 ✓ $FC = [(A * CF) - Y] * DF$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
POE00501	S0	650nm	0 a	05/12/08	18:49:05	0	1	-0.008323981	mg/L	20	ml	20
POE00502	S1	650nm	0.022 a	05/12/08	18:49:15	0	1	0.046957237	mg/L	20	ml	20
POE00503	S2	650nm	0.046 a	05/12/08	18:49:26	0	1	0.107263998	mg/L	20	ml	20
POE00504	S3	650nm	0.085 a	05/12/08	18:49:36	0	1	0.205262502	mg/L	20	ml	20
POE00505	S4	650nm	0.199 a	05/12/08	18:49:47	0	1	0.491719666	mg/L	20	ml	20
POE00506	S5	650nm	0.288 a	05/12/08	18:50:01	0	1	0.715357276	mg/L	20	ml	20
POE00507	S6	650nm	0.398 a	05/12/08	18:50:10	0	1	0.991763312	mg/L	20	ml	20
POE00508	ICV	650nm	0.205 a	05/12/08	18:50:20	0	1	0.506796359	mg/L	20	ml	20
POE00509	ICB	650nm	0 a	05/12/08	18:50:30	0	1	-0.008323981	mg/L	20	ml	20
POE00510	STD LOW ✓	650nm	0.045 a	05/12/08	18:50:41	0	1	0.104751216	mg/L	20	ml	20
POE00511	STD HIGH ✓	650nm	0.334 a	05/12/08	18:51:06	0	1	0.830945255	mg/L	20	ml	20
POE00512	POE005WB ✓	650nm	0 a	05/12/08	18:51:40	0	1	-0.008323981	mg/L	20	ml	20
POE00513	POE005WL ✓	650nm	0.205 a	05/12/08	18:51:50	0	1	0.506796359	mg/L	20	ml	20
POE00514	POE005WC ✓	650nm	0.212 a	05/12/08	18:52:00	0	1	0.524385834	mg/L	20	ml	20
POE00515	E061-01 ✓	650nm	0.046 a	05/12/08	18:53:06	0	1	0.107263998	mg/L	20	ml	20
POE00516	E061-01D ✓	650nm	0.045 a	05/12/08	18:53:24	0	1	0.104751216	mg/L	20	ml	20
POE00517	CCV1	650nm	0.2 a	05/12/08	18:53:49	0	1	0.494232448	mg/L	20	ml	20
POE00518	CCB1	650nm	0 a	05/12/08	18:53:59	0	1	-0.008323981	mg/L	20	ml	20

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

Analyzed by: CR

EXTRACTION LOG FOR PHOSPHORUS

Method ☐ Distillation: EMAX_____ - Rev. No.___ ☒ Digestion: EMAX 365.2 - Rev. No.___ ☐ Book # A70-PO-006B

Matrix: W Start Date: 5/9/08 Time: 16:00 End Date: 5/12/08 Time: 13:15

PREPARATION BATCH * PO E005

Sample Prep ID	Lab Sample ID	Sample Amount ~~(g)~~ wL	Extraction Solution (ml)	Notes
01	S-0.1	50	50	
02	S-0.8	↓	↓	
03	PO E005 WB			
04	↓ WL			
05	↓ WC			
06	E061-01			
07	↓ -01D	↓	↓	
08				
09				
10				
11				
12				
13				
14				
15				
16			CM	
17				
18			5/9/08	
19				
20				
21				
22				
23				
24				
25				
26				

Calibration of pH meter		
Buffer ID	Value	Reading
	7	
	4	
Slope		
pH meter ID		

Reagents			
Reagents	Lot #	Amount (ml)	Final Volume (ml)
H_2SO_4	SWP1-01-305	1	50
$(NH_4)S_2O_3$	SW7A-06-237	0.4g	
pH		Exp. Date	
Rotary Agitator #		rpm	

Room Temperature (°C)			
High	Low	Thermostat Setting	Criteria
			20-40

Comments:

Prepared By: CM

Checked By:

Extracts Received By: CM

Disposed by: Disposal Date:

8074

CASE NARRATIVE

CLIENT: **TETRA TECH, INC.**

PROJECT: **LMC BEAUMONT SITE 2**

SDG: **08E061**

METHOD 365.2
ORTHO-PHOSPHATE

One (1) water sample was received on 05/07/08 for Ortho-phosphate analysis by Method 365.2 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Sample E061-01 was analyzed for duplicate. %RPD was within QC limit.

5. **Sample Analysis**

   Sample was analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 365.2
Ortho-PHOSPHATE

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I70

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	POE003WB	ND	1	NA	0.100	0.0200	05/08/0813:53	NA	POE00310	POE00308	POE003W	NA	NA
LCS1W	POE003WL	0.502	1	NA	0.100	0.0200	05/08/0813:53	NA	POE00311	POE00308	POE003W	NA	NA
LCD1W	POE003WC	0.500	1	NA	0.100	0.0200	05/08/0813:54	NA	POE00312	POE00308	POE003W	NA	NA
TT-MW2-17D	E061-01	0.126	1	NA	0.100	0.0200	05/08/0813:54	NA	POE00313	POE00308	POE003W	05/07/0811:50	05/07/08
TT-MW2-17DDUP	E061-01D	0.121	1	NA	0.100	0.0200	05/08/0813:54	NA	POE00314	POE00308	POE003W	05/07/0811:50	05/07/08
TT-MW2-17DMS	E061-01M	0.648	1	NA	0.100	0.0200	05/08/0813:54	NA	POE00315	POE00308	POE003W	05/07/0811:50	05/07/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: POE003WL/C

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 05/08/08 13:53/13:54

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Phosphorus	ND	0.500	0.502	100	0.500	0.500	100	0	80-120	20

8077

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061 DATE RECEIVED: 05/07/08
SAMPLE ID: TT-MW2-17DDUP DATE EXTRACTED: NA
CONTROL NO.: E061-01D DATE ANALYZED: 05/08/08 13:54

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
Phosphorus	0.126	0.121	4	20

8978

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 365.2
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061 DATE RECEIVED: 05/07/08
SAMPLE ID: TT-MW2-17DMS DATE EXTRACTED: NA
CONTROL NO.: E061-01M DATE ANALYZED: 05/08/08 13:54

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	QC LIMIT (%)
Phosphorus	0.126	0.500	0.648	104	75-125

8976

ANALYSIS RUN LOG
for
PHOSPHORUS

~~Total~~ Ortho cm 5/8/08

ICAL stock conc. 10 ppm	ICAL stock exp Date: 11/1/08
ICV/LCS/MS stock conc: 10 ppm	ICV/LCS/MS exp Date: 11/1/08

Book #: A70-PO-006A

Instrument No.: 70

Analytical Batch: ~~POE004~~ POE003 cm 5/8/08

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

SOP #	Rev. #
☒ EMAX-365.2	3
☐ EMAX-	

STANDARDS ID	aliquot (mL) in 20 ~~50~~ final vol. cm 5/8/08	CONC. (mg/L)
S0 nanopure	0	0.0
S1 SW2-01-440	~~0.25~~ 0.1	0.05
S2	~~0.5~~ 0.2	0.10
S3	~~1.0~~ 0.4	0.20
S4	~~2.5~~ 1.0	0.50
S5	~~2.5~~ 1.4	0.70
S6	~~5.0~~ 2.0	1.00
ICV/LCS/MS SW2-01-441	~~2.5~~ 1.0	0.5
CCV SW2-01-440	~~2.5~~ 1.0	0.5

cm 5/8/08

Prep Date: 5/8/08 Exp Date: 5/8/08

REAGENT	ID
Ammonium Persulfate	NA
Coloring Reagent	SWP1-02-57
H_2SO_4, 5 N	SWP1-02-27
H_2SO_4, 11 N	NA
NaOH, 1 N	NA

Analyzed By: CJ.

Date: 5/8/08

8080

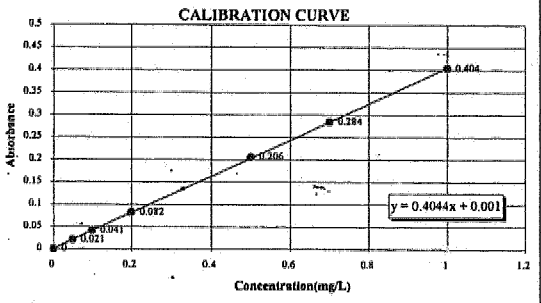
EMAX LABORATORIES, INC.

PHOSPHORUS ANALYSIS

Instrument ID: 70 Book #: A70-PO-004 Page: 11

SOP: EMAX-365.2 Rev. 3 Calibration Reference: 08PO70E8 Analytical Batch: POE003

ICAL	mg/L
S0	0
S1	0.05
S2	0.1
S3	0.2
S4	0.5
S5	0.7
S6	1



PARAMETER	WATER	SOIL	Method Requirement
MDL	0.02 mg/L	0.1 mg/Kg	≤ 1/2 RL
RL	0.1 mg/L	1 mg/Kg	≥ 2 MDL
LCS/LCD	0.5 mg/L	5 mg/Kg	80-120 %
MS/MSD	0.5 mg/L	5 mg/Kg	75-125 %
ICV	0.5 mg/L		80-120%
CCV	0.5 mg/L		80-120%
STD LOW	0.1 mg/L		80-120%
STD HIGH	0.8 mg/L		80-120%

r (Coeff. Correl.)= 0.99996 ✓ CF= 2.472847763 Y= 0.00240 ✓ $FC = [(A * CF) - Y] * DF$

Data File Name	Lab Sample ID	λ	Absorbance	DATE mm/dd/yy	TIME hh:mm:ss	Sample Background	DF	FC	Unit	Sample Amount	Unit	Final Volume
POE00301	S0	650NM	0 A	05/08/08	13:51:57	0	1	-0.002402283	mg/L	20	ml	20
POE00302	S1	650NM	0.021 A	05/08/08	13:52:08	0	1	0.04952752	mg/L	20	ml	20
POE00303	S2	650NM	0.041 A	05/08/08	13:52:18	0	1	0.098984476	mg/L	20	ml	20
POE00304	S3	650NM	0.082 A	05/08/08	13:52:26	0	1	0.200371234	mg/L	20	ml	20
POE00305	S4	650NM	0.206 A	05/08/08	13:52:37	0	1	0.507004357	mg/L	20	ml	20
POE00306	S5	650NM	0.284 A	05/08/08	13:52:46	0	1	0.699886482	mg/L	20	ml	20
POE00307	S6	650NM	0.404 A	05/08/08	13:52:57	0	1	0.996628214	mg/L	20	ml	20
POE00308	ICV	650NM	0.203 A	05/08/08	13:53:10	0	1	0.499585813	mg/L	20	ml	20
POE00309	ICB	650NM	0 A	05/08/08	13:53:22	0	1	-0.002402283	mg/L	20	ml	20
	STD LOW											
	STD HIGH											
POE00310	POE003WB ✓	650NM	0 A	05/08/08	13:53:33	0	1	-0.002402283	mg/L	20	ml	20
POE00311	POE003WL ✓	650NM	0.204 A	05/08/08	13:53:55	0	1	0.502058661	mg/L	20	ml	20
POE00312	POE003WC ✓	650NM	0.203 A	05/08/08	13:54:05	0	1	0.499585813	mg/L	20	ml	20
POE00313	E061-01 ✓	650NM	0.052 A	05/08/08	13:54:16	0	1	0.126185801	mg/L	20	ml	20
POE00314	E061-01D ✓	650NM	0.05 A	05/08/08	13:54:25	0	1	0.121240106	mg/L	20	ml	20
POE00315	E061-01M ✓	650NM	0.263 A	05/08/08	13:54:43	0	1	0.647956679	mg/L	20	ml	20
POE00316	CCV1	650NM	0.207 A	05/08/08	13:55:45	0	1	0.509477204	mg/L	20	ml	20
POE00317	CCB1	650NM	0 A	05/08/08	13:55:56	0	1	-0.002402283	mg/L	20	ml	20

CF= Calibration Factor
FC= Found Concentration
DF=Dilution Factor(factored in FC)

Analyzed by: BOB1

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E061

METHOD 415.1
TOTAL ORGANIC CARBON

One (1) water sample was received on 5/7/08 for Total Organic Carbon analysis by Method 415.1 in accordance with "Method for Chemical Analysis of Water and Wastewater", EPA 600/4-79-020 (1983).

1. **Holding Time**

   Analysis met holding time criteria.

2. **Method Blank**

   Method blank was free of contamination at the reporting limit.

3. **Lab Control Sample/Lab Control Sample Duplicate**

   Lab control results were within QC limit.

4. **Duplicate**

   Sample E061-01 was analyzed for Duplicate. % RPD was within QC limits.

5. **Matrix Spike**

   Sample E061-01 was designated for MS. % Recovery was within QC limits.

6. **Sample Analysis**

   Samples were analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 415.1
TOC

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I62

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
LCS1W	TCE007WL	23.6	1	NA	1.00	0.500	05/09/0817:55	NA	TCE006-33	TCE006-26	TCE007W	NA	NA
LCD1W	TCE007WC	23.8	1	NA	1.00	0.500	05/09/0818:08	NA	TCE006-34	TCE006-26	TCE007W	NA	NA
MBLK1W	TCE007WB	ND	1	NA	1.00	0.500	05/09/0818:20	NA	TCE006-35	TCE006-26	TCE007W	NA	NA
TT-MW2-17D	E061-01	2.62	1	NA	1.00	0.500	05/09/0820:42	NA	TCE006-46	TCE006-38	TCE007W	05/07/0811:50	05/07/08
TT-MW2-17DDUP	E061-01D	2.61	1	NA	1.00	0.500	05/09/0820:53	NA	TCE006-47	TCE006-38	TCE007W	05/07/0811:50	05/07/08
TT-MW2-17DMS	E061-01M	26.7	1	NA	1.00	0.500	05/09/0821:05	NA	TCE006-48	TCE006-38	TCE007W	05/07/0811:50	05/07/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E061
METHOD: METHOD 415.1

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	TCE007WB	TCE007WL	TCE007WC		
LAB FILE ID:	TCE006-35	TCE006-33	TCE006-34		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	05/09/0818:20	05/09/0817:55	05/09/0818:08	DATE RECEIVED:	NA
PREP. BATCH:	TCE007W	TCE007W	TCE007W		
CALIB. REF:	TCE006-26	TCE006-26	TCE006-26		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
TOC	ND	25.0	23.6	94	25.0	23.8	95	1	80-120	20

8981

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E061
METHOD: METHOD 415.1

MATRIX:	WATER		% MOISTURE:	NA
DILUTION FACTOR:	1	1		
SAMPLE ID:	TT-MW2-17D			
LAB SAMP ID:	E061-01	E061-01M		
LAB FILE ID:	TCE006-46	TCE006-48		
DATE EXTRACTED:	NA	NA	DATE COLLECTED:	05/07/08 11:50
DATE ANALYZED:	05/09/0820:42	05/09/0821:05	DATE RECEIVED:	05/07/08
PREP. BATCH:	TCE007W	TCE007W		
CALIB. REF:	TCE006-38	TCE006-38		

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	QC LIMIT (%)
TOC	2.62	25.0	26.7	96	75-125

EMAX QUALITY CONTROL DATA
DUPLICATE SAMPLE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
BATCH NO.: 08E061
METHOD: METHOD 415.1

MATRIX:	WATER		% MOISTURE:	NA
DILUTION FACTOR:	1	1		
SAMPLE ID:	TT-MW2-17D			
EMAX SAMP ID:	E061-01	E061-01D		
LAB FILE ID:	TCE006-46	TCE006-47		
DATE EXTRACTED:	NA	NA	DATE COLLECTED:	05/07/08 11:50
DATE ANALYZED:	05/09/0820:42	05/09/0820:53	DATE RECEIVED:	05/07/08
PREP. BATCH:	TCE007W	TCE007W		
CALIB. REF:	TCE006-38	TCE006-38		

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	DUPL RSLT (mg/L)	RPD RSLT %	QC LIMIT (%)
TOC	2.62	2.61	0	20

EMAX LABORATORIES, INC.

