



Kevin Scott
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October 21, 2009

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1650 Arch Street
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**Subject: Final Trip Report for the
Chesapeake Products Site
EPA Contract No. EP-S3-05-02
TDD No. E43-026-09-07-018
Document Tracking No. 0855**

Dear Mr. Ventura:

Tetra Tech EM Inc. (Tetra Tech) is submitting the Final trip report for the Chesapeake Products site summarizing soil and groundwater sampling activities conducted from July 20 to July 22 2009. If you have any questions regarding this report, please contact me at (610) 364-2119.

Sincerely,

A handwritten signature in grey ink that reads 'K Scott'.

Kevin Scott
Project Manager

Enclosure

cc: TDD File

**FINAL TRIP REPORT
FOR THE
CHESAPEAKE PRODUCTS SITE
CHESAPEAKE, CHESPEAKE COUNTY, VIRGINIA**

Prepared for

U.S. Environmental Protection Agency Region 3
Hazardous Site Cleanup Division
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October 21, 2009

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for
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1.0 INTRODUCTION

Under Eastern Area Superfund Technical Assessment and Response Team (START) Contract No. EP-S3-05-02, Technical Direction Document (TDD) No. E43-026-09-07-018, the U.S. Environmental Protection Agency (EPA) Region 3 tasked Tetra Tech EM Inc. (Tetra Tech) to conduct a multi-media assessment of the Chesapeake Products site, located in the City of Chesapeake, Chesapeake County, Virginia. The purpose of this assessment was to determine the lateral extent of heavy metal contamination, primarily lead, in the surface soils at the site and to determine whether hazardous substances are present in groundwater beneath the site. The data collected during this assessment supplements analytical data obtained from the 2005 and 2006 sampling events conducted by EPA and Tetra Tech.

This trip report provides site background information in Section 2.0, describes site geology and hydrogeology in Section 3.0, describes site activities in Section 4.0, summarizes analytical results in Section 5.0, and provides conclusions in Section 6.0. References are listed after the text.

2.0 BACKGROUND

This section describes the site location, provides a site description, and outlines the site's history and previous investigation activities.

1.1 SITE LOCATION

The Chesapeake Products site is located on the eastern edge of the South Branch of the Elizabeth River, in the City of Chesapeake, Chesapeake County, Virginia. The geographic coordinates (as determined by Garmin, GPS76 model, with accuracy of +/- 25 feet) of the approximate center of the site are 36.81354444 degrees north latitude and 76.28838333 degrees west longitude. The site is located approximately 14 river-miles upstream of the Elizabeth River and James River confluence. The site is surrounded by the Titan America cement production facility to the north, industrial facilities, Truxton Street, Priority Lane, a freight railroad line and Interstate 464 to the

east, open space and a freight railroad line to the south, and the South Branch of the Elizabeth River and U.S. Naval Ship Yards to the west. See Appendix A, Figure 1 for the site location map (Google Earth 2009).

1.2 SITE DESCRIPTION

Prior to 2008, the site included a number of structures used for fertilizer manufacturing and storage of fertilizer raw materials. The site contained six primary buildings: a Rear Building (Building 1) located nearest to the river docks, a Green Building (Building 2) used for storage, a Rear Administrative Building (Building 4), a Main Building (Building 7), a Red Building (Building 8) believed to have been a storage building, and a Front Administrative Building (Building 10), believed to have been used for shipping in the past. All buildings were demolished in 2008. There is a loading dock on the western end of the site that is used by Titan America. Figure 2 in Appendix A shows the current layout of the site.

1.3 SITE HISTORY

In February 2003, Bay Environmental produced a combined Phase I and II Environmental Site Assessment (ESA) of the Chesapeake Products site for Titan America Corporation. Historical records review and interviews conducted and presented in the Bay Environmental ESA provided the following information about historical site operations:

“The site was operated as a fertilizer manufacturing plant from 1876 to 2000.

On-site operations involved the use and storage of hazardous and non-hazardous substances (e.g., sulfuric acid, NPK fertilizer, micro-nutrient fertilizer, petroleum) at the facility. A review of the aerial photographs and Sanborn fire insurance maps revealed that the facility has undergone a number of changes with regard to building and aboveground storage tank locations, specifically in the south central and southwestern portions of the property.

The fire insurance map from 1910 shows lead acid chambers and storage tanks in these general areas.....Two approximately 30,000-gallon sulfuric acid aboveground storage tanks (ASTs) were previously located within the

southeastern portion of the property as evidenced by the remaining tank bottoms...One 2,000-gallon underground storage tank (UST) is located north of the main office building...this tank was installed in 1990, which replaced one 2,000-gallon gasoline UST that was installed in 1961” (Bay Environmental 2003).

The consultant for the currently identified site potential responsible party (PRP), SCS Engineering, prepared an engineering report which was presented to the Chesapeake Department of Licensing and Inspections. Based on this 2006 report, the City of Chesapeake determined the facility was unsafe for occupancy and issued a notice to shut down operations at the facility (Tetra Tech 2006a). All buildings were demolished in 2008.