ANALYSIS LOG
for
TOC

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

Start Date/Time: 5/9/08 9:19

Stop Date/Time: 5/10/08 01:24

TCE006W: E807, E049, E059, E014

TCE007W: E062, E061, E073

TCE008S: E041

All water samples had a pH<2.

Book #: A62-011

Instrument No.: 62

Analytical Sequence: TCE006

Method File: TCE006

Analytical Batch: TCE006W, TCE007W, TCE008S

SOP #	Rev. #
☐ EMAX-415.1	1
☑ EMAX-9060	1
☐ EMAX-	

STANDARDS ID		CONC. (mg/L)
S0	Nanopure	0
S1	SW10B-01-903	1
S2		5
S3		10
S4		40
S5		80
S6	—	—
ICV/LCS	SW10B-01-904	25
CCV	SW10B-01-905	25

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ TOC	
☐	

Analyzed By: KS

Date: 5/9/08

	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result
1	Standard	NPOC	ICAL	TCE006-1	0A-123456-000	C:\Program	1.000	
2	Control	NPOC	ICV	TCE006-2	0A-123456-000	C:\Program	1.000	NPOC:23.77 mg/
3	Unknown	NPOC	ICB	TCE006-3	0A-123456-000	C:\Program	1.000	NPOC:0.1736 mg
4	Unknown	NPOC	HCO3\CO3	TCE006-4	0A-123456-000	C:\Program	1.000	NPOC:0.2217 mg
5	Unknown	NPOC	TCE006WB	TCE006-5	0A-123456-000	C:\Program	1.000	NPOC:0.1663 mg
6	Unknown	NPOC	TCE006WL	TCE006-6	0A-123456-000	C:\Program	1.000	NPOC:23.46 mg/
7	Unknown	NPOC	TCE006WC	TCE006-7	0A-123456-000	C:\Program	1.000	NPOC:23.44 mg/
8	Unknown	NPOC	08E807-01	TCE006-8	0A-123456-000	C:\Program	1.000	NPOC:1.969 mg/
9	Unknown	NPOC	08E049-01	TCE006-9	0A-123456-000	C:\Program	1.000	NPOC:8.462 mg/
10	Unknown	NPOC	08E049-02	TCE006-10	0A-123456-000	C:\Program	1.000	NPOC:14.94 mg/
11	Unknown	NPOC	08E049-03	TCE006-11	0A-123456-000	C:\Program	1.000	NPOC:19.80 mg/
12	Unknown	NPOC	08E049-04	TCE006-12	0A-123456-000	C:\Program	1.000	NPOC:129.5 mg/
13	Unknown	NPOC	08E049-05	TCE006-13	0A-123456-000	C:\Program	1.000	NPOC:11.00 mg/
14	Control	NPOC	CCV1	TCE006-14	0A-123456-000	C:\Program	1.000	NPOC:24.76 mg/
15	Unknown	NPOC	CCB1	TCE006-15	0A-123456-000	C:\Program	1.000	NPOC:0.1805 mg
16	Unknown	NPOC	08E049-06	TCE006-16	0A-123456-000	C:\Program	1.000	NPOC:5.869 mg/
17	Unknown	NPOC	08E049-06D	TCE006-17	0A-123456-000	C:\Program	1.000	NPOC:5.945 mg/
18	Unknown	NPOC	08E049-06M	TCE006-18	0A-123456-000	C:\Program	1.000	NPOC:29.68 mg/
19	Unknown	NPOC	08E059-01	TCE006-19	0A-123456-000	C:\Program	1.000	NPOC:6.901 mg/
20	Unknown	NPOC	08E059-02	TCE006-20	0A-123456-000	C:\Program	1.000	NPOC:4.142 mg/
21	Unknown	NPOC	08E059-03	TCE006-21	0A-123456-000	C:\Program	1.000	NPOC:5.788 mg/
22	Unknown	NPOC	08E059-04	TCE006-22	0A-123456-000	C:\Program	1.000	NPOC:4.422 mg/
23	Unknown	NPOC	08E059-05	TCE006-23	0A-123456-000	C:\Program	1.000	NPOC:8.526 mg/
24	Unknown	NPOC	08E059-06	TCE006-24	0A-123456-000	C:\Program	1.000	NPOC:5.501 mg/
25	Unknown	NPOC	08E059-07	TCE006-25	0A-123456-000	C:\Program	1.000	NPOC:10.75 mg/
26	Control	NPOC	CCV2	TCE006-26	0A-123456-000	C:\Program	1.000	NPOC:24.86 mg/
27	Unknown	NPOC	CCB2	TCE006-27	0A-123456-000	C:\Program	1.000	NPOC:0.2698 mg
28	Unknown	NPOC	08E059-08	TCE006-28	0A-123456-000	C:\Program	1.000	NPOC:8.703 mg/
29	Unknown	NPOC	08E814-01	TCE006-29	0A-123456-000	C:\Program	1.000	NPOC:2.120 mg/
30	Unknown	NPOC	08E814-02	TCE006-30	0A-123456-000	C:\Program	1.000	NPOC:1.658 mg/
31	Unknown	NPOC	08E049-05	TCE006-31	0A-123456-000	C:\Program	1.000	NPOC:10.79 mg/
32	Unknown	NPOC	08E049-04	TCE006-32	0A-123456-000	C:\Program	10.00	NPOC:78.97 mg/
33	Unknown	NPOC	TCE007WL	TCE006-33	0A-123456-000	C:\Program	1.000	NPOC:23.61 mg/
34	Unknown	NPOC	TCE007WC	TCE006-34	0A-123456-000	C:\Program	1.000	NPOC:23.77 mg/
35	Unknown	NPOC	TCE007WB	TCE006-35	0A-123456-000	C:\Program	1.000	NPOC:0.08432 m
36	Unknown	NPOC	08E062-06	TCE006-36	0A-123456-000	C:\Program	1.000	NPOC:424.1 mg/
37	Unknown	NPOC	08E062-07	TCE006-37	0A-123456-000	C:\Program	1.000	NPOC:745.6 mg/
38	Control	NPOC	CCV3	TCE006-38	0A-123456-000	C:\Program	1.000	NPOC:25.01 mg/
39	Unknown	NPOC	CCB3	TCE006-39	0A-123456-000	C:\Program	1.000	NPOC:0.000 mg/
40	Unknown	NPOC	08E062-01	TCE006-40	0A-123456-000	C:\Program	200.0	NPOC:3568 mg/L
41	Unknown	NPOC	08E062-02	TCE006-41	0A-123456-000	C:\Program	200.0	NPOC:5450 mg/L
42	Unknown	NPOC	08E062-03	TCE006-42	0A-123456-000	C:\Program	200.0	NPOC:5664 mg/L
43	Unknown	NPOC	08E062-04	TCE006-43	0A-123456-000	C:\Program	200.0	NPOC:5799 mg/L
44	Unknown	NPOC	08E062-05	TCE006-44	0A-123456-000	C:\Program	200.0	NPOC:6544 mg/L
45	Unknown	NPOC	08E062-12	TCE006-45	0A-123456-000	C:\Program	200.0	NPOC:3402 mg/L
46	Unknown	NPOC	08E061-01	TCE006-46	0A-123456-000	C:\Program	1.000	NPOC:2.617 mg/
47	Unknown	NPOC	08E061-01D	TCE006-47	0A-123456-000	C:\Program	1.000	NPOC:2.614 mg/
48	Unknown	NPOC	08E061-01M	TCE006-48	0A-123456-000	C:\Program	1.000	NPOC:26.74 mg/
49	Unknown	NPOC	08E062-11	TCE006-49	0A-123456-000	C:\Program	200.0	NPOC:9266 mg/L
50	Control	NPOC	CCV4	TCE006-50	0A-123456-000	C:\Program	1.000	NPOC:24.74 mg/
51	Unknown	NPOC	CCB4	TCE006-51	0A-123456-000	C:\Program	1.000	NPOC:0.09052 m
52	Unknown	NPOC	08E073-01	TCE006-52	0A-123456-000	C:\Program	1.000	NPOC:10.74 mg/
53	Unknown	NPOC	08E073-02	TCE006-53	0A-123456-000	C:\Program	1.000	NPOC:8.032 mg/
54	Unknown	NPOC	08E073-03	TCE006-54	0A-123456-000	C:\Program	1.000	NPOC:8.044 mg/
55	Unknown	NPOC	08E073-04	TCE006-55	0A-123456-000	C:\Program	1.000	NPOC:9.527 mg/
56	Unknown	NPOC	08E073-05	TCE006-56	0A-123456-000	C:\Program	1.000	NPOC:1.589 mg/
57	Unknown	NPOC	08E073-06	TCE006-57	0A-123456-000	C:\Program	1.000	NPOC:7.727 mg/
58	Unknown	NPOC	08E073-07	TCE006-58	0A-123456-000	C:\Program	1.000	NPOC:3.515 mg/
59	Unknown	NPOC	08E073-08	TCE006-59	0A-123456-000	C:\Program	1.000	NPOC:10.56 mg/
60	Unknown	NPOC	08E073-09	TCE006-60	0A-123456-000	C:\Program	1.000	NPOC:8.510 mg/
61	Control	NPOC	CCV5	TCE006-61	0A-123456-000	C:\Program	1.000	NPOC:25.21 mg/
62	Unknown	NPOC	CCB5	TCE006-62	0A-123456-000	C:\Program	1.000	NPOC:0.06028 m
63	Unknown	NPOC	TCE008SB	TCE006-63	0A-123456-000	C:\Program	1.000	NPOC:0.000 mg/
64	Unknown	NPOC	TCE008SL	TCE006-64	0A-123456-000	C:\Program	1.000	NPOC:23.84 mg/
65	Unknown	NPOC	TCE008SC	TCE006-65	0A-123456-000	C:\Program	1.000	NPOC:23.85 mg/
66	Unknown	NPOC	08E041-04	TCE006-66	0A-123456-000	C:\Program	1.000	NPOC:9.519 mg/
67	Unknown	NPOC	08E041-05	TCE006-67	0A-123456-000	C:\Program	1.000	NPOC:2.424 mg/

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	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result
68	Control	NPOC	CCV6	TCE006-68	0A-123456-000	C:\Program	1.000	NPOC:24.93 mg/
69	Unknown	NPOC	CCB6	TCE006-69	0A-123456-000	C:\Program	1.000	NPOC:0.09037 m
70								
71								
72								
73								
74								
75								
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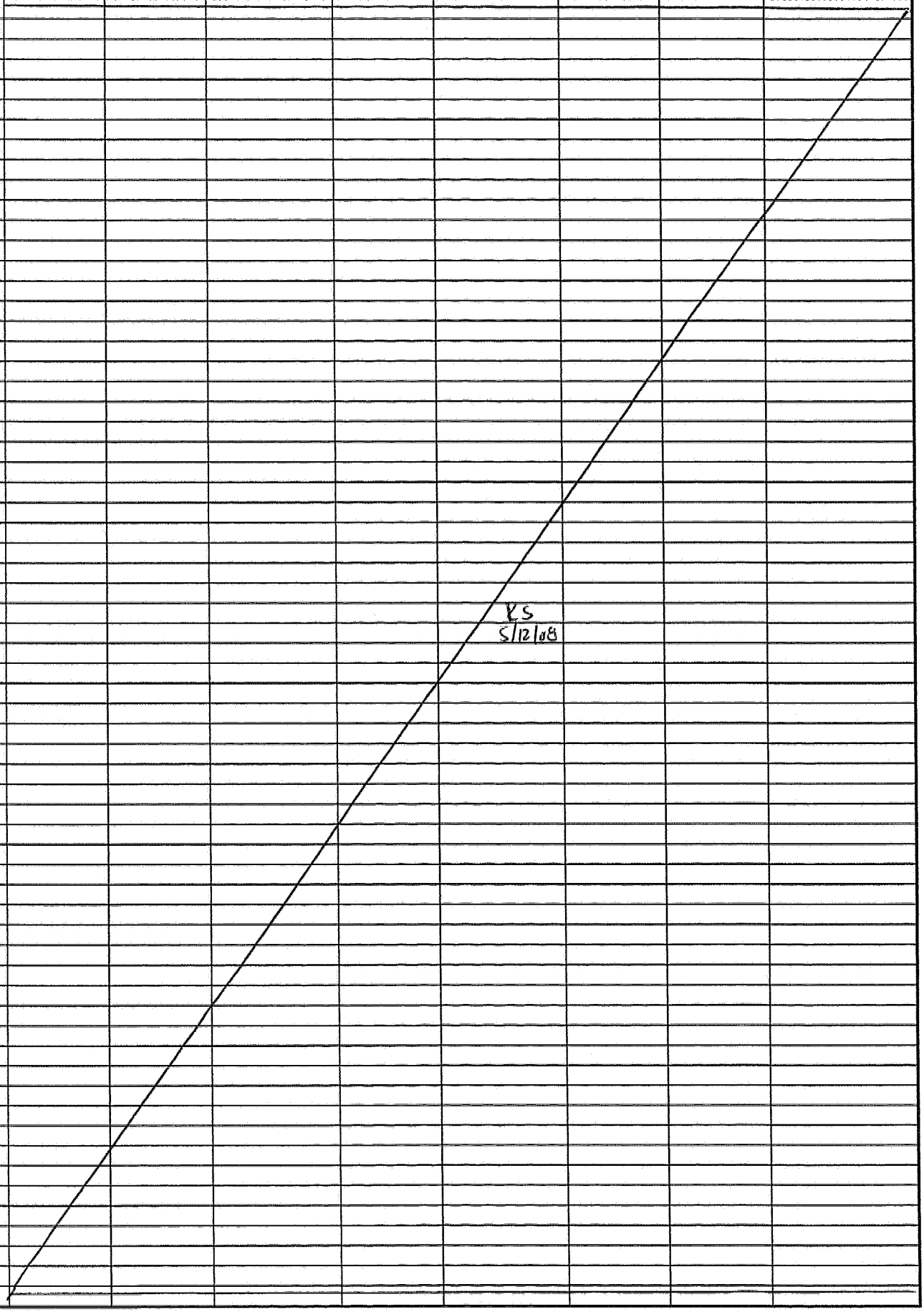


Instr.Information

System	toc
Detector	Combustion
Catalyst	Regular Sensitivity
Cell Length	long

Cal. Curve

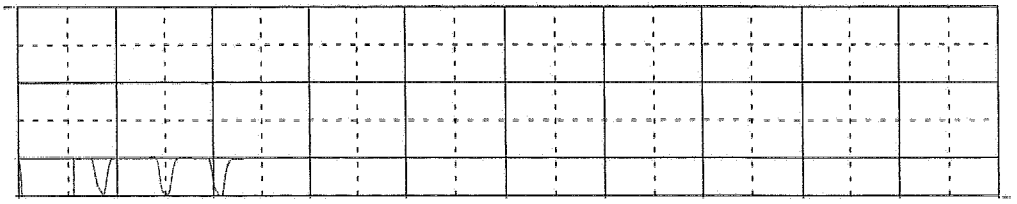
Sample Name:	ICAL
Sample ID:	TCE006-1
Cal. Curve:	tce006.2008_05_09_09_12_22.cal

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	0.4037	50uL	1	*******		05/09/08 09:19:40 AM
2	0.7119	50uL	1	*******		05/09/08 09:21:11 AM
3	0.4898	50uL	1	*******		05/09/08 09:22:26 AM
4	0.4673	50uL	1	*******		05/09/08 09:23:42 AM

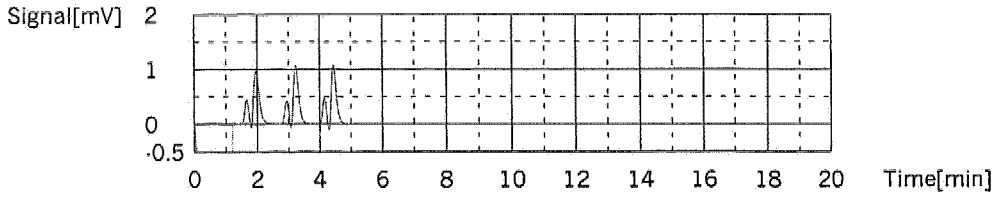
Acid Add.	2.500%
Sp. Time	90.00sec
Mean Area	0.5182



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1.526	50uL	10	*******		05/09/08 09:32:04 AM
2	1.493	50uL	10	*******		05/09/08 09:33:31 AM
3	1.531	50uL	10	*******		05/09/08 09:34:54 AM
4	1.523	50uL	10	*******		05/09/08 09:36:17 AM

Acid Add.	2.500%
Sp. Time	90.00sec
Mean Area	1.518

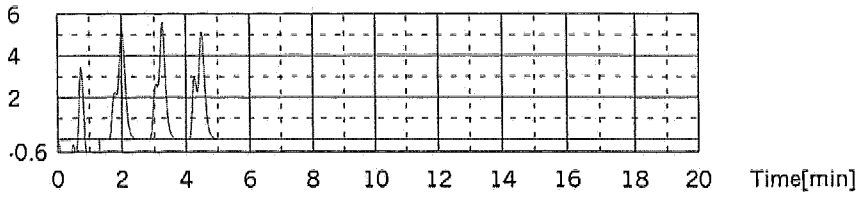


Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	9.595	50uL	2	*******		05/09/08 09:42:49 AM
2	9.839	50uL	2	*******		05/09/08 09:44:15 AM
3	9.989	50uL	2	*******		05/09/08 09:45:39 AM
4	9.988	50uL	2	*******		05/09/08 09:47:04 AM

8090

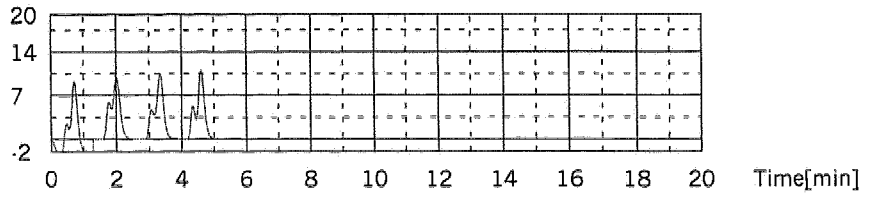
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 9.853



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	19.83	50uL	1	*******		05/09/08 09:52:53 AM
2	20.31	50uL	1	*******		05/09/08 09:54:21 AM
3	20.08	50uL	1	*******		05/09/08 09:55:48 AM
4	20.28	50uL	1	*******		05/09/08 09:57:15 AM

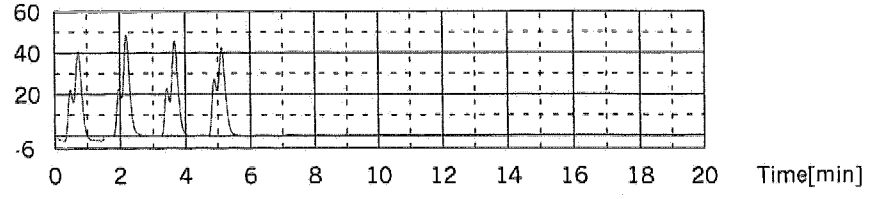
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 20.13



Conc: 40.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	85.77	50uL	2	*******		05/09/08 10:05:54 AM
2	87.35	50uL	2	*******		05/09/08 10:07:31 AM
3	86.81	50uL	2	*******		05/09/08 10:09:09 AM
4	88.31	50uL	2	*******		05/09/08 10:10:45 AM

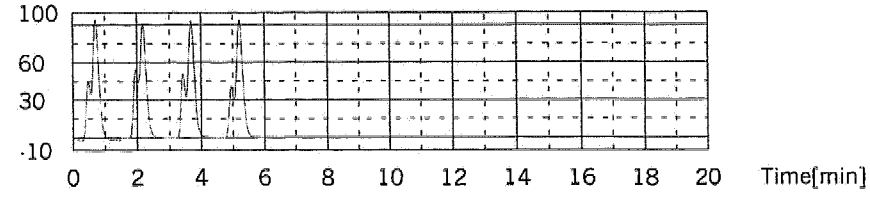
Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 87.06



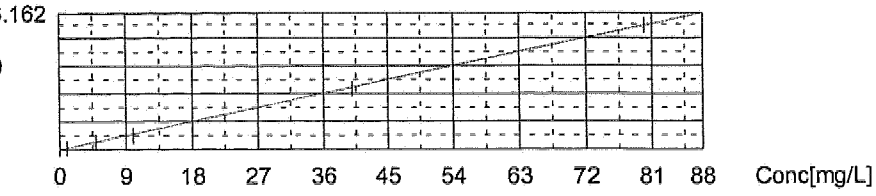
Conc: 80.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	176.2	50uL	1	*******		05/09/08 10:16:45 AM
2	177.8	50uL	1	*******		05/09/08 10:18:24 AM
3	180.3	50uL	1	*******		05/09/08 10:20:04 AM
4	177.8	50uL	1	*******		05/09/08 10:21:45 AM

Acid Add. 2.500%
Sp. Time 90.00sec
Mean Area 178.0



Slope: 2.229
Intercept 0.000
r^2 0.999779



8091

Control Sample

Sample Name: ICV
Sample ID: TCE006-2
Method: tce006.tpl
Chk. Result Control value: 23.77 / Control exceeds range!

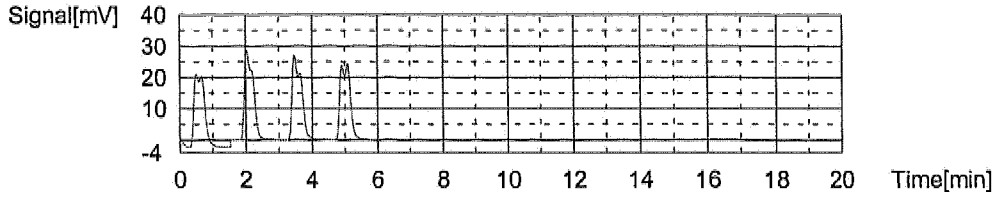
Type	Anal.	Dil.	Result
Control	NPOC	1.000	NPOC:23.77 mg/L

1. Det.

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	52.39	23.50mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:30:00 AM
2	53.07	23.81mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:31:36 AM
3	53.47	23.99mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:33:12 AM
4	53.04	23.79mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:34:52 AM

Mean Area 52.99
Mean Conc. 23.77mg/L



Sample

Sample Name: ICB
Sample ID: TCE006-3
Origin: tce006.cal
Chk. Result

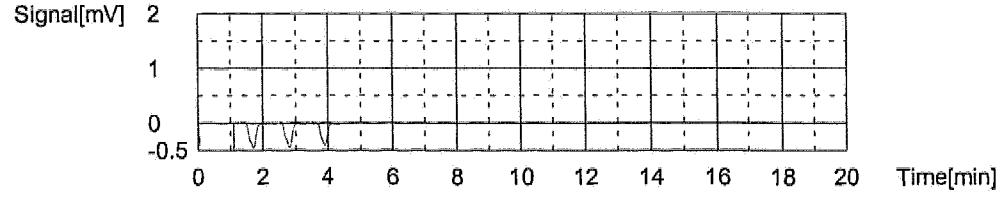
Type	Anal.	Dil.	Result
Unknown	NPOC	1.000	NPOC:0.1736 mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.3357	0.1506mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:42:26 AM
2	0.4256	0.1909mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:43:42 AM
3	0.4184	0.1877mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:44:58 AM
4	0.3679	0.1650mg/L	50uL	1		tce006.2008_05_09_09_12_22.cal	05/09/08 10:46:13 AM

Mean Area 0.3869
Mean Conc. 0.1736mg/L



	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result
1	Standard	NPOC	ICAL		0A-123456-000	C:\Program	1.000	
2	Control	NPOC	ICV		0A-123456-000	C:\Program	1.000	
3	Unknown	NPOC	ICB		0A-123456-000	C:\Program	1.000	
4	Unknown	NPOC	HCO3\CO3		0A-123456-000	C:\Program	1.000	
5	Unknown	NPOC	TCE006WB		0A-123456-000	C:\Program	1.000	
6	Unknown	NPOC	TCE006WL		0A-123456-000	C:\Program	1.000	
7	Unknown	NPOC	TCE006WC		0A-123456-000	C:\Program	1.000	
8	Unknown	NPOC	08E807-01		0A-123456-000	C:\Program	1.000	
9	Unknown	NPOC	08E049-01		0A-123456-000	C:\Program	1.000	
10	Unknown	NPOC	08E049-02		0A-123456-000	C:\Program	1.000	
11	Unknown	NPOC	08E049-03		0A-123456-000	C:\Program	1.000	
12	Unknown	NPOC	08E049-04		0A-123456-000	C:\Program	1.000	
13	Unknown	NPOC	08E049-05		0A-123456-000	C:\Program	1.000	
14	Control	NPOC	CCV1		0A-123456-000	C:\Program	1.000	
15	Unknown	NPOC	CCB1		0A-123456-000	C:\Program	1.000	
16	Unknown	NPOC	08E049-06		0A-123456-000	C:\Program	1.000	
17	Unknown	NPOC	08E049-06D		0A-123456-000	C:\Program	1.000	
18	Unknown	NPOC	08E049-06M		0A-123456-000	C:\Program	1.000	
19	Unknown	NPOC	08E059-01		0A-123456-000	C:\Program	1.000	
20	Unknown	NPOC	08E059-02		0A-123456-000	C:\Program	1.000	
21	Unknown	NPOC	08E059-03		0A-123456-000	C:\Program	1.000	
22	Unknown	NPOC	08E059-04		0A-123456-000	C:\Program	1.000	
23	Unknown	NPOC	08E059-05		0A-123456-000	C:\Program	1.000	
24	Unknown	NPOC	08E059-06		0A-123456-000	C:\Program	1.000	
25	Unknown	NPOC	08E059-07		0A-123456-000	C:\Program	1.000	
26	Control	NPOC	CCV2		0A-123456-000	C:\Program	1.000	
27	Unknown	NPOC	CCB2		0A-123456-000	C:\Program	1.000	
28	Unknown	NPOC	08E059-08		0A-123456-000	C:\Program	1.000	
29	Unknown	NPOC	08E814-01		0A-123456-000	C:\Program	1.000	
30	Unknown	NPOC	08E814-02		0A-123456-000	C:\Program	1.000	
31	Unknown	NPOC	08E049-05		0A-123456-000	C:\Program	1.000	
32	Unknown	NPOC	08E049-04		0A-123456-000	C:\Program	10.00	
33	Unknown	NPOC	TCE007WL		0A-123456-000	C:\Program	1.000	
34	Unknown	NPOC	TCE007WC		0A-123456-000	C:\Program	1.000	
35	Unknown	NPOC	TCE007WB		0A-123456-000	C:\Program	1.000	
36	Unknown	NPOC	08E062-06		0A-123456-000	C:\Program	1.000	
37	Unknown	NPOC	08E062-07		0A-123456-000	C:\Program	1.000	
38	Control	NPOC	CCV3		0A-123456-000	C:\Program	1.000	
39	Unknown	NPOC	CCB3		0A-123456-000	C:\Program	1.000	
40	Unknown	NPOC	08E062-01		0A-123456-000	C:\Program	200.0	
41	Unknown	NPOC	08E062-02		0A-123456-000	C:\Program	200.0	
42	Unknown	NPOC	08E062-03		0A-123456-000	C:\Program	200.0	
43	Unknown	NPOC	08E062-04		0A-123456-000	C:\Program	200.0	
44	Unknown	NPOC	08E062-05		0A-123456-000	C:\Program	200.0	
45	Unknown	NPOC	08E062-12		0A-123456-000	C:\Program	200.0	
46	Unknown	NPOC	08E061-01		0A-123456-000	C:\Program	1.000	
47	Unknown	NPOC	08E061-01D		0A-123456-000	C:\Program	1.000	
48	Unknown	NPOC	08E061-01M		0A-123456-000	C:\Program	1.000	
49	Unknown	NPOC	08E062-11		0A-123456-000	C:\Program	200.0	
50	Control	NPOC	CCV4		0A-123456-000	C:\Program	1.000	
51	Unknown	NPOC	CCB4		0A-123456-000	C:\Program	1.000	
52	Unknown	NPOC	08E073-01		0A-123456-000	C:\Program	1.000	
53	Unknown	NPOC	08E073-02		0A-123456-000	C:\Program	1.000	
54	Unknown	NPOC	08E073-03		0A-123456-000	C:\Program	1.000	
55	Unknown	NPOC	08E073-04		0A-123456-000	C:\Program	1.000	
56	Unknown	NPOC	08E073-05		0A-123456-000	C:\Program	1.000	
57	Unknown	NPOC	08E073-06		0A-123456-000	C:\Program	1.000	
58	Unknown	NPOC	08E073-07		0A-123456-000	C:\Program	1.000	
59	Unknown	NPOC	08E073-08		0A-123456-000	C:\Program	1.000	
60	Unknown	NPOC	08E073-09		0A-123456-000	C:\Program	1.000	
61	Control	NPOC	CCV5		0A-123456-000	C:\Program	1.000	
62	Unknown	NPOC	CCB5		0A-123456-000	C:\Program	1.000	
63	Unknown	NPOC	TCE008SB		0A-123456-000	C:\Program	1.000	
64	Unknown	NPOC	TCE008SL		0A-123456-000	C:\Program	1.000	
65	Unknown	NPOC	TCE008SC		0A-123456-000	C:\Program	1.000	
66	Unknown	NPOC	08E041-04		0A-123456-000	C:\Program	1.000	
67	Unknown	NPOC	08E041-05		0A-123456-000	C:\Program	1.000	

	Type	Analysis	Sample Name	Sample ID	ObjectID	Origin	Dilution	Result
68	Control	NPOC	CCV6		0A-123456-000	C:\Program	1.000	
69	Unknown	NPOC	CCB6		0A-123456-000	C:\Program	1.000	
70								
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KS
5/9/08

8094

CASE NARRATIVE

CLIENT: TETRA TECH, INC.