1.4 PREVIOUS SITE INVESTIGATIONS

In February 2003, an environmental consultant for Titan America, Bay Environmental, prepared a combined Phase I and II ESA (Bay Environmental 2003). The Phase I and II investigation activities were conducted by Bay Environmental at the site on January 9 and 10, 2003. Bay Environmental completed 13 soil borings to a total depth of approximately 12 feet below ground surface (bgs). Soil samples (S-1 to S-13) were collected at approximately 2 feet bgs, and groundwater samples (S-1 to S-13) were collected from the bottom of each of the borings. Soil and groundwater samples S-1 to S-8, S-12, and S-13 were analyzed for nitrates, phosphorus, total petroleum hydrocarbons (TPH), and Resource Conservation and Recovery Act (RCRA) metals. Soil and groundwater samples S-9 to S-11 were tested for pH only. Groundwater samples S-1 to S-8, S-11, and S-12 were also analyzed for pH (Bay Environmental 2003).

Results from the Phase II activities indicated environmental contamination of soil and groundwater at the site. The pH levels of groundwater were acidic, at levels below the Virginia Department of Environmental Quality (VADEQ) groundwater pH standards of 6.5 to 9.0, with the lowest groundwater pH of 3.50 near the former sulfuric acid storage tank area, identified as Area-6 (Bay Environmental 2003). In addition to acidic groundwater, nitrates, phosphorus,

diesel range organics (DRO), arsenic, and lead were found in subsurface soil samples at the site at levels exceeding VADEQ reporting limits. The Bay Environmental combined Phase I and II ESA concluded that lead in soil and groundwater was of greatest concern at the site (Bay Environmental 2003).

In April 2005, EPA and Tetra Tech performed a removal site assessment. Ten surface soil samples and 20 waste pile samples were collected from various areas throughout the site. Samples were analyzed for RCRA metals, pesticides, and polychlorinated biphenyls (PCB). The April 2005 assessment identified contaminants of concern, including heavy metals, PCBs, and various pesticides.

3.0 SITE GEOLOGY AND HYDROGEOLOGY

The site is located near the western boundary of the Coastal Plain physiographic province of Virginia. Sediments of the Coastal Plain physiographic province are classified into a series of 19 hydrogeologic units designated as aquifers or confining zones. The uppermost aquifer is the unconfined surficial aquifer (also called the Columbia aquifer), which is composed of unconsolidated interbedded gravel, sand, silt, and clay. The surficial aquifer is utilized for private domestic wells. The aquifer is principally recharged by precipitation infiltration. Because of the stratified nature of the sediments, horizontal hydraulic conductivity is generally greater than vertical hydraulic conductivity, and most of the unconfined groundwater flows relatively short distances before discharging to nearby streams and water bodies. A small amount, however, reaches deeper, confined aquifers. The Columbia aquifer is underlain by the Yorktown confining zone. The Yorktown confining zone is underlain by the Yorktown-Eastover aquifer, which is composed of thick to massively bedded shelly sand and lesser clay intervals. The recharge to this aquifer is primarily through downward leakage of water from the overlying Columbia aquifer (USGS 1988, VA Division of Mineral Resources 1993, VA Water Control Board, 1981).

The soil borings advanced on the site during the assessment indicate that directly underlying the site is a layer of silty-sand. Depth to groundwater beneath the site varied from 0.75 feet bgs near the eastern boundary to 5.65 feet bgs in the southwest portion of the site. The results of this assessment indicated that groundwater flow was as expected, to the west towards the South Branch of the Elizabeth River.

4.0 SITE ACTIVITIES

This section discusses site activities performed by Tetra Tech during the July 2009 assessment, including X-ray fluorescent (XRF) screening for lead in soil, soil and groundwater sampling.

On July 20, 2009, Tetra Tech and EPA mobilized to the site to begin the assessment. Tetra Tech conducted a site reconnaissance with the EPA On-Scene Coordinator (OSC) and began marking out the predetermined sample locations using a handheld GPS that contained each sampling location as a way point. A 125-foot by 125-foot sampling grid was laid out within the site boundary. On July 21, 2009, Tetra Tech returned to the site along with the EPA OSC and Tetra Tech subcontractor, Vironex, to collect surface and subsurface soil samples for XRF screening for lead and laboratory analysis for lead and install three temporary monitoring wells. On July 22, 2009, Tetra Tech and EPA collected groundwater samples from the three temporary monitoring wells.

Tetra Tech documented site activities in accordance with Tetra Tech Standard Operating Procedure (SOP) No. 024, "Recording of Notes in Field Logbook" (Tetra Tech 1999a). A copy of field log book notes is provided in Appendix B. Photographs taken during the field activities are provided in Appendix C.

1.5 X-RAY FLUORESCENT SCREENING FOR LEAD IN SOIL

On July 21, 2009, Tetra Tech collected surface soils from the sample locations proposed in the Tetra Tech July 17, 2009 sampling and analysis plan (SAP) (Tetra Tech, 2009). Where possible, within each section of the grid a surface soil sample was collected where each grid line intersected and in the approximate center. Soil was collected using a dedicated disposal plastic

scoop in accordance with Tetra Tech SOP No. 005-1, "Soil Sampling" (Tetra Tech 1999c) and placed into a plastic zip-lock baggie for ex-situ screening for lead using an InnovX Systems XRF Lead Paint Analyzer. Several of the proposed locations were directly over concrete or located in areas of impenetrable vegetation and no sample was collected. Pools of rainwater from a recent rain event covered portions of the site including a few of the proposed sample locations. Tetra Tech did collect soil/sediment samples from these locations that were under water, but did not perform XRF screening on these samples due to the high moisture content and the potential for erroneous instrument readings. In total, Tetra Tech collected 41 surface soil samples from 46 proposed locations, including a grab sample from underneath an elevated concrete slab near the east end of the site. The grab sample was not one of the 46 samples originally proposed in the SAP. Of the 41 samples collected, Tetra Tech screened 35 samples for lead and arsenic using the portable XRF. Tables 1 and 2 below present the total number of surface soil samples collected for XRF screening, the number of samples in which lead and arsenic were detected, and the range of levels and means for both metals. Appendix A, Figure 3 shows the locations of the surface soil samples collected.

TABLE 1 XRF RESULTS FOR LEAD IN SURFACE SOILS

Number of Surface Soil Samples Screened with XRF	Number of Samples with Lead Detected	Range of Lead Levels Detected in Soil (parts per million)	Mean Lead Level in Soil (parts per million)
35	35	23 to 3,188	1,036

TABLE 2 XRF RESULTS FOR ARSENIC IN SURFACE SOILS

Number of Surface Soil Samples Screened with XRF	Number of Samples with Arsenic Detected	Range of Arsenic Levels Detected in Soil (parts per million)	Mean Arsenic Level in Soil (parts per million)
35	29	Not Detected to 1,055	174.9

In addition, Tetra Tech performed XRF screening on four subsurface soil samples that were collected from three soil borings advanced on site. The lead concentrations for these four samples ranged from not detected to 10,681 parts per million (ppm). Tables 3 and 4 below present the total number of soil samples (surface and subsurface) collected for XRF screening, the number of samples in which lead and arsenic were detected, and the range of levels and means for both metals.

TABLE 3 XRF RESULTS FOR LEAD IN SURFACE AND SUBSURFACE SOILS			
Total Number of Soil Samples Screened with XRF	Number of Samples with Lead Detected	Range of Lead Levels Detected in Soil (parts per million)	Mean Lead Level in Soil (parts per million)
39	38	23 to 10,681	1,393

TABLE 4 XRF RESULTS FOR ARSENIC IN SURFACE AND SUBSURFACE SOILS			
Total Number of Soil Samples Screened with XRF	Number of Samples with Arsenic Detected	Range of Arsenic Levels Detected in Soil (parts per million)	Mean Arsenic Level in Soil (parts per million)
39	32	Not Detected to 1,055	187.75

Appendix G, Table G-1 presents a summary of the lead and arsenic concentration measured with the portable XRF analyzer in each soil sample. It should be noted that the Tetra Tech SAP indicated that Tetra Tech would perform in situ XRF screening for lead at each location and only collect soil samples from the 24 points where the grid lines intersected. Tetra Tech deviated from the plan in order to expedite the screening process. The soil sample and soil boring locations are shown in Appendix A, Figure 4. The lead concentrations measured with the XRF for each sampling location screened is included in Appendix A, Figure 5. Appendix A, Figure 6 shows the estimated lateral extent of lead contamination on the site based on the XRF screening results.

4.1 SOIL SAMPLING SUMMARY

As described in Section 4.1 above, Tetra Tech collected 45 samples which included 41 surface soil samples (including one grab sample from beneath a concrete slab) and four subsurface soil samples from three shallow soil borings advanced by Vironex, a Tetra Tech Geoprobe subcontractor. Vironex completed three soil borings using Geoprobe® direct-push technologies in accordance with Tetra Tech SOP No. 054, “Using the Geoprobe System” (Tetra Tech 1999d). The borings locations were identified as east, northwest and southwest, based on the geographic location of the boring in relation to the site. All three borings were advanced to a maximum depth of 10 feet bgs and two five-foot macro core soil samples were removed from each boring. Tetra Tech noted the lithology of the soil borings and recorded this information on soil boring logs which are included in Appendix D. Following the approved SAP, Tetra Tech collected subsurface soil samples from each boring at 2-foot sample intervals from the ground surface to the groundwater interface. Groundwater was encountered at a shallow depth in all three borings. Table 5 below presents the boring locations, boring identifiers, depth to groundwater, and the sampling depth interval from which a soil sample was collected.

TABLE 5 SOIL BORING SUMMARY			
Boring Location	Soil Boring Identifier	Depth to Groundwater (feet bgs)	Sample Interval (feet bgs)
Southwest	SB-1	5.65	0 to 2
	SB-2		2 to 4
Northwest	SB-4	0.75	0 to 2.5
East	SB-7	3.5	0 to 2.5

Notes: bgs = below the ground surface

Of the 45 samples collected, Tetra Tech selected 25 to be submitted to a laboratory assigned under EPA’s Contract Laboratory Program (CLP) for total lead analysis by EPA Method ILM05.4, inductively coupled plasma atomic emission spectroscopy (ICP-AES). Tetra Tech selected the six samples that were too wet to perform XRF screening on plus a duplicate of one of these samples, as the first seven samples of the 25 sample subset. Next, Tetra Tech sorted the XRF screening results for the other 39 samples that were screened with the XRF, by highest to

lowest lead concentration, and then selected the 17 samples with the highest lead concentration, plus one duplicate sample, to complete the subset. A summary of the soil samples selected for laboratory analysis is provided in Appendix G, Table G-2.