PROJECT: LMC BEAUMONT SITE 2

SDG: 08E061

METHOD 2320B
ALKALINITY

One (1) water sample was received on 05/07/08 for Bicarbonate, Carbonate and Total Alkalinity analysis by Method 2320B in accordance with "Standard Methods for the Examination of Water and Wastewater", 18th edition (1990).

1. Holding Time

Analysis met holding time criteria.

2. Method Blank

Method blank was free of contamination at the reporting limit.

3. Lab Control Sample/Lab Control Sample Duplicate

Lab control results were within QC limit.

4. Duplicate

Sample E061-01 was analyzed for duplicate. %RPDs were within QC limit.

5. Sample Analysis

Sample was analyzed according to the prescribed QC procedures. All criteria were met.

METHOD 2320B
BICARBONATE ALKALINITY

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : 153

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ALE004WB	ND	1	NA	5.00	1.00	05/09/0811:34	NA	ALE00401	NA	ALE004W	NA	NA
TT-MW2-17D	E061-01	97.5	1	NA	5.00	1.00	05/09/0811:43	NA	ALE00404	NA	ALE004W	05/07/0811:50	05/07/08
TT-MW2-17DDUP	E061-01D	95.0	1	NA	5.00	1.00	05/09/0811:45	NA	ALE00405	NA	ALE004W	05/07/0811:50	05/07/08

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 2320B
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061 DATE RECEIVED: 05/07/08
SAMPLE ID: TT-MW2-17DDUP DATE EXTRACTED: NA
CONTROL NO.: E061-01D DATE ANALYZED: 05/09/08 11:45

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
Bicarbonate Alkalinity	97.5	95.0	3	20

0697

METHOD 2320B
CARBONATE ALKALINITY

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I53

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ALE004WB	ND	1	NA	5.00	1.00	05/09/0811:34	NA	ALE00401	NA	ALE004W	NA	NA
TT-MW2-17D	E061-01	ND	1	NA	5.00	1.00	05/09/0811:43	NA	ALE00404	NA	ALE004W	05/07/0811:50	05/07/08
TT-MW2-17DDUP	E061-01D	ND	1	NA	5.00	1.00	05/09/0811:45	NA	ALE00405	NA	ALE004W	05/07/0811:50	05/07/08

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 2320B
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061 DATE RECEIVED: 05/07/08
SAMPLE ID: TT-MW2-17DDUP DATE EXTRACTED: NA
CONTROL NO.: E061-01D DATE ANALYZED: 05/09/08 11:45

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
Carbonate Alkalinity	ND	ND	0	20

8999

METHOD 2320B
TOTAL ALKALINITY

Client : TETRA TECH, INC.
Project : LMC BEAUMONT SITE 2
Batch No. : 08E061

Matrix : WATER
Instrument ID : I53

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ALE004WB	ND	1	NA	5.00	1.00	05/09/0811:34	NA	ALE00401	NA	ALE004W	NA	NA
LCS1W	ALE004WL	193	1	NA	5.00	1.00	05/09/0811:37	NA	ALE00402	NA	ALE004W	NA	NA
LCD1W	ALE004WC	198	1	NA	5.00	1.00	05/09/0811:41	NA	ALE00403	NA	ALE004W	NA	NA
TT-MW2-17D	E061-01	97.5	1	NA	5.00	1.00	05/09/0811:43	NA	ALE00404	NA	ALE004W	05/07/0811:50	05/07/08
TT-MW2-17DDUP	E061-01D	95.0	1	NA	5.00	1.00	05/09/0811:45	NA	ALE00405	NA	ALE004W	05/07/0811:50	05/07/08

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 2320B
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: ALE004WL/C

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 05/09/08 11:37/11:41

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Total Alkalinity	ND	186	193	104	186	198	106	3	80-120	20

8151

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: TETRA TECH, INC.
PROJECT: LMC BEAUMONT SITE 2
METHOD: METHOD 2320B
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 08E061
SAMPLE ID: TT-MW2-17DDUP
CONTROL NO.: E061-01D

DATE RECEIVED: 05/07/08
DATE EXTRACTED: NA
DATE ANALYZED: 05/09/08 11:45

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
Total Alkalinity	97.5	95.0	3	20

0192

ANALYSIS RUN LOG
for
ALKALINITY

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

MS/MSD amount of spike:

Book #: AAL-021

Instrument No.: ☑ 53 ☐ 97

Analytical Batch: 08ALE004

SOP #	Rev. #
☑ EMAX-310.1	3
☑ EMAX-2320B	1
☐ EMAX-	

STANDARDS ID	CONC. (mg/L)
LCS SWI-01-079	186
MS/MSD NA	
ICV NA	
0.02N HCL SWR1-01-065	0.02N

pH Buffer	ID
pH 4	SWI-01-086
pH 7	SWI-01-096
pH 10	SWI-01-073
pH Check	SWI-01-057

Analyzed By: [signature] / RM

Date: 5-09-08

8103

EMAX LABORATORIES, INC.

ALKALINITY RAW DATA

MISCELLANEOUS INFORMATION		
Standard	Concentration	
Acid Titrant, HCl	0.02	*N*
Na_2CO_3 (Zor Z_N)*	2.63	*g/L*
LCS	186	*mg/L*
MS	66.25	*mg/L*
MDL	1	*mg/L*
RL	5	*mg/L*

pH Meter Calibration			
Instrument ID:		53	
Buffer 4	3.99	05/09/08	11:30:41
Buffer 7	7.01	05/09/08	11:31:37
Buffer 10	10	05/09/08	11:32:36
pH Check Buffer	8.03	05/09/08	11:33:43

STANDARDIZATION				
V_{Na2CO3} / V_b (ml)	V_{HCl} (ml)	DATE	TIME	Acid Titrant HCl (N)
5				NA
5				#DIV/0!
5				#DIV/0!
5				#DIV/0!
			Average HCl (N)=	0.02000

☑ Acid Titrant is purchased as certified standard solution

Book #: AAL-021

Page: 37

SOP: EMAX-310.1 Rev. 3

Analytical Batch: 08ALE004

Analyzed By: VV

Data File Name	Lab Sample ID	Sample Amount (ml)	Sample pH	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Volume of Acid Titant *(A) ml* pH=8.3	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Volume of Acid Titant *(B) ml* pH=4.5	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Volume of Acid Titant (C) *ml* pH=4.2	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	Final pH	Analysis Date mm:dd:yy	Analysis Time hh:mm:ss	NOTES
08ALE0041	ALE004WB	100	5.93	05/09/08	11:33:49	NA	05/09/08	11:34:03	0.05	05/09/08	11:34:40	NA	05/09/08	11:34:44	4.53	05/09/08	11:34:48	
08ALE004-2	ALE004WL	20	8.95	05/09/08	11:35:38	NA	05/09/08	11:35:41	3.85	05/09/08	11:37:12	NA	05/09/08	11:37:18	4.52	05/09/08	11:37:23	
08ALE004-3	ALE004WC	20	8.92	05/09/08	11:38:10	NA	05/09/08	11:38:13	3.95	05/09/08	11:40:52	NA	05/09/08	11:40:56	4.49	05/09/08	11:41:01	
08ALE004-4	E061-01	20	7.69	05/09/08	11:41:38	NA	05/09/08	11:41:46	1.95	05/09/08	11:43:14	NA	05/09/08	11:43:16	4.48	05/09/08	11:43:21	
08ALE004-5	E061-01D	20	7.71	05/09/08	11:44:16	NA	05/09/08	11:44:19	1.9	05/09/08	11:45:29	NA	05/09/08	11:45:32	4.47	05/09/08	11:45:38	
08ALE004-6	E049-01	20	7.75	05/09/08	12:02:54	NA	05/09/08	12:02:56	9.35	05/09/08	12:06:50	NA	05/09/08	12:06:55	4.46	05/09/08	12:06:59	
08ALE004-7	E049-02	5	8.01	05/09/08	12:07:36	NA	05/09/08	12:07:39	3.5	05/09/08	12:09:36	NA	05/09/08	12:09:39	4.49	05/09/08	12:09:44	
08ALE004-8	E049-03	5	8.16	05/09/08	12:10:22	NA	05/09/08	12:10:25	5.3	05/09/08	12:13:21	NA	05/09/08	12:13:24	4.48	05/09/08	12:13:31	
08ALE004-9	E049-04	5	6.86	05/09/08	12:14:18	NA	05/09/08	12:14:20	6	05/09/08	12:17:08	NA	05/09/08	12:17:12	4.5	05/09/08	12:17:17	
08ALE004-10	E049-05	5	7.45	05/09/08	12:18:25	NA	05/09/08	12:18:28	4.2	05/09/08	12:21:38	NA	05/09/08	12:21:41	4.53	05/09/08	12:21:45	
08ALE004-11	E049-06	5	7.75	05/09/08	12:22:25	NA	05/09/08	12:22:30	2.6	05/09/08	12:24:02	NA	05/09/08	12:24:06	4.51	05/09/08	12:24:09	
08ALE004-12	E807-01	20	7.44	05/09/08	12:25:33	NA	05/09/08	12:25:35	3.75	05/09/08	12:28:25	NA	05/09/08	12:28:29	4.47	05/09/08	12:28:33	
08ALE004-13	E805-01	20	7.26	05/09/08	12:29:46	NA	05/09/08	12:29:53	3.45	05/09/08	12:31:43	NA	05/09/08	12:31:46	4.52	05/09/08	12:31:51	
08ALE004-14	E805-02	20	7.25	05/09/08	12:34:22	NA	05/09/08	12:34:25	3.45	05/09/08	12:37:16	NA	05/09/08	12:37:20	4.49	05/09/08	12:37:24	
08ALE004-15	E805-03	20	7.34	05/09/08	12:38:25	NA	05/09/08	12:38:29	3.75	05/09/08	12:41:10	NA	05/09/08	12:41:12	4.48	05/09/08	12:41:15	
08ALE004-16	D928-01	20	7.21	05/09/08	13:17:10	NA	05/09/08	13:17:13	3.8	05/09/08	13:19:24	NA	05/09/08	13:19:27	4.47	05/09/08	13:19:31	
08ALE004-17	D928-02	20	7.08	05/09/08	13:21:02	NA	05/09/08	13:21:05	3.5	05/09/08	13:24:23	NA	05/09/08	13:24:25	4.49	05/09/08	13:24:29	
08ALE004-18	D928-03	20	7.23	05/09/08	13:26:28	NA	05/09/08	13:26:31	3.5	05/09/08	13:30:03	NA	05/09/08	13:30:07	4.52	05/09/08	13:30:12	
08ALE004-19	D928-04	20	7.19	05/09/08	13:31:28	NA	05/09/08	13:31:34	3.55	05/09/08	13:34:28	NA	05/09/08	13:34:32	4.47	05/09/08	13:34:36	
08ALE004-20	D928-05	20	7.22	05/09/08	13:36:05	NA	05/09/08	13:36:09	3.15	05/09/08	13:39:17	NA	05/09/08	13:39:20	4.49	05/09/08	13:39:26	
08ALE004-21	D928-06	20	7.27	05/09/08	13:41:36	NA	05/09/08	13:41:42	3.25	05/09/08	13:44:05	NA	05/09/08	13:44:09	4.48	05/09/08	13:44:16	
08ALE004-22	D928-07	20	7.2	05/09/08	13:47:27	NA	05/09/08	13:47:34	3.5	05/09/08	13:50:17	NA	05/09/08	13:50:24	4.52	05/09/08	13:50:30	

5-06-08

Comments:

Standardization of Acid Titrant (*N*)

$$N = \frac{(Z)(V_{Na2CO3})}{(53)(V_{HCl})} \qquad N = \frac{(Z_N)(V_{Na2CO3})}{(V_{HCl})}$$

Z=g/L Na_2CO_3. If the concentration of Na_2CO_3 is in N, then Z=Z_N

ALKALINITY REPORT FORM

08ALE004

EMAX LABORATORIES, INC.