Surface soil samples were designated in accordance to the following format: “CP-SS-##,” with “CP” referring to the “Chesapeake Products” site, “SS” referring to “surface soil,” and the final two-digit number representing specific sampling locations. Subsurface soil samples were designated in accordance with the following format: “CP-SB-##,” with “CP” referring to the “Chesapeake Products” site, “SB” referring to “subsurface soil,” and the ending two-digit number representing the borehole and sampling interval). Appendix G, Table 2 presents a summary of the 25 samples that were selected for analysis by a CLP laboratory for total lead by ICP-AES.

5.1 GROUNDWATER SAMPLING

As mentioned in Section 4.2 above, Tetra Tech’s subcontractor, Vironex, advanced three soil borings, one in each corner of the site, east, southwest, and northwest corners, all to a depth of 10 feet bgs. Following the collection of subsurface soil samples from these locations, Tetra Tech instructed Vironex to install a temporary monitoring well in each boring. The monitoring wells were constructed of one 5-foot section of 1-inch diameter schedule 40 PVC pipe and one 5-foot section of 1-inch diameter # 10 (0.010 inch) slotted PVC screen. Sand was poured into the annulus of the borehole to create a sand pack around and slightly above the PVC screen. Following completion of the temporary monitoring wells, Tetra Tech initiated purging and sampling of the monitoring wells in accordance with Tetra Tech SOP No. 010-3, “Groundwater Sampling” (Tetra Tech 2000b). Data related to the depth of the boring, depth to groundwater, and purging calculations for each monitoring well was recorded on a monitoring well purging form. Copies of the monitoring well purging forms are provided in Appendix E. Initially, Tetra Tech attempted to purge the wells using the low flow purging procedure with micro-purge equipment; however, this method was taking too much time so Tetra Tech hand-bailed two of the three wells using disposable bailers. Purge water from the temporary monitoring wells was initially containerized in a 5-gallon bucket and then transferred into a 55-gallon poly drum that

Tetra Tech mobilized to the site. Once the temporary monitoring wells had been purged of the appropriate volume of water, Tetra Tech collected groundwater samples from each of the wells. Table 6 below provides a summary of the groundwater samples collected.

TABLE 6 GROUNDWATER SAMPLE SUMMARY					
Boring Location	Temporary Monitoring Well ID	Groundwater Sample ID	Sample Date and Time	Analyses	Sample Type
Southwest	GW-01	CP09-GW-01	9/22/2009 1310	TCL VOCs and SVOCs, PCBs, TCL metals (total and dissolved), and CN	Grab
Northwest	GW-02	CP09-GW-02	9/22/2009 1227	TCL VOCs and SVOCs, PCBs, TCL metals (total and dissolved), and CN	Grab
East	GW-03	CP09-GW-03	9/22/2009 1145	TCL VOCs and SVOCs, PCBs, TCL metals (total and dissolved), and CN	Grab
		CP09-GW-04 (Duplicate of GW-03)	9/22/2009 1145	TCL VOCs and SVOCs, PCBs, TCL metals (total and dissolved), and CN	Field QA/QC

Notes: CN = Cyanide
 GW = Groundwater
 ID = Identification
 SVOC = Semivolatile organic compound

TCL = Target compound list
 VOC = Volatile organic compound
 QA/QC = Quality assurance/quality control

Appendix A, Figure 7, shows the locations of the three temporary monitoring wells and groundwater sampling locations.

6.1 SAMPLE MANAGEMENT

Samples were handled and packaged in accordance with the Tetra Tech SOP No. 019, “Packaging and Shipping Samples” (Tetra Tech 2000a) and with the Tetra Tech “Quality

Assurance Project Plan (QAPP) for START” (Tetra Tech 2006b). All shipping containers were properly labeled with EPA custody seals and were delivered with signed chain-of-custody forms and appropriate hazard warnings for laboratory personnel. On July 23, 2009, under CLP case number 38801, samples were submitted to KAP Technologies of The Woodlands, Texas for organic analysis and to A4 Scientific, also located in The Woodlands, Texas for inorganic analyses. Appropriate samples were preserved and all samples were kept on ice during delivery to the assigned CLP laboratory. Copies of the EPA CLP traffic report and chain-of-custody records are provided in Appendix F.

6.2 EQUIPMENT DECONTAMINATION

All dedicated sampling equipment and personal protective equipment (PPE) used during the sampling event was double-bagged and disposed of as dry industrial waste. Non-dedicated sampling equipment was decontamination withalconox and distilled water followed by a double rinse with distilled water, in accordance with Tetra Tech SOP No. 002, “General Equipment Decontamination” (Tetra Tech 1999b). Decontamination fluids and monitoring well purge water were contained in a 55-gallon open top drum that remained at the site. Tetra Tech will make arrangements with a subcontractor to dispose of this wastestream in accordance with all applicable state and federal regulations.