SOP: EMAX-310.1 Rev. 3

Start Date/Time: 5/9/08 11:30 End Date/Time: 5/9/08 13:50

Book #: AAL-021

Page: 37

Data File Name	Lab Sample ID	Sample Amount (ml)	Volume of Acid Titant (A) ml pH=8.3	Volume of Acid Titant (B) ml pH=4.5	Volume of Acid Titant (C) ml pH=4.2	ALKALINITY (mg/L) TOTAL[P]	TOTAL[T]	[OH]	[CO_3]	[HCO_3]	NOTES
08ALE0041	ALE004WB	100	NA	0.05	NA	ND	ND	ND	ND	ND	
08ALE004-2	ALE004WL	20	NA	3.85	NA	ND	193	ND	ND	193	
08ALE004-3	ALE004WC	20	NA	3.95	NA	ND	198	ND	ND	198	
08ALE004-4	E061-01	20	NA	1.95	NA	ND	97.5	ND	ND	97.5	
08ALE004-5	E061-01D	20	NA	1.9	NA	ND	95	ND	ND	95	
08ALE004-6	E049-01	20	NA	9.35	NA	ND	468	ND	ND	468	
08ALE004-7	E049-02	5	NA	3.5	NA	ND	700	ND	ND	700	
08ALE004-8	E049-03	5	NA	5.3	NA	ND	1060	ND	ND	1060	
08ALE004-9	E049-04	5	NA	6	NA	ND	1200	ND	ND	1200	
08ALE004-10	E049-05	5	NA	4.2	NA	ND	840	ND	ND	840	
08ALE004-11	E049-06	5	NA	2.6	NA	ND	520	ND	ND	520	
08ALE004-12	E807-01	20	NA	3.75	NA	ND	188	ND	ND	188	
08ALE004-13	E805-01	20	NA	3.45	NA	ND	173	ND	ND	173	
08ALE004-14	E805-02	20	NA	3.45	NA	ND	173	ND	ND	173	
08ALE004-15	E805-03	20	NA	3.75	NA	ND	188	ND	ND	188	
08ALE004-16	D928-01	20	NA	3.8	NA	ND	190	ND	ND	190	
08ALE004-17	D928-02	20	NA	3.5	NA	ND	175	ND	ND	175	
08ALE004-18	D928-03	20	NA	3.5	NA	ND	175	ND	ND	175	
08ALE004-19	D928-04	20	NA	3.55	NA	ND	178	ND	ND	178	
08ALE004-20	D928-05	20	NA	3.15	NA	ND	158	ND	ND	158	
08ALE004-21	D928-06	20	NA	3.25	NA	ND	163	ND	ND	163	
08ALE004-22	D928-07	20	NA	3.5	NA	ND	175	ND	ND	175	

5/09/08

TITRANT HCl (N)=	0.02000

MISCELLANEOUS INFORMATION		
Standard	Concentration	
Acid Titrant, HCl	0.02	N
Na_2CO_3 (Zor Z_N)*	2.63	g/L
LCS	186	mg/L
MS	66.25	mg/L
MDL	1	mg/L
RL	5	mg/L

ALKALINITY (mg/L)

$$P = \frac{(A)(N)(50,000)}{S}$$

$$T = \frac{(2B-C)(N)(50,000)}{S} \quad for\ T < 20\ mg/L$$

$$T = \frac{(B)(N)(50,000)}{S} \quad for\ T > 20\ mg/L$$

Comments:

Sample Duplicate		
Sample ID	Result	RPD
E061-01	97.5	3%
E061-01D	95	

Total Alkalinity MS Recovery		
Sample ID	Result	Rec.
RPD		

Total Alkalinity LCS Recovery			
Sample ID	Result	Rec.	RPD
ALE004WL	193	104%	3%
ALE004WC	198	106%	
Comments: Standardization of Acid Titrant (N)			

Analyzed by: VV / RM

8105

LABORATORY REPORT FOR

TETRA TECH, INC.

LMC BEAUMONT SITE 2

SULFUR, TOTAL

SDG#: 08E061

Ye Myint

From: Evans, Russell [Russell.Evans@testamericainc.com]
Sent: Friday, May 30, 2008 9:30 AM
To: Ye Myint
Subject: G8E090356

Here are the results of your project performed at TestAmerica.

RUSSELL EVANS
Data Technician

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

880 Riverside Parkway
West Sacramento, Ca 95605
Vox 916.373.5600 | Fax 916.812.7357
www.testamericainc.com

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

May 29, 2008

TestAmerica Project Number: G8E090356
PO/Contract: TT_0610 / 08E061

Ye Myint
EMAX Laboratories Inc
1835 205th Street
Torrance, CA 90501

Dear Mr. Myint,

This report contains the analytical results for the sample received under chain of custody by TestAmerica on May 9, 2008. This sample is associated with your LMC Beaumont Site 2 project.

The test results in this report meet all NELAC requirements for parameters that accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916) 374-4442.

Sincerely,

Karen Sellers

Karen M. Sellers
Project Manager

Table of Contents

TestAmerica West Sacramento Project Number G8E090356

Case Narrative

Quality Assurance Program

Sample Description Information

Chain of Custody Documentation

WATER, 6010B, Sulfur
Sample: 1
- Sample Data Sheet
- Method Blank Report
- Laboratory QC Reports

Case Narrative

TestAmerica West Sacramento Project Number G8E090356

There are no anomalies associated with this project.

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ACCREDITED IN ACCORDANCE WITH nelac

TestAmerica Laboratories West Sacramento Certifications/Accreditations

Certifying State	Certificate #	Certifying State	Certificate #
Alaska	UST-055	New York*	11666
Arizona	AZ0616	Oregon*	CA 200005
Arkansas	04-067-0	Pennsylvania	68-1272
California*	01119CA	South Carolina	87014002
Colorado	NA	Texas	TX 270-2004A
Connecticut	PH-0691	Utah*	QUAN1
Florida*	E87570	Virginia	00178
Georgia	960	Washington	C087
Hawaii	NA	West Virginia	9930C, 334
Kansas*	E10375	Wisconsin	998204680
Louisiana*	01944	NFESC	NA
Michigan	9947	USACE	NA
Nevada	CA44	USDA Foreign Plant	37-82605
New Jersey*	CA005	USDA Foreign Soil	S-46613

*NELAP accredited. A more detailed parameter list is available upon request. Updated 9/21/07

QC Parameter Definitions

QC Batch: The QC batch consists of a set of up to 20 field samples that behave similarly (i.e., same matrix) and are processed using the same procedures, reagents, and standards at the same time.

Method Blank: An analytical control consisting of all reagents, which may include internal standards and surrogates, and is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background contamination.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD): An aliquot of blank matrix spiked with known amounts of representative target analytes. The LCS (and LCSD as required) is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. If an LCSD is performed, it may also be used to evaluate the precision of the process.

Duplicate Sample (DU): Different aliquots of the same sample are analyzed to evaluate the precision of an analysis.

Surrogates: Organic compounds not expected to be detected in field samples, which behave similarly to target analytes. These are added to every sample within a batch at a known concentration to determine the efficiency of the sample preparation and analytical process.

Matrix Spike and Matrix Spike Duplicate (MS/MSD): An MS is an aliquot of a matrix fortified with known quantities of specific compounds and subjected to an entire analytical procedure in order to indicate the appropriateness of the method for a particular matrix. The percent recovery for the respective compound(s) is then calculated. The MSD is a second aliquot of the same matrix as the matrix spike, also spiked, in order to determine the precision of the method.

Isotope Dilution: For isotope dilution methods, isotopically labeled analogs (internal standards) of the native target analytes are spiked into the sample at time of extraction. These internal standards are used for quantitation, and monitor and correct for matrix effects. Since matrix effects on method performance can be judged by the recovery of these analogs, there is little added benefit of performing MS/MSD for these methods. MS/MSD are only performed for client or QAPP requirements.

Control Limits: The reported control limits are either based on laboratory historical data, method requirements, or project data quality objectives. The control limits represent the estimated uncertainty of the test results.

Sample Summary

TestAmerica West Sacramento Project Number G8E090356

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
KMX8T	1	TT-MW2-17D	5/7/2008 11:50 AM	5/9/2008 09:30 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

CHAIN OF CUSTODY

EMAX LABORATORIES INC.
Tel#: 310-618-8889 FAX#: 310-618-0818
email: info@emaxlabs.com

EMAX CONTROL NO	08E061
PROJECT CODE	TT_0610_
TURN-AROUND-TIME	15

SEND REPORT TO:
EMAX LABORATORIES, INC.
1835 W. 205TH ST. CA 90501

ATTN: Ye

CLIENT: Tetra Tech. Inc.
PROJECT: LMC Beaumont Site 2

SEND SAMPLES TO:

TEST AMERICA/STL
880 Riverside Parkway
West Sacramento, CA 95605

EMAX Sample ID	Client Sample ID	Collection Date	CollectionTime	Matrix	Method		COMMENTS
E061-01	TT-MW2-17D	5/7/2008	11:50:00 AM	WATER	6010B	Sulfur, Total	

INSTRUCTION: A cross reference table for Client Sample ID and EMAX Sample ID must be included in the final report.

COOLER TEMPERATURE

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	5/8/08	1500	Cheng Vue	5/9/08	0930

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LOT RECEIPT CHECKLIST
TestAmerica West Sacramento

CLIENT EMAX PM ~~DA~~ FS LOG# 57908

LOT# (QUANTIMS ID) G8E090356 QUOTE# 79325 LOCATION W24A

		Initials	Date
DATE RECEIVED 5/9/08	TIME RECEIVED 0930	CV	5/9/08

DELIVERED BY
- ☑ FEDEX
- ☐ CA OVERNIGHT
- ☐ CLIENT
- ☐ AIRBORNE
- ☐ GOLDENSTATE
- ☐ DHL
- ☐ UPS
- ☐ BAX GLOBAL
- ☐ GO-GETTERS
- ☐ TAL COURIER
- ☐ VALLEY LOGISTICS
- ☐ MORGAN HILL COURIER
- ☐ OTHER

CUSTODY SEAL STATUS ☐ INTACT ☐ BROKEN ☑ N/A

CUSTODY SEAL #(S) _____

SHIPPPING CONTAINER(S) ☐ TAL ☑ CLIENT ☐ N/A

TEMPERTURE RECORD (IN °C) IR 4 ☑ 5 ☐ ☐ OTHER _____

COC #(S) NA

TEMPERATURE BLANK Observed: 2 Corrected: 2

SAMPLE TEMPERATURE

Observed: 3 Average: 3 Corrected Average: 4

COLLECTOR'S NAME: ☐ Verified from COC ☑ Not on COC

pH MEASURED ☐ YES ☐ ANOMALY ☑ N/A

LABELED BY.....

LABELS CHECKED BY.....

PEER REVIEW _____ ☑ NA

SHORT HOLD TEST NOTIFICATION

SAMPLE RECEIVING
- WETCHEM ☑ N/A
- VOA-ENCORES ☑ N/A

☐ METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL ☑ N/A

☑ COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH APPROPRIATE TEMPERATURES, CONTAINERS, PRESERVATIVES ☐ N/A

☐ CLOUSEAU ☐ TEMPERATURE EXCEEDED (2 °C – 6 °C)*1 ☑ N/A

☐ WET ICE ☐ BLUE ICE ☐ GEL PACK ☐ NO COOLING AGENTS USED ☐ PM NOTIFIED

Notes: _____

*1 Acceptable temperature range for State of Wisconsin samples is≤4°C.

LEAVE NO SPACES BLANK. USE "N/A" IF NOT APPLICABLE.

TestAmerica West Sacramento

TestAmerica

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Bottle Lot Inventory

Lot ID: G8E090356

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VOA*	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
VOAh*	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
AGB																				
AGBs																				
250AGB																				
250AGBs																				
250AGBn																				
500AGB																				
____AGJ																				
500AGJ																				
250AGJ																				
125AGJ																				
____CGJ																				
500CGJ																				
250CGJ																				
125CGJ																				
PJ																				
PJn																				
500PJ																				
500PJn																				
500PJna																				
500PJzn/na																				
250PJ																				
250PJn	1																			
250PJna																				
250PJzn/na																				
Acetate Tube																				
____"CT																				
Encore																				
Folder/filter																				
PUF																				
Petri/Filter																				
XAD Trap																				
Ziploc																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

h = hydrochloric acid s = sulfuric acid na = sodium hydroxide n = nitric acid zn = zinc acetate

Number of VOAs with air bubbles present / total number of VOA's

QA-185 5/05 EM

Page 3

LEAVE NO SPACES BLANK. USE "NA" IF NOT APPLICABLE.

WATER, Sulfur, 6010B

EMAX Laboratories Inc

Client Sample ID: TT-MW2-17D

TOTAL Metals

Lot-Sample #...: G8E090356-001 **Matrix.....:** WATER
Date Sampled...: 05/07/08 **Date Received..:** 05/09/08

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8137221						
Sulfur	**20.1**	**0.50**	**mg/L**	**SW846 6010B**	**05/16/08**	**KMX8T1AA**
		Dilution Factor: 1		MDL.....: 0.30		

QC DATA ASSOCIATION SUMMARY

G8E090356

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 6010B		8137221	8137112

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: G8E090356 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: G8E160000-221 **Prep Batch #...:** 8137221						
Sulfur	ND	0.50	mg/L	SW846 6010B	05/16/08	KNC1V1AT
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: G8E090356 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: G8E160000-221 **Prep Batch #...:** 8137221							
Sulfur	10.0	10.9	mg/L	109	SW846 6010B	05/16/08	KNC1V1AX
Dilution Factor: 1							

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: G8E090356 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: G8E160000-221 **Prep Batch #...:** 8137221					
Sulfur	109	(80 - 120)	SW846 6010B	05/16/08	KNC1V1AX
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: G8E090356 **Matrix.....:** WATER
Date Sampled...: 05/05/08 **Date Received..:** 05/05/08

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: G8E050202-002 **Prep Batch #...:** 8137221									
Sulfur									
	2.5	10.0	13.5	mg/L	110		SW846 6010B	05/16/08	KMKXM1CA
	2.5	10.0	13.1	mg/L	106	2.6	SW846 6010B	05/16/08	KMKXM1CC

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: G8E090356 **Matrix.....:** WATER
Date Sampled...: 05/05/08 **Date Received..:** 05/05/08

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: G8E050202-002 **Prep Batch #...:** 8137221							
Sulfur	110	(80 - 120)			SW846 6010B	05/16/08	KMKXM1CA
	106	(80 - 120)	2.6	(0-20)	SW846 6010B	05/16/08	KMKXM1CC

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

LABORATORY REPORT

Prepared For: Tetra Tech--San Bernardino
348 West Hospitality Lane Suite 100
San Bernardino, CA 92408
Attention: Thomas Villeneuve

Project: 22289-0201

Sampled: 04/17/08
Received: 04/18/08
Issued: 05/28/08 15:53

NELAP #01108CA California ELAP#1197 CSDLAC #10256

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

ADDITIONAL INFORMATION: This is a complete final report.