5.0 ANALYTICAL RESULTS

This section summarizes analytical results for the samples collected during the Chesapeake Products multi-media assessment.

All validated sample analytical results were received by September 1, 2009. Tetra Tech summarized the laboratory data into tables which are provided in Appendix G. The validated CLP analytical data packages are provided in Attachment 1. Data were qualified as part of laboratory quality control procedures during data validation by EPA Region 3’s Office of Analytical Services and Quality Assurance Branch (EPA 1990, 2004 and 2008).

6.3 GROUNDWATER SAMPLING ANALYTICAL RESULTS

The sections below discuss the analytical results received from the groundwater samples submitted to the CLP laboratory for TCL VOC, SVOC, pesticides and PCBs analysis. All sample results are summarized in data tables included in Appendix G.

5.1.1 VOCs in Groundwater Samples

Analytical results for the groundwater samples collected on site revealed the presence of three different VOCs including acetone, methylene chloride, and toluene. All three compounds were detected in a laboratory blank and are therefore suspected to be present as a result of laboratory contamination.

5.1.2 SVOCs in Groundwater Samples

Analytical results for the groundwater samples collected on site revealed the presence of five different SVOCs including 4-Chloro-3-methylphenol, diethylphthalate, phenanthrene, fluoranthene, and pyrene. 4-Chloro-3-methylphenol was detected in groundwater sample GW-03 at a concentration of 4.4 micrograms per liter ($\mu\text{g/L}$) and diethylphthalate was detected in groundwater sample GW-01 at a concentration of 3.0 $\mu\text{g/L}$. Phenanthrene, fluoranthene, and pyrene were detected in the field blank but not in any other groundwater samples. All concentrations were “J” qualified indicating that the compound is present in the sample but that the reported value may not be accurate or precise. The concentrations of SVOCs detected in groundwater samples were compared to EPA maximum contaminant levels (MCL) (EPA 2009). No SVOCs were detected in any samples above the corresponding EPA MCLs.

5.1.3 Pesticides and PCBs in Groundwater Samples

Analytical results for groundwater samples collected on site did not reveal the presence of any pesticides or PCBs.

5.1.4 Inorganic Compounds in Groundwater Samples

The inorganic compounds detected in groundwater samples collected from the site are shown in Appendix G, Tables G-3 and G-4. Table G-3 presents the total metal concentrations and Table G-4 presents the dissolved metal concentrations. The concentrations of total metals detected in groundwater samples were compared to EPA MCLs. The levels of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, and thallium were detected in two or more groundwater samples at concentrations above the corresponding EPA MCL. Arsenic and lead were detected in all four groundwater samples at concentrations that were several orders of magnitude above the corresponding MCLs for these metals. The concentrations of dissolved metals detected in groundwater samples were also compared to EPA MCLs. The levels of antimony, arsenic, cadmium, copper, lead, and thallium were detected in one or more groundwater samples at concentrations above the corresponding EPA MCL and all six of these metals were detected in groundwater sample GW-01 at concentrations above the corresponding EPA MCL. Appendix A, Figure 8, shows the monitoring well sample results displayed on a map of the site.

6.4 SOIL SAMPLING ANALYTICAL RESULTS

This section discusses the analytical results received from the soil samples collected from the site. The soil samples were submitted to the CLP laboratory for lead analysis only. Lead detected in soil samples collected from the site are shown in Appendix G, Table G-5. The lead concentrations detected in the soil samples were compared to EPA's regional screening levels (RSL) established for industrial soils (EPA 2009). Lead was detected above EPA's recommended action level (there is no RSL established for lead) for lead of 800 milligrams per kilogram (mg/kg) in 21 of 25 samples submitted to the laboratory. Lead concentrations ranged from 143 mg/kg in surface soil sample SS-38 to 11,300 mg/kg in sample SB-02 collected from

the southwest boring at a depth of 2 to 4 feet bgs. The average concentration of lead for all 25 soil samples was 2,050 mg/kg.

Tetra Tech performed a relative percent difference (RPD) comparison of the XRF and laboratory measurements for lead using a subset of the 25 soil samples that were submitted to the laboratory for lead analysis and also screened in the field for lead using the portable XRF analyzer. The subset consisted of 18 samples for which there were both laboratory and XRF data available. The RPD ranged from less than 1 percent difference in soil sample SS-33 to approximately 16.3 percent in sample SS-14. The average RPD for all 18 samples was approximately 6.65 percent. The comparison of the XRF and laboratory measurements for lead is shown in Appendix G, Table G-6. Appendix A, Figure 9 shows the comparison of the XRF and laboratory measurement for lead for this subset of soil samples displayed on a map of the site.

6.0 SUMMARY AND CONCLUSIONS

In July 2009, Tetra Tech conducted a multi-media assessment of the Chesapeake Products site for the purpose of determining the lateral extent of heavy metal contamination, primarily lead, in the surface soils at the site and to determine whether hazardous substances are present in groundwater beneath the site. Tetra Tech collected 41 surface soil samples and screened 35 of these samples for lead contamination using a portable XRF analyzer. In 19 of the samples, lead was measured at a concentration greater than 800 mg/kg (EPA's recommended action level). Additionally, Tetra Tech collected four subsurface soil samples from three soil borings and screened these samples for lead using the XRF analyzer. In two of the four samples screened, lead was measured at a concentration of greater than 800 mg/kg and in one sample collected at a depth of 2 to 4 feet bgs, lead was measured at a concentration of 10,681 mg/kg, which is several orders of magnitude above the EPA recommended action level for industrial soils. Tetra Tech submitted a subset of the soil samples to a CLP laboratory to confirm the lead concentration measured using the XRF and the laboratory data substantiated the XRF data. Of 18 samples where the laboratory and XRF data were compared, eight samples analyzed by the laboratory showed higher lead concentrations than the same set screened with the XRF. The average lead

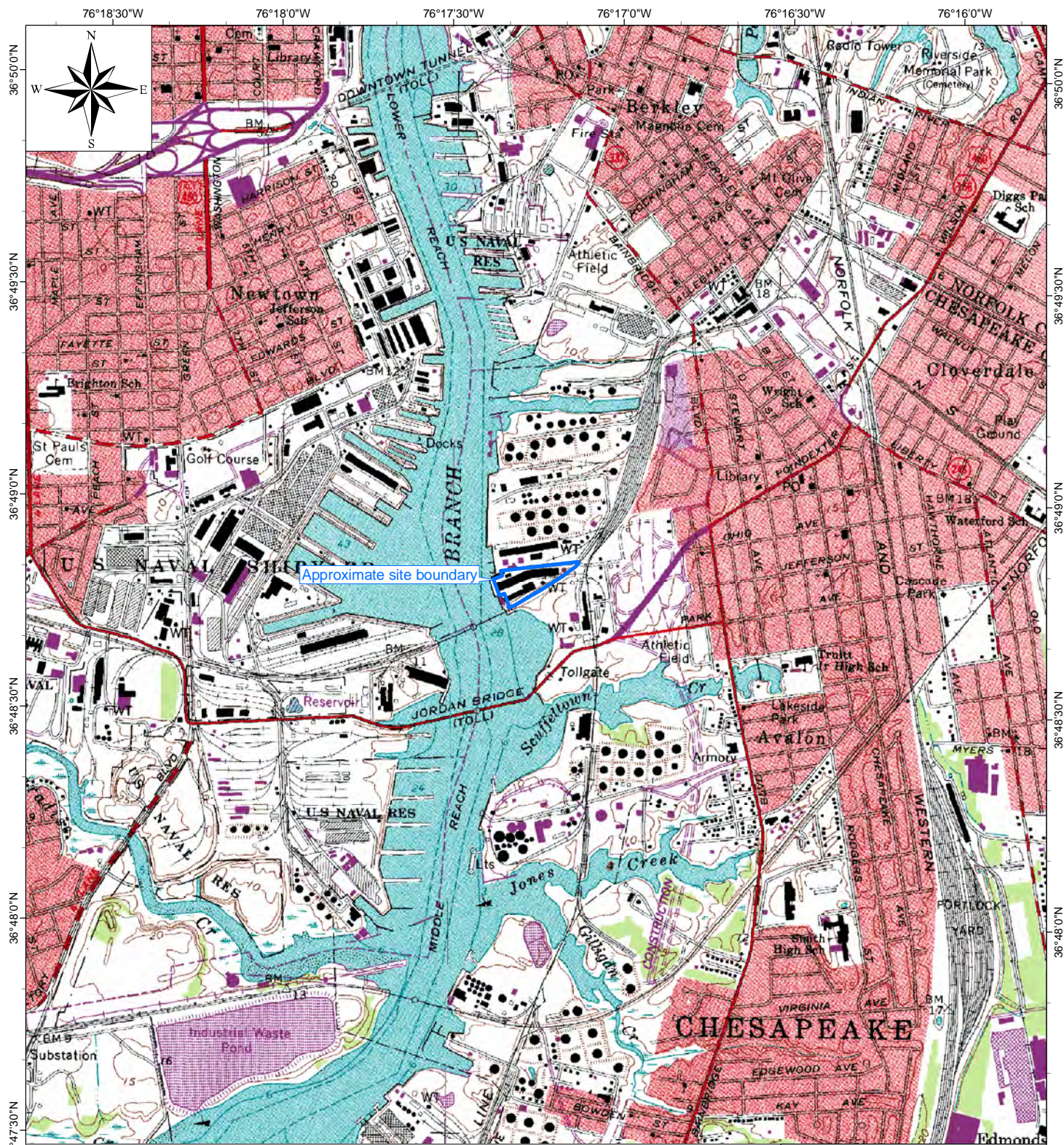
concentration for the 18 samples that were compared was 2,484 mg/kg in the samples analyzed by the laboratory and 2,440 mg/kg for those samples screened using the XRF.

Tetra Tech also collected four groundwater samples from the three temporary monitoring wells that were installed during the July 2009 assessment. The levels of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, and thallium were detected in two or more groundwater samples at concentrations above the corresponding EPA MCL. Arsenic and lead were detected in all four groundwater samples at concentrations that were several orders of magnitude above the corresponding MCLs for these metals.