LABORATORY ID	CLIENT ID	MATRIX
IRD1831-01	SB2-7-15	Soil
IRD1831-02	SB2-7-15-DUP	Soil

Reviewed By:



TestAmerica Irvine

Kathleen A. Robb
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

Tetra Tech--San Bernardino
348 West Hospitality Lane Suite 100
San Bernardino, CA 92408
Attention: Thomas Villeneuve

Project ID: 22289-0201
Report Number: IRD1831

Sampled: 04/17/08
Received: 04/18/08

METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IRD1831-01 (SB2-7-15 - Soil)								
Reporting Units: meq/kg								
Cation Exchange Capacity	EPA 9081	8D28092	10	**210**	1	4/28/2008	4/28/2008	
Sample ID: IRD1831-02 (SB2-7-15-DUP - Soil)								
Reporting Units: meq/kg								
Cation Exchange Capacity	EPA 9081	8D28092	10	**180**	1	4/28/2008	4/28/2008	

TestAmerica Irvine

Kathleen A. Robb
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

Tetra Tech--San Bernardino
348 West Hospitality Lane Suite 100
San Bernardino, CA 92408
Attention: Thomas Villeneuve

Project ID: 22289-0201
Report Number: IRD1831

Sampled: 04/17/08
Received: 04/18/08

METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 8D28092 Extracted: 04/28/08										
Blank Analyzed: 04/28/2008 (8D28092-BLK1)										
Cation Exchange Capacity	ND	10	meq/kg							
Duplicate Analyzed: 04/28/2008 (8D28092-DUP1)					**Source: IRD1831-01**					
Cation Exchange Capacity	202	10	meq/kg		208			3	30	

TestAmerica Irvine

Kathleen A. Robb
Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

Tetra Tech--San Bernardino
348 West Hospitality Lane Suite 100
San Bernardino, CA 92408
Attention: Thomas Villeneuve

Project ID: 22289-0201
Report Number: IRD1831

Sampled: 04/17/08
Received: 04/18/08

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

TestAmerica Irvine

Kathleen A. Robb
Project Manager

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Attention: Thomas Villeneuve

Project ID: 22289-0201
Report Number: IRD1831

Sampled: 04/17/08
Received: 04/18/08

Certification Summary

TestAmerica Irvine

Method	Matrix	Nelac	California
EPA 9081	Soil	N/A	N/A

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

Subcontracted Laboratories

BioInsite Laboratories LLC

Analysis Performed: Outside Analysis
Samples: IRD1831-01, IRD1831-02

TestAmerica Irvine

Kathleen A. Robb
Project Manager

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TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: Test America

CHAIN OF CUSTODY RECORD

IRD1831

DATE 4/17/08 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LMC Bogart Site 2
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures)

TURN-AROUND TIME: Standard

PARAMETERS

LINE ITEM	SAMPLE NO.	DATE	TIME	Cation Exchange Capacity (CEC)	Perchlorate Reduction Bacteria Concentrate	PCR Plate Count Test	Living Components Test	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	OBSERVATIONS/COMMENTS
1.	SB2-7-15	4/17/08	1330	X	X		X	U	S	G	2	NR	
2.	SB2-7-15-Dup	4/17/08	1330	X	X		X	U	S	G	2	NR	
3.													
4.													
5.													
6.													
7.													
8.													
9.													
10.													

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil, M - Sediment, W - Water

CONTAINER TYPE: G - Glass Bottle/Jar, SS - Stainless Steel Sleeve, SB - Brass Sleeve, P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL, NR (None required), NaOH, H_2SO_4

AC 2030 4/21/08

RELINQUISHED BY	SIGNATURE	TETRA TECH, INC.	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 4
Christopher Pa			4/17/08	1500	
RECEIVED BY: Mike Hustin	SIGNATURE	COMPANY: TAI	DATE: 4/18/08	TIME: 1420	METHOD OF SHIPMENT/SHIPMENT NO.: Cuny
RELINQUISHED BY: Mike Hustin	SIGNATURE	COMPANY: TAI	DATE: 4/18/08	TIME: 1800	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY: TAI	DATE: 4/18/08	TIME: 1800	

DISTRIBUTION: White and Pink = Tetra Tech, Inc. Canary = Laboratory

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BIOINSITE LLC, POST OFFICE BOX 1503, MURPHYSBORO, ILLINOIS 62966

Tel. (618) 549 6868, Lab (618) 453-6605 Fax (618) 687-4801, URL: WWW.BIOINSITE.COM

Report date: May 15th, 2008

Report Number: 001-08-TestAm

Samples received on: Apr 22nd, 2008

Analyzed: 12 – 14th May, 2008

Samples stored at 4 °C

Samples analyzed by: Kelly Wrighton

Sample	presence of chlorite dismutase gene	Quantification**
sb2-7-15 IRD1831-01B	Positive*	9.3 x 10^3 cells/g**
sb2-7-15-DUP IRD1831-02 b	Positive	1.6 x 10^4 cells/g**

*Internal laboratory positive and negative control results were as expected.

**Limit of detection range: 2-50 cells/ml

**Enumeration results from the MPN calculation were within the associated 95% confidence index.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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LABORATORY REPORT

Prepared For: Tetra Tech--San Bernardino
348 West Hospitality Lane Suite 100
San Bernardino, CA 92408
Attention: Thomas Villeneuve

Project: Perchlorate Reducing Bacteria
22289-0201

Sampled: 05/05/08
Received: 05/06/08
Issued: 05/28/08 15:56

NELAP #01108CA California ELAP#1197 CSDLAC #10256

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

ADDITIONAL INFORMATION: This is a complete final report.

LABORATORY ID	CLIENT ID	MATRIX
IRE0459-01	15B-20'	Soil
IRE0459-02	15B-70'	Soil

Reviewed By:



TestAmerica Irvine

Kathleen A. Robb
Project Manager

TestAmerica
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Tetra Tech--San Bernardino
348 West Hospitality Lane Suite 100
San Bernardino, CA 92408
Attention: Thomas Villeneuve

Project ID: Perchlorate Reducing Bacteria
22289-0201
Report Number: IRE0459

Sampled: 05/05/08
Received: 05/06/08

METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IRE0459-01 (15B-20' - Soil)								
Reporting Units: meq/kg								
Cation Exchange Capacity	EPA 9081	8E07125	10	**160**	1	5/7/2008	5/9/2008	
Sample ID: IRE0459-02 (15B-70' - Soil)								
Reporting Units: meq/kg								
Cation Exchange Capacity	EPA 9081	8E07125	10	**120**	1	5/7/2008	5/9/2008	

TestAmerica Irvine

Kathleen A. Robb
Project Manager

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Tetra Tech--San Bernardino
348 West Hospitality Lane Suite 100
San Bernardino, CA 92408
Attention: Thomas Villeneuve

Project ID: Perchlorate Reducing Bacteria
22289-0201
Report Number: IRE0459

Sampled: 05/05/08
Received: 05/06/08

METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 8E07125 Extracted: 05/07/08										
Blank Analyzed: 05/09/2008 (8E07125-BLK1)										
Cation Exchange Capacity	ND	10	meq/kg							
Duplicate Analyzed: 05/09/2008 (8E07125-DUP1)					**Source: IRE0459-01**					
Cation Exchange Capacity	164	10	meq/kg		163			1	30	

TestAmerica Irvine

Kathleen A. Robb
Project Manager

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Tetra Tech--San Bernardino
348 West Hospitality Lane Suite 100
San Bernardino, CA 92408
Attention: Thomas Villeneuve

Project ID: Perchlorate Reducing Bacteria
22289-0201
Report Number: IRE0459

Sampled: 05/05/08
Received: 05/06/08

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

TestAmerica Irvine

Kathleen A. Robb
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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Tetra Tech--San Bernardino
348 West Hospitality Lane Suite 100
San Bernardino, CA 92408
Attention: Thomas Villeneuve

Project ID: Perchlorate Reducing Bacteria
22289-0201
Report Number: IRE0459

Sampled: 05/05/08
Received: 05/06/08

Certification Summary

TestAmerica Irvine

Method	Matrix	Nelac	California
EPA 9081	Soil	N/A	N/A

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

Subcontracted Laboratories

BioInsite Laboratories LLC

Analysis Performed: Outside Analysis
Samples: IRE0459-01, IRE0459-02

TestAmerica Irvine

Kathleen A. Robb
Project Manager

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348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: Test America

CHAIN OF CUSTODY RECORD

IRE0459

DATE 05/05/2008 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2 Source Area Columns & Microcosms
PROJECT MANAGER: Tom Villeneuve
TC #: 22289-0201
SAMPLERS (Signatures)

LINE ITEM	SAMPLE NO.	DATE	TIME	Cation Exchange Capacity (CEC)	Perchlorate Reducing Bacteria Count	Perchlorate Concentration (Plate Count)	Living Components Test (PCR)	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
1.	15B-20'	05/05/2008	1020	X	X	X		Un	S	G	6	NR
2.	15B-70'	05/05/2008	1330	X	X	X		Un	S	G	6	NR
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												

PARAMETERS

TURN-AROUND TIME: Standard

OBSERVATIONS/COMMENTS
*Biological samples to John Coates' Lab - Instruct them that we are working w/ Dr. Deshusses of UCR

SB 5.7.08
0525

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SS - Stainless Steel Sleeve; SB - Brass Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NaOH; NR (None required); H_2SO_4

RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 12
David Bertolacci		TETRA TECH, INC.	05/05/2008	1730	
RECEIVED BY: L. DeLacy	SIGNATURE: L. DeLacy	COMPANY: TEST AMERICA	DATE: 5/6/08	TIME: 0945	METHOD OF SHIPMENT/SHIPMENT NO.: Courier
RELINQUISHED BY: L. DeLacy	SIGNATURE: L. DeLacy	COMPANY: " "	DATE: 5/6/08	TIME: 1525	Special Shipping/Handling/Storage Requirements:
RECEIVED BY: Truong Nguyen	SIGNATURE: Truong Nguyen	COMPANY: TAI	DATE: 5/6/08	TIME: 1525	

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039

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Tel. (618) 549 6868, Lab (618) 453-6605 Fax (618) 687-4801, URL: WWW.BIOINSITE.COM

Report date: May 23rd, 2008

Report Number: 002-08-TestAm

Samples received on: May 8th, 2008

Analyzed: 20th – 23rd May, 2008

Samples stored at 4 ^{o}C

Samples analyzed by: Kelly Wrighton

Sample	presence of chlorite dismutase gene	Quantification**
SHZ-15B-70	Positive*	1.84 X 10^3 cells/g (95% CI: 5.28X10^2-6.48X10^3 cells/g) **
SHZ-15B-20	Positive	1.38 x10^2 cells/g (95% CI: 3.96x10^1-4.86x10^2 cells/g) **

*Internal laboratory positive and negative control results were as expected.

**Limit of detection range: 2-50 cells/ml

**Enumeration results from the MPN calculation were within the associated 95% confidence index.

Centrum Analytical Laboratories
Certified Hazardous Waste Testing Mobile & In House Laboratories

Microbac

Client: Tetra Tech, Inc.
348 W. Hospitality Lane, Ste. 100
San Bernardino, CA 92408-3216

Date Sampled: 05/16/08
Date Received: 05/16/08
Job Number: 31384

Project: LMC Beaumont Site 2 / Wolfskill

CASE NARRATIVE

The following information applies to samples which were received on 05/16/08:

The samples were received at the laboratory directly from the field and were cooled to 4ºC upon arrival. The sample containers were intact.

The Perchlorate analysis was subcontracted to ELAP Lab #1230. The original report is attached to, but is not part of, this report.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 05/22/08.

Report approved by:

Robert R. Clark, PhD
Technical Director

ELAP Lab# 2419, 2479, 2527, 2373, 2562, 2122

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.

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Centrum Analytical Laboratories

Microbac

Metals by EPA 6010B and EPA 7470A

Client:	Tetra Tech, Inc.	Date Sampled:	05/16/08
Project:	LMC Beaumont Site 2 / Wolfskill	Date Received:	05/16/08
Job No:	31384	Date Digested:	05/16/08
Matrix:	Water	Date Analyzed:	05/16-19/08
Analyst:	TLB	Batch Number:	6010W4325
			7470W1759

		Sample ID:	Blank	IDW1-051608	IDW4-051608
Metals	**Method #**	**RL**	mg/L	mg/L	mg/L
Antimony	6010B	0.10	ND	ND	ND
Arsenic	6010B	0.020	ND	**0.030**	ND
Barium	6010B	0.010	ND	**0.122**	**0.068**
Beryllium	6010B	0.010	ND	ND	ND
Cadmium	6010B	0.010	ND	ND	ND
Chromium	6010B	0.010	ND	**0.042**	ND
Cobalt	6010B	0.010	ND	**0.017**	ND
Copper	6010B	0.020	ND	**0.103**	**0.024**
Lead	6010B	0.020	ND	**0.022**	ND
Molybdenum	6010B	0.10	ND	ND	ND
Nickel	6010B	0.020	ND	**0.042**	ND
Selenium	6010B	0.10	ND	ND	ND
Silver	6010B	0.040	ND	ND	ND
Thallium	6010B	0.20	ND	ND	ND
Vanadium	6010B	0.10	ND	ND	ND
Zinc	6010B	0.20	ND	**0.765**	ND
Mercury	7470A	0.0004	ND	ND	ND

Centrum Analytical Laboratories

Microbac

QC Sample Report - Metals by EPA 6010B and EPA 7470A

Sample Matrix: Water

Metals by EPA 6010B

Analytical Batch #: 6010W4325
Spike Sample ID: Laboratory Control Sample
MS/MSD Sample ID: 31379-1

Analytical Notes:

	Batch Accuracy Results:				Batch Precision Results:				
Compound	Spike Concentration (mg/L)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail	MS Sample Result (mg/L)	MSD Sample Result (mg/L)	Relative Percent Difference (RPD)	RPD Acceptance Limits	Pass/Fail
Antimony	1.0	**104**	75 - 125	**Pass**	1.02	1.04	**2%**	20%	**Pass**
Arsenic	1.0	**104**	75 - 125	**Pass**	0.99	1.00	**1%**	20%	**Pass**
Barium	1.0	**104**	75 - 125	**Pass**	1.00	1.01	**0%**	20%	**Pass**
Beryllium	1.0	**98**	75 - 125	**Pass**	0.93	0.92	**0%**	20%	**Pass**
Cadmium	1.0	**93**	75 - 125	**Pass**	0.88	0.89	**2%**	20%	**Pass**
Chromium	1.0	**103**	75 - 125	**Pass**	0.97	0.98	**1%**	20%	**Pass**
Cobalt	1.0	**96**	75 - 125	**Pass**	0.89	0.90	**2%**	20%	**Pass**
Copper	1.0	**100**	75 - 125	**Pass**	1.00	0.99	**2%**	20%	**Pass**
Lead	1.0	**94**	75 - 125	**Pass**	0.86	0.89	**3%**	20%	**Pass**
Molybdenum	1.0	**99**	75 - 125	**Pass**	0.90	0.92	**2%**	20%	**Pass**
Nickel	1.0	**95**	75 - 125	**Pass**	0.94	0.95	**1%**	20%	**Pass**
Selenium	1.0	**100**	75 - 125	**Pass**	0.87	0.91	**4%**	20%	**Pass**
Silver	1.0	**99**	75 - 125	**Pass**	0.38	0.38	**1%**	20%	**Pass**
Thallium	1.0	**90**	75 - 125	**Pass**	0.76	0.83	**9%**	20%	**Pass**
Vanadium	1.0	**102**	75 - 125	**Pass**	0.96	0.97	**1%**	20%	**Pass**
Zinc	1.0	**99**	75 - 125	**Pass**	1.05	1.07	**2%**	20%	**Pass**

Mercury by EPA 7470A

Batch Number: 7471S1759
Spike Sample ID: Laboratory Control Sample
MS/MSD Sample ID: 31379-1

Analytical Notes:

	Batch Accuracy Results				Batch Precision Results				
Compound	Spike Concentration (mg/L)	Spike Sample % Recovery	% Recovery Acceptance Limit	Pass/Fail	MS Sample Result (mg/L)	MSD Sample Result (mg/L)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
Mercury	5.00	**102**	75 - 125	**Pass**	0.010	0.010	**0%**	20%	**Pass**