7.0 REFERENCES

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APPENDIX A
FIGURES



Quadrangle Location = ■

Virginia



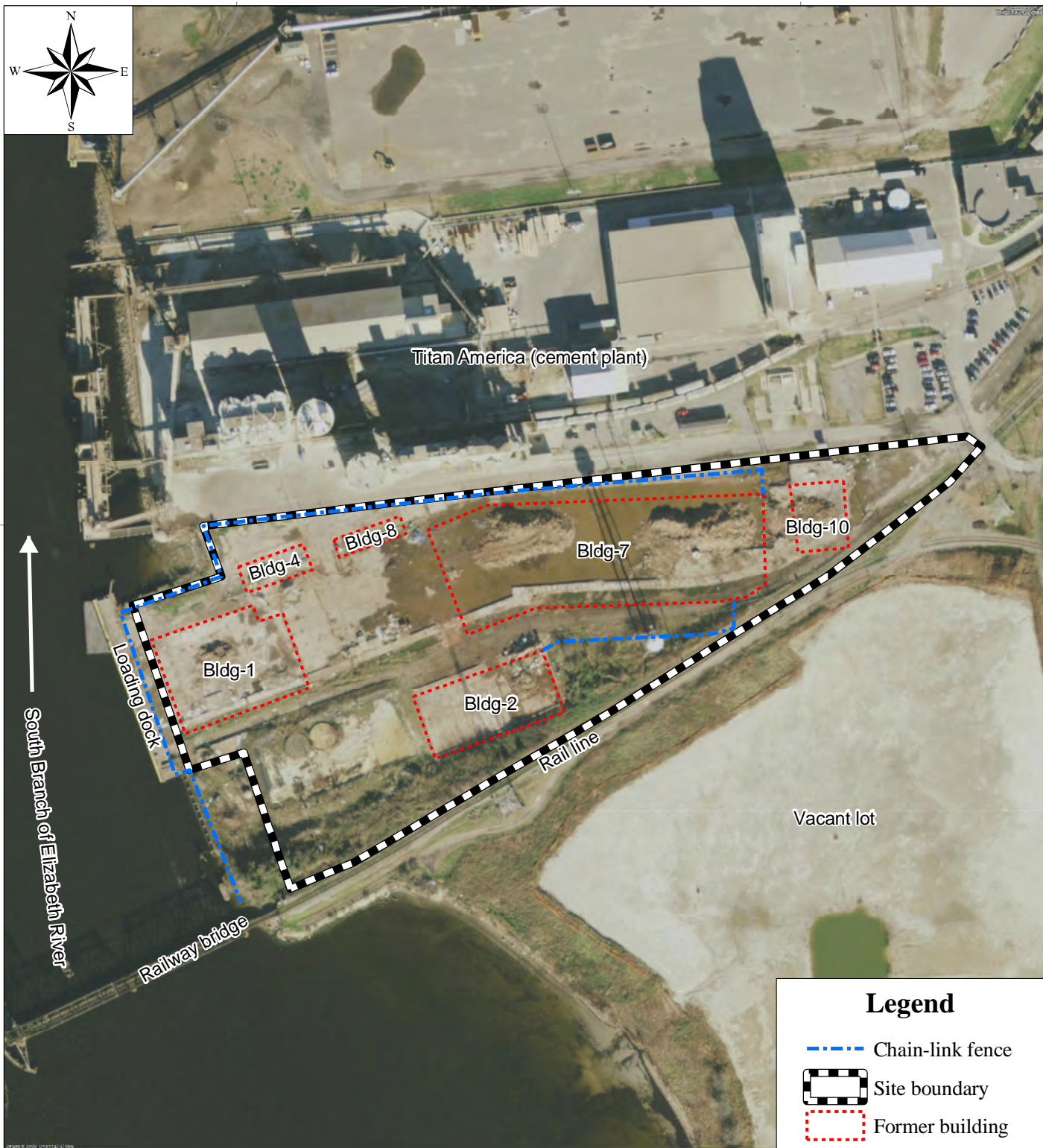
Chesapeake Products Site Chesapeake, Virginia

Figure 1
Site Location Map

TDD No. E43-026-09-07-018
EPA Contract No. EP-S3-05-02

Map created on July 12, 2009
by D. Call, Tetra Tech EM Inc.