MS: Matrix Spike LCS: Laboratory Control Sample
MSD: Matrix Spike Duplicate LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories

Microbac

Metals by EPA 6010B and EPA 7471A

Client:	Tetra Tech, Inc.	Date Sampled:	05/16/08
Project:	LMC Beaumont Site 2 / Wolfskill	Date Received:	05/16/08
Job No:	31384	Date Digested:	05/19/08
Matrix:	Soil	Date Analyzed:	05/19-20/08
Analyst:	TLB	Batch Number:	6010S4327
			7471S1760

		Sample ID:	Blank	IDW2-051608	IDW3-051608
Metals	**Method**	**RL**	mg/Kg	mg/Kg	mg/Kg
Antimony	6010B	5.0	ND	ND	ND
Arsenic	6010B	1.0	ND	**1.60**	**1.62**
Barium	6010B	0.50	ND	**79.6**	**47.3**
Beryllium	6010B	0.50	ND	ND	ND
Cadmium	6010B	0.50	ND	ND	ND
Chromium	6010B	0.50	ND	**23.6**	**34.3**
Cobalt	6010B	0.50	ND	**4.73**	**5.58**
Copper	6010B	1.0	ND	**8.28**	**10.9**
Lead	6010B	1.0	ND	**2.28**	**2.55**
Molybdenum	6010B	5.0	ND	ND	ND
Nickel	6010B	1.0	ND	**5.86**	**9.06**
Selenium	6010B	5.0	ND	ND	ND
Silver	6010B	2.0	ND	ND	ND
Thallium	6010B	10	ND	ND	ND
Vanadium	6010B	5.0	ND	**23.4**	**25.6**
Zinc	6010B	10	ND	**27.6**	**34.8**
Mercury	7471A	0.02	ND	ND	ND

Centrum Analytical Laboratories

Microbac

QC Sample Report - Metals by EPA 6010B and EPA 7471A

Sample Matrix: Soil

Metals by EPA 6010B

Analytical Batch #: 6010S4327
Spike Sample ID: Laboratory Control Sample
MS/MSD Sample ID: IDW2-051608

Analytical Notes:

	Batch Accuracy Results:				Batch Precision Results:				
Compound	Spike Concentration (mg/Kg)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail	MS Sample Result (mg/Kg)	MSD Sample Result (mg/Kg)	Relative Percent Difference (RPD)	RPD Acceptance Limits	Pass/Fail
Antimony	50.0	**106**	75 - 125	**Pass**	48.67	48.26	**1%**	20%	**Pass**
Arsenic	50.0	**103**	75 - 125	**Pass**	45.66	45.99	**1%**	20%	**Pass**
Barium	50.0	**105**	75 - 125	**Pass**	122.98	115.95	**6%**	20%	**Pass**
Beryllium	50.0	**100**	75 - 125	**Pass**	45.99	46.11	**0%**	20%	**Pass**
Cadmium	50.0	**93**	75 - 125	**Pass**	40.89	41.20	**1%**	20%	**Pass**
Chromium	50.0	**101**	75 - 125	**Pass**	70.26	68.90	**2%**	20%	**Pass**
Cobalt	50.0	**102**	75 - 125	**Pass**	45.14	45.43	**1%**	20%	**Pass**
Copper	50.0	**101**	75 - 125	**Pass**	57.81	56.56	**2%**	20%	**Pass**
Lead	50.0	**93**	75 - 125	**Pass**	43.22	43.59	**1%**	20%	**Pass**
Molybdenum	50.0	**97**	75 - 125	**Pass**	44.94	44.78	**0%**	20%	**Pass**
Nickel	50.0	**98**	75 - 125	**Pass**	47.32	48.09	**2%**	20%	**Pass**
Selenium	50.0	**98**	75 - 125	**Pass**	45.95	45.59	**1%**	20%	**Pass**
Silver	50.0	**89**	75 - 125	**Pass**	47.91	47.15	**2%**	20%	**Pass**
Thallium	50.0	**84**	75 - 125	**Pass**	39.22	39.47	**1%**	20%	**Pass**
Vanadium	50.0	**98**	75 - 125	**Pass**	70.82	69.50	**2%**	20%	**Pass**
Zinc	50.0	**105**	75 - 125	**Pass**	86.17	80.05	**7%**	20%	**Pass**

Mercury by EPA 7471A

Batch Number: 7471S1760
Spike Sample ID: Laboratory Control Sample
MS/MSD Sample ID: IDW2-051608

Analytical Notes:

	Batch Accuracy Results				Batch Precision Results				
Compound	Spike Concentration (mg/Kg)	Spike Sample % Recovery	% Recovery Acceptance Limit	Pass/Fail	MS Sample Result (mg/Kg)	MSD Sample Result (mg/Kg)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
Mercury	0.42	**103**	75 - 125	**Pass**	0.405	0.426	**5%**	20%	**Pass**

MS: Matrix Spike LCS: Laboratory Control Sample
MSD: Matrix Spike Duplicate LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories

Microbac

C6 to C40 Hydrocarbons by GCMS and GC/FID

Client:	Tetra Tech, Inc.	Date Sampled:	05/16/08
Project:	LMC Beaumont Site 2 / Wolfskill	Date Received:	05/16/08
Job No.:	31384	Batch Number:	MS5TPHGS523
Matrix:	Soil		8015DS4335
Analyst:	CMR / AW		

Carbon Chain Length:	C6-C12	C12-C22	C22-C40
Reporting Limits:	0.50	10	20
Units:	mg/Kg	mg/Kg	mg/Kg
Method Blank	ND	ND	ND
IDW2-051608	ND	ND	ND
IDW3-051608	ND	ND	ND
Method:	GCMS	GC/FID	GC/FID
Date Extracted:	N/A	05/16/08	05/16/08
Date Analyzed:	05/16/08	05/19-20/08	05/19-20/08

Centrum Analytical Laboratories

Microbac

QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Soil
Batch Number: 8015DS4335

Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Compound	Spike Concentration (mg/Kg)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
Diesel	100	**109**	70 - 130	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: IDW2-051608

Compound	MS Sample Result (mg/Kg)	MSD Sample Result (mg/Kg)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
Diesel	105.4	107.7	**2%**	25%	**Pass**

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories

Microbac

QC Sample Report - Volatile Hydrocarbons as Gasoline by GCMS

Matrix: Soil
Batch Number: MS5TPHGS523

Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Compound	Spike Concentration (mg/Kg)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
Gasoline	2.0	**75**	70 - 130	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Compound	MS Sample Result (mg/Kg)	MSD Sample Result (mg/Kg)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
Gasoline	1.51	1.68	**11%**	25%	**Pass**

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories

Microbac

C6 to C40 Hydrocarbons by GCMS and GC/FID

Client:	Tetra Tech, Inc.	Date Sampled:	05/16/08
Project:	LMC Beaumont Site 2 / Wolfskill	Date Received:	05/16/08
Job No.:	31384	Batch Number:	SH1TPHGW670
Matrix:	Water		8015DW4334
Analyst:	RCG / AW		

Carbon Chain Length:	C6-C12	C12-C22	C22-C40
Reporting Limits:	0.10	0.40	0.40
Units:	mg/L	mg/L	mg/L
Method Blank	ND	ND	ND
IDW1-051608	ND	ND	ND
IDW4-051608	**0.31***	**0.55**	ND
Method:	GCMS	GC/FID	GC/FID
Date Extracted:	N/A	05/16/08	05/16/08
Date Analyzed:	05/19/08	05/16/08	05/16/08

* The chromatographic pattern displayed by this sample does not match the pattern for gasoline. The concentration of volatile hydrocarbons has been quantitated against gasoline and has been reported here as Gasoline.

Centrum Analytical Laboratories

Microbac

QC Sample Report - Volatile Hydrocarbons as Gasoline by GCMS

Matrix: Water
Batch Number: SH1TPHGW670

Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Analytical Notes:

Compound	Spike Concentration (mg/L)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
Gasoline	2.0	**116**	70 - 130	**Pass**

Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analytical Notes:

Compound	MS Sample Result (mg/L)	MSD Sample Result (mg/L)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
Gasoline	2.32	2.25	**3%**	25%	**Pass**

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories

Microbac

QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Water
Batch number: 8015DW4334

Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Compound	Spike Concentration (mg/L)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
Diesel	3.2	**108**	70 - 130	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Compound	MS Sample Result (mg/L)	MSD Sample Result (mg/L)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
Diesel	3.44	3.58	**4%**	25%	**Pass**

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories

Microbac

Volatile Organic Compounds by EPA 8260B

Client:	Tetra Tech, Inc.	Date Sampled:	05/16/08
Project:	LMC Beaumont Site 2 / Wolfskill	Date Received:	05/16/08
Job No.:	31384	Date Analyzed:	05/16/08
Matrix:	Soil	Batch Number:	MS58260S523
Analyst:	CMR		

	Sample ID:	Blank	IDW2-051608	IDW3-051608
Compounds	**RL**	mg/Kg	mg/Kg	mg/Kg
Acetone	0.050	ND	ND	ND
tert-Amyl Methyl Ether (TAME)	0.002	ND	ND	ND
Benzene	0.001	ND	ND	ND
Bromobenzene	0.005	ND	ND	ND
Bromochloromethane	0.005	ND	ND	ND
Bromodichloromethane	0.001	ND	ND	ND
Bromoform	0.005	ND	ND	ND
Bromomethane	0.005	ND	ND	ND
tert-Butanol (TBA)	0.020	ND	ND	ND
2-Butanone (MEK)	0.010	ND	ND	ND
n-Butylbenzene	0.002	ND	ND	ND
sec-Butylbenzene	0.002	ND	ND	ND
tert-Butylbenzene	0.002	ND	ND	ND
Carbon disulfide	0.010	ND	ND	ND
Carbon tetrachloride	0.001	ND	ND	ND
Chlorobenzene	0.001	ND	ND	ND
Chloroethane	0.005	ND	ND	ND
Chloroform	0.002	ND	ND	ND
Chloromethane	0.001	ND	ND	ND
2-Chlorotoluene	0.002	ND	ND	ND
4-Chlorotoluene	0.002	ND	ND	ND
Dibromochloromethane	0.002	ND	ND	ND
1,2-Dibromoethane	0.002	ND	ND	ND
1,2-Dibromo-3-chloropropane	0.010	ND	ND	ND
Dibromomethane	0.001	ND	ND	ND
1,2-Dichlorobenzene	0.001	ND	ND	ND
1,3-Dichlorobenzene	0.002	ND	ND	ND
1,4-Dichlorobenzene	0.002	ND	ND	ND
Dichlorodifluoromethane	0.005	ND	ND	ND
1,1-Dichloroethane	0.001	ND	ND	ND
1,2-Dichloroethane	0.001	ND	ND	ND
1,1-Dichloroethene	0.005	ND	ND	ND
cis-1,2-Dichloroethene	0.002	ND	ND	ND
trans-1,2-Dichloroethene	0.002	ND	ND	ND
1,2-Dichloropropane	0.001	ND	ND	ND
1,3-Dichloropropane	0.001	ND	ND	ND
2,2-Dichloropropane	0.001	ND	ND	ND
1,1-Dichloropropene	0.001	ND	ND	ND

Centrum Analytical Laboratories

Microbac

Volatile Organic Compounds by EPA 8260B

Client:	Tetra Tech, Inc.	Date Sampled:	05/16/08
Project:	LMC Beaumont Site 2 / Wolfskill	Date Received:	05/16/08
Job No.:	31384	Date Analyzed:	05/16/08
Matrix:	Soil	Batch Number:	MS58260S523
Analyst:	CMR		

	Sample ID:	Blank	IDW2-051608	IDW3-051608
Compounds	**RL**	mg/Kg	mg/Kg	mg/Kg
cis-1,3-Dichloropropene	0.001	ND	ND	ND
trans-1,3-Dichloropropene	0.001	ND	ND	ND
Diisopropyl Ether (DIPE)	0.002	ND	ND	ND
Ethylbenzene	0.001	ND	ND	ND
Ethyl tert-Butyl Ether (EtBE)	0.002	ND	ND	ND
Hexachlorobutadiene	0.001	ND	ND	ND
2-Hexanone	0.010	ND	ND	ND
Isopropylbenzene	0.001	ND	ND	ND
p-Isopropyltoluene	0.002	ND	ND	ND
Methylene chloride	0.050	ND	ND	ND
4-Methyl-2-pentanone	0.010	ND	ND	ND
Methyl tert-Butyl Ether (MtBE)	0.002	ND	ND	ND
Naphthalene	0.002	ND	ND	ND
n-Propylbenzene	0.001	ND	ND	ND
Styrene	0.001	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.001	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.002	ND	ND	ND
Tetrachloroethene	0.001	ND	ND	ND
Toluene	0.001	ND	ND	ND
1,2,3-Trichlorobenzene	0.002	ND	ND	ND
1,2,4-Trichlorobenzene	0.002	ND	ND	ND
1,1,1-Trichloroethane	0.001	ND	ND	ND
1,1,2-Trichloroethane	0.003	ND	ND	ND
Trichloroethene	0.001	ND	ND	ND
1,2,3-Trichloropropane	0.003	ND	ND	ND
Trichlorofluoromethane	0.001	ND	ND	ND
Trichlorotrifluoroethane	0.005	ND	ND	ND
1,2,4-Trimethylbenzene	0.001	ND	ND	ND
1,3,5-Trimethylbenzene	0.001	ND	ND	ND
Vinyl chloride	0.002	ND	ND	ND
Xylenes, m-,p-	0.002	ND	ND	ND
Xylene, o-	0.001	ND	ND	ND

Surrogates in % Recovery (Acceptance Limits: 70 - 130%)

	Sample ID:	Blank	IDW2-051608	IDW3-051608
Dibromofluoromethane		99	97	98
Toluene-d8		102	102	102
Bromofluorobenzene		97	96	96

Centrum Analytical Laboratories

Microbac

QC Sample Report - Volatile Organic Compounds by EPA 8260B

Matrix: Soil
Batch Number: MS58260S523

Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Analytical Notes:

Compound	Spike Concentration (mg/Kg)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
1,1-Dichloroethene	0.050	**102**	70 - 130	**Pass**
Benzene	0.050	**101**	70 - 130	**Pass**
Trichloroethene	0.050	**98**	70 - 130	**Pass**
Toluene	0.050	**102**	70 - 130	**Pass**
Chlorobenzene	0.050	**97**	70 - 130	**Pass**

Batch Precision Results

MS/MSD Sample ID: IDW2-051608

Analytical Notes:

Compound	MS Sample Result (mg/Kg)	MSD Sample Result (mg/Kg)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
1,1-Dichloroethene	0.0551	0.0593	**7%**	25%	**Pass**
Benzene	0.0568	0.0611	**7%**	25%	**Pass**
Trichloroethene	0.0557	0.0605	**8%**	25%	**Pass**
Toluene	0.0564	0.0620	**9%**	25%	**Pass**
Chlorobenzene	0.0567	0.0599	**5%**	25%	**Pass**