Legend

- - - - - Chain-link fence
- Site boundary
- Former building

0 100 200
Feet

Approximate Site Location = ■



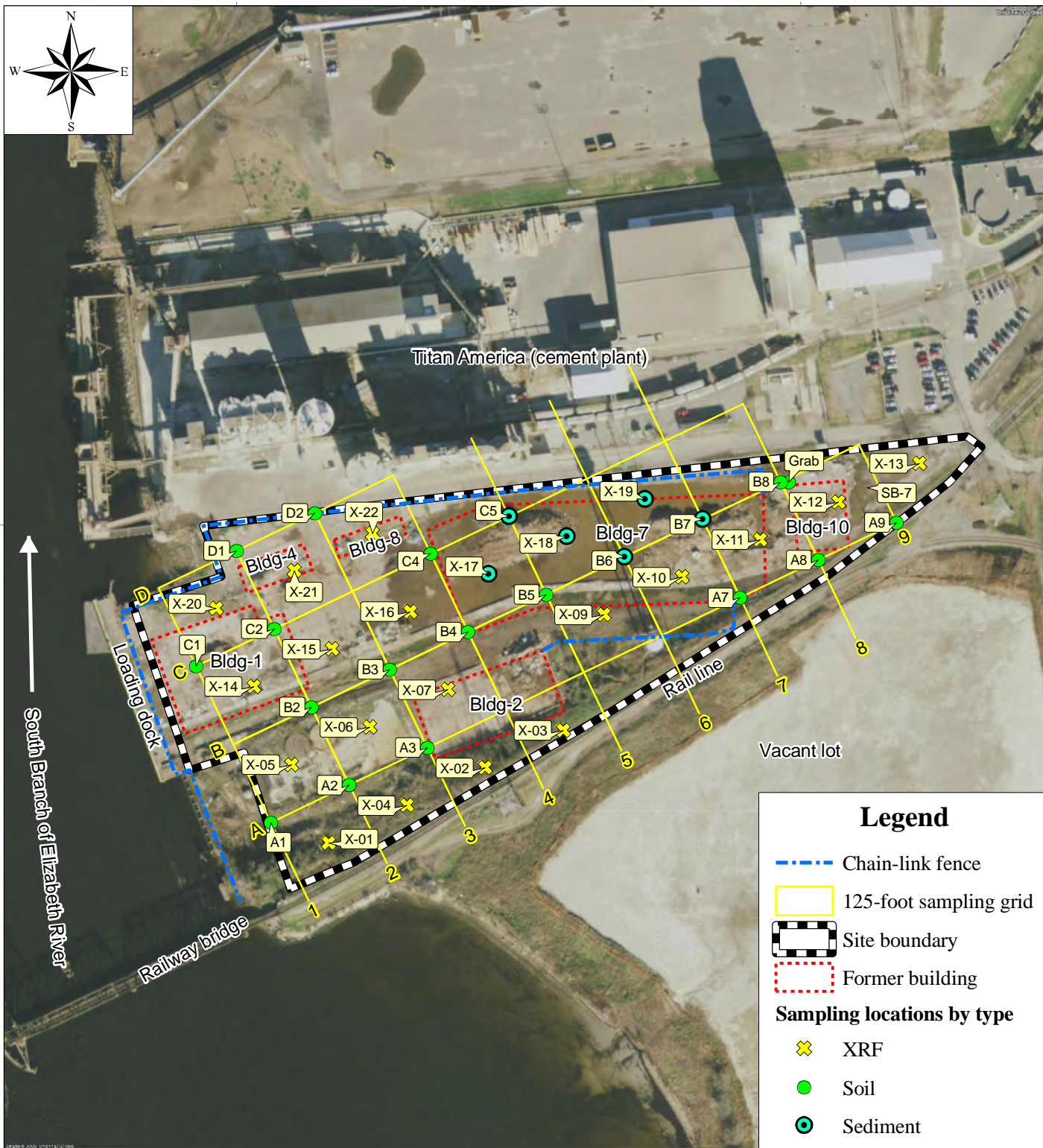
Chesapeake Products Site
Chesapeake, Virginia

Figure 2
Site Layout Map

TDD No. E43-026-09-07-018
EPA Contract No. EP-S3-05-02

Map created on July 12, 2009
by D. Call, Tetra Tech EM Inc.





Approximate Site Location = ■



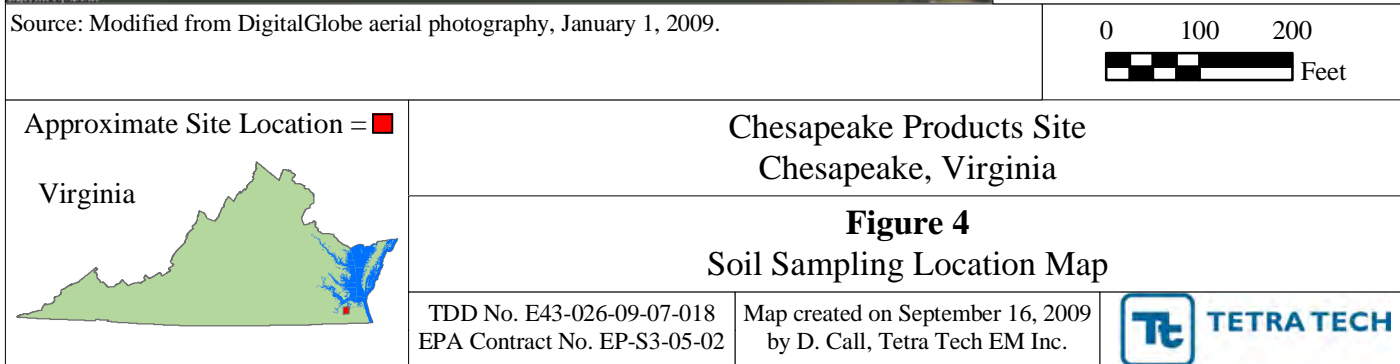