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories

Microbac

Volatile Organic Compounds by EPA 8260B

Client:	Tetra Tech, Inc.	Date Sampled:	05/16/08
Project:	LMC Beaumont Site 2 / Wolfskill	Date Received:	05/16/08
Job No.:	31384	Date Analyzed:	05/19/08
Matrix:	Water	Batch Number:	SH18260W670
Analyst:	RCG		

Sample ID:		Blank	LTB-051608	IDW1-051608	IDW4-051608
Compounds	**RL**	µg/L	µg/L	µg/L	µg/L
Acetone	50	ND	ND	**85**	**33,000**
tert-Amyl Methyl Ether (TAME)	1.0	ND	ND	ND	ND
Benzene	0.5	ND	ND	ND	ND
Bromobenzene	1.0	ND	ND	ND	ND
Bromochloromethane	1.0	ND	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND	ND
Bromoform	0.5	ND	ND	ND	ND
Bromomethane	2.0	ND	ND	ND	ND
tert-Butanol (TBA)	10	ND	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	**16**	ND
n-Butylbenzene	1.0	ND	ND	ND	ND
sec-Butylbenzene	0.5	ND	ND	ND	ND
tert-Butylbenzene	0.5	ND	ND	ND	ND
Carbon disulfide	10	ND	ND	ND	ND
Carbon tetrachloride	0.5	ND	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND	ND
Chloroethane	0.5	ND	ND	ND	ND
Chloroform	0.5	ND	ND	ND	ND
Chloromethane	2.0	ND	ND	ND	ND
2-Chlorotoluene	0.5	ND	ND	ND	ND
4-Chlorotoluene	0.5	ND	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND	ND
1,2-Dibromoethane	0.5	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	10	ND	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND	ND
Dichlorodifluoromethane	0.5	ND	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND	ND

Centrum Analytical Laboratories

Microbac

Volatile Organic Compounds by EPA 8260B

Client:	Tetra Tech, Inc.	Date Sampled:	05/16/08
Project:	LMC Beaumont Site 2 / Wolfskill	Date Received:	05/16/08
Job No.:	31384	Date Analyzed:	05/19/08
Matrix:	Water	Batch Number:	SH18260W670
Analyst:	RCG		

	Sample ID:	Blank	LTB-051608	IDW1-051608	IDW4-051608
Compounds	**RL**	µg/L	µg/L	µg/L	µg/L
cis-1,3-Dichloropropene	0.5	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND	ND
Diisopropyl Ether (DIPE)	1.0	ND	ND	ND	ND
Ethylbenzene	0.5	ND	ND	**0.7**	ND
Ethyl tert-Butyl Ether (EtBE)	1.0	ND	ND	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND	ND
2-Hexanone	10	ND	ND	ND	ND
Isopropylbenzene	0.5	ND	ND	ND	ND
p-Isopropyltoluene	0.5	ND	ND	ND	ND
Methylene chloride	50	ND	ND	ND	ND
4-Methyl-2-pentanone	5.0	ND	ND	ND	ND
Methyl-tert-butyl ether (MtBE)	1.0	ND	ND	ND	ND
Naphthalene	0.5	ND	ND	ND	ND
n-Propylbenzene	0.5	ND	ND	ND	ND
Styrene	0.5	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1.0	ND	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND	ND
Toluene	0.5	ND	ND	**5.2**	**2.0**
1,2,3-Trichlorobenzene	0.5	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.5	ND	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND	ND	ND
Trichlorofluoromethane	0.5	ND	ND	ND	ND
Trichlorotrifluoroethane	5.0	ND	ND	ND	ND
1,2,4-Trimethylbenzene	0.5	ND	ND	ND	ND
1,3,5-Trimethylbenzene	0.5	ND	ND	ND	ND
Vinyl chloride	0.5	ND	ND	ND	ND
Xylenes, m-,p-	1.0	ND	ND	**1.5**	ND
Xylene, o-	0.5	ND	ND	**2.3**	ND

Surrogates in % Recovery (Acceptance Limits: 70 - 130%)

	Sample ID:	Blank	LTB-051608	IDW1-051608	IDW4-051608
Dibromofluoromethane		102	103	105	105
Toluene-d8		101	103	104	104
Bromofluorobenzene		98	99	97	98

Centrum Analytical Laboratories

Microbac

QC Sample Report - Volatile Organic Compounds by EPA 8260B

Matrix: Water
Batch Number: SH18260W670

Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Compound	Spike Concentration (µg/L)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
1,1-Dichloroethene	50	**109**	70 - 130	**Pass**
Benzene	50	**101**	70 - 130	**Pass**
Trichloroethene	50	**103**	70 - 130	**Pass**
Toluene	50	**103**	70 - 130	**Pass**
Chlorobenzene	50	**100**	70 - 130	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: IDW1-051608

Compound	MS Sample Result (µg/L)	MSD Sample Result (µg/L)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
1,1-Dichloroethene	46.77	45.36	**3%**	25%	**Pass**
Benzene	49.19	48.80	**1%**	25%	**Pass**
Trichloroethene	49.77	48.81	**2%**	25%	**Pass**
Toluene	53.70	53.51	**0%**	25%	**Pass**
Chlorobenzene	50.47	49.30	**2%**	25%	**Pass**

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Calscience
Environmental
Laboratories, Inc.

May 20, 2008

Marilu Escher
Microbac Laboratories, Inc.
1401 Research Park Drive
Suite 100
Riverside, CA 92507-2111

Subject: **Calscience Work Order No.: 08-05-1613**
Client Reference: LMC Beaumont Site 2 Wolfskill / 31384

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 5/16/2008 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Microbac Laboratories, Inc.		Date Received:	05/16/08
1401 Research Park Drive		Work Order No:	08-05-1613
Suite 100		Preparation:	N/A
Riverside, CA 92507-2111		Method:	EPA 314.0

Project: LMC Beaumont Site 2 Wolfskill / 31384

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IDW1-051608	**08-05-1613-1-A**	**05/16/08 09:00**	**Aqueous**	**IC 6**	**N/A**	**05/16/08 18:00**	**080516L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	7.3	2.0	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IDW4-051608	**08-05-1613-4-A**	**05/16/08 10:45**	**Aqueous**	**IC 6**	**N/A**	**05/16/08 21:06**	**080516L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	18000	1000	500		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-203-800**	**N/A**	**Aqueous**	**IC 6**	**N/A**	**05/16/08 14:53**	**080516L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	2.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Microbac Laboratories, Inc.	Date Received: 05/16/08
1401 Research Park Drive	Work Order No: 08-05-1613
Suite 100	Preparation: Cartridge
Riverside, CA 92507-2111	Method: EPA 314.0 (M)

Project: LMC Beaumont Site 2 Wolfskill / 31384 Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IDW2-051608	**08-05-1613-2-A**	**05/16/08 09:20**	**Solid**	**IC 6**	**05/16/08**	**05/16/08 19:48**	**080516L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	20.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IDW3-051608	**08-05-1613-3-A**	**05/16/08 10:30**	**Solid**	**IC 6**	**05/16/08**	**05/17/08 13:50**	**080516L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	2400	100	5		ug/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-205-351**	**N/A**	**Solid**	**IC 6**	**05/16/08**	**05/16/08 18:46**	**080516L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	20.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Microbac Laboratories, Inc.
1401 Research Park Drive
Suite 100
Riverside, CA 92507-2111

Date Received: 05/16/08
Work Order No: 08-05-1613
Preparation: N/A
Method: EPA 314.0

Project LMC Beaumont Site 2 Wolfskill / 31384

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
08-05-1057-6	**Aqueous**	**IC 6**	**N/A**	**05/16/08**	**080516S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	106	103	80-120	3	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Microbac Laboratories, Inc.
1401 Research Park Drive
Suite 100
Riverside, CA 92507-2111

Date Received: 05/16/08
Work Order No: 08-05-1613
Preparation: Cartridge
Method: EPA 314.0 (M)

Project LMC Beaumont Site 2 Wolfskill / 31384

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
IDW3-051608	**Solid**	**IC 6**	**05/16/08**	**05/17/08**	**080516S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	97	93	80-120	1	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Microbac Laboratories, Inc.		Date Received:	N/A
1401 Research Park Drive		Work Order No:	08-05-1613
Suite 100		Preparation:	N/A
Riverside, CA 92507-2111		Method:	EPA 314.0

Project: LMC Beaumont Site 2 Wolfskill / 31384

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-05-203-800	**Aqueous**	**IC 6**	**N/A**	**05/16/08**	**080516L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	100	99	85-115	1	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Microbac Laboratories, Inc.		Date Received:	N/A
1401 Research Park Drive		Work Order No:	08-05-1613
Suite 100		Preparation:	Cartridge
Riverside, CA 92507-2111		Method:	EPA 314.0 (M)

Project: LMC Beaumont Site 2 Wolfskill / 31384

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-05-205-351	**Solid**	**IC 6**	**05/16/08**	**05/16/08**	**080516L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	100	100	85-115	0	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 08-05-1613

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Calscience

Microbac

Chain of Custody Record

RUSH

Microbac # 1613

1401 Research Park Drive, Suite 100
Riverside, CA 92507
V: 951.779.0310 ● 800.798.9336 F: 951.779.0344

3299 Hill Street, Suite 305
Signal Hill, CA 90755
V: 562.498.7005 F: 562.498.8617

www.microbac.com centrum@microbac.com

Project No:	Project Name:
31384	LMC Beaumont Site 2 / Wolfskill
Project Manager:	**Phone:** / **Fax:**
Marilee Eschen	
Client Name: (Report and Billing)	**Address:** (Report and Billing)
Centrum Dev.	Riverside, CA

Analyses Requested

Lab # (Lab use only)	Sample ID (As it should appear on report)	Grab/ Comp	Date sampled	Time sampled	Sample matrix	Preserved	LUFT Diesel, or EPA 8015B DRO	LUFT Gas, or EPA 8015B GRO	VOCs: 8260B, or 624	SVOCs: 8270C, or 625	8081A/8082: Pesticides, or PCBs, or Pest/PCB	VOCs: 8260B, or 624	Metals: Title 22 (CAM), or RCRA, or PP		Preservation							Remarks/Special Instructions
1	IDW1-051608		5/16/08	900	W										X							
2	IDW2-051608		↓	920	S										X							
3	IDW3-051608			1030	S										X							
4	IDW4-051608		↓	1045	W										X							

Turn-Around Time

- ☐ 24 Hr. RUSH*
- ☒ 48 Hr. RUSH*
- ☐ Normal TAT
- ☐ Other _____

*Requires PRIOR approval, additional charges apply. Rush Fees are based on regular business hours. Samples received after 4 pm will be processed next business day.

Requested due date: _____

Remarks/Special Instructions

	Date:	Time:
1) Relinquished by: (Sampler's Signature)	5/16/08	1430
2) Received by:		
3) Relinquished by:		
4) Received by:		
5) Relinquished by:		
6) Received for Laboratory by: Dannyle CEL	5/16/08	14:37

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

Laboratory Notes:

To be completed by Laboratory personnel:

Samples chilled? ☐ Yes ☐ No ☐ From Field

Custody seals? ☐ Yes ☐ No

All sample containers intact? ☐ Yes ☐ No

☐ Courier ☐ UPS/Fed Ex ☐ Hand carried

Additional Report Formats:

☐ Paper Report ☐ PDF Report (include email)

☐ LARWQCB ☐ EDF (include Global ID)

☐ EDD (GISKEY) ☐ EDD (Other)*

* with prior approval only

Sample Disposal

☐ Client will pick up

☐ Return to client

☐ Lab disposal

Sample Locator Number: _____

Temp of samples: _____

Preservative checked: Y / N

White Copy - Original (Accompanies Samples) Yellow Copy - Microbac Files Pink Copy - Client Copy

v9.0 03/08 coc-temp-both-0308.xls

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 08 - 05 - 1613

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Microbac **DATE:** 05/16/08

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
4.7 °C IR thermometer.
_____ Ambient temperature.

Initial: NC

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: ✓

Initial: NC

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: NC

COMMENTS:

TETRA TECH, INC.
348 W. Hospitality Lane, Suite 100
San Bernardino, California 92408
Telephone: (909) 381-1674
FAX: (909) 889-1391

SHIP TO: Centrum / Microbac
1401 Research Pk Dr
Riverside, CA 92507
951-779-0310

RUSH

CHAIN OF CUSTODY RECORD

JN: 31384

DATE 05/16/2008 PAGE 1 OF 1

CLIENT: Tetra Tech
PROJECT NAME: LMC Beaumont Site 2 / Wolfskill
PROJECT MANAGER: Tom Villeneuve
TC #: 19893-02 / 22289-0201
SAMPLERS (Signatures)

TURN-AROUND TIME: 2-Day RUSH

OBSERVATIONS/COMMENTS: please email to david.bertolacci@tetratech.com

PARAMETERS

LINE ITEM	SAMPLE NO.	DATE	TIME	VOCs (SW8260B)	TPH C6-C40 (8015M)	CAM17 metals (6010B/7471A)	Perchlorate (314.0)	FILTERED/UNFILTERED	MATRIX TYPE	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	
1.	LTB-051608	05/16/2008	0800	X				Un	W	G	2	HCl	
2.	IDW1-051608	↓	0900	X	X	X	X	↓	W	G/P	6	See bottle	Wolfskill Water
3.	IDW2-051608	↓	0920	X	X	X	X	↓	S	G	5	↓	Wolfskill Soil
4.	IDW3-051608	↓	1030	X	X	X	X	↓	S	G	5	↓	Site 2 Soil
5.	IDW4-051608	↓	1045	X	X	X	X	↓	W	G/P	6	↓	Site 2 water
6.													
7.													
8.													
9.													
10.													

FILTERING: ☐ FILTERED ☐ UNFILTERED

MATRIX TYPE: S - Soil; M - Sediment; W - Water

CONTAINER TYPE: G - Glass Bottle/Jar; SS - Stainless Steel Sleeve; SB - Brass Sleeve; P - Plastic Bottle/Jar

PRESERVATIVES: (Water Only) HCL; NR (None required); NaOH; H_2SO_4

RELINQUISHED BY	SIGNATURE		DATE	TIME	
David Bertolacci		TETRA TECH, INC.	05/16/2008	1200	TOTAL NUMBER OF CONTAINERS ON THIS CHAIN OF CUSTODY: 24
RECEIVED BY: JEN IÑIGUEZ	SIGNATURE: Jen Iñiguez	COMPANY: Microbac - Centrum Div.	DATE: 5-16-08	TIME: 1200	METHOD OF SHIPMENT/SHIPMENT NO.: drop-off
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	Special Shipping/Handling/Storage Requirements:
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	from field + intact (G/SH)

DISTRIBUTION: White and Pink = Tetra Tech, Inc. Canary = Laboratory

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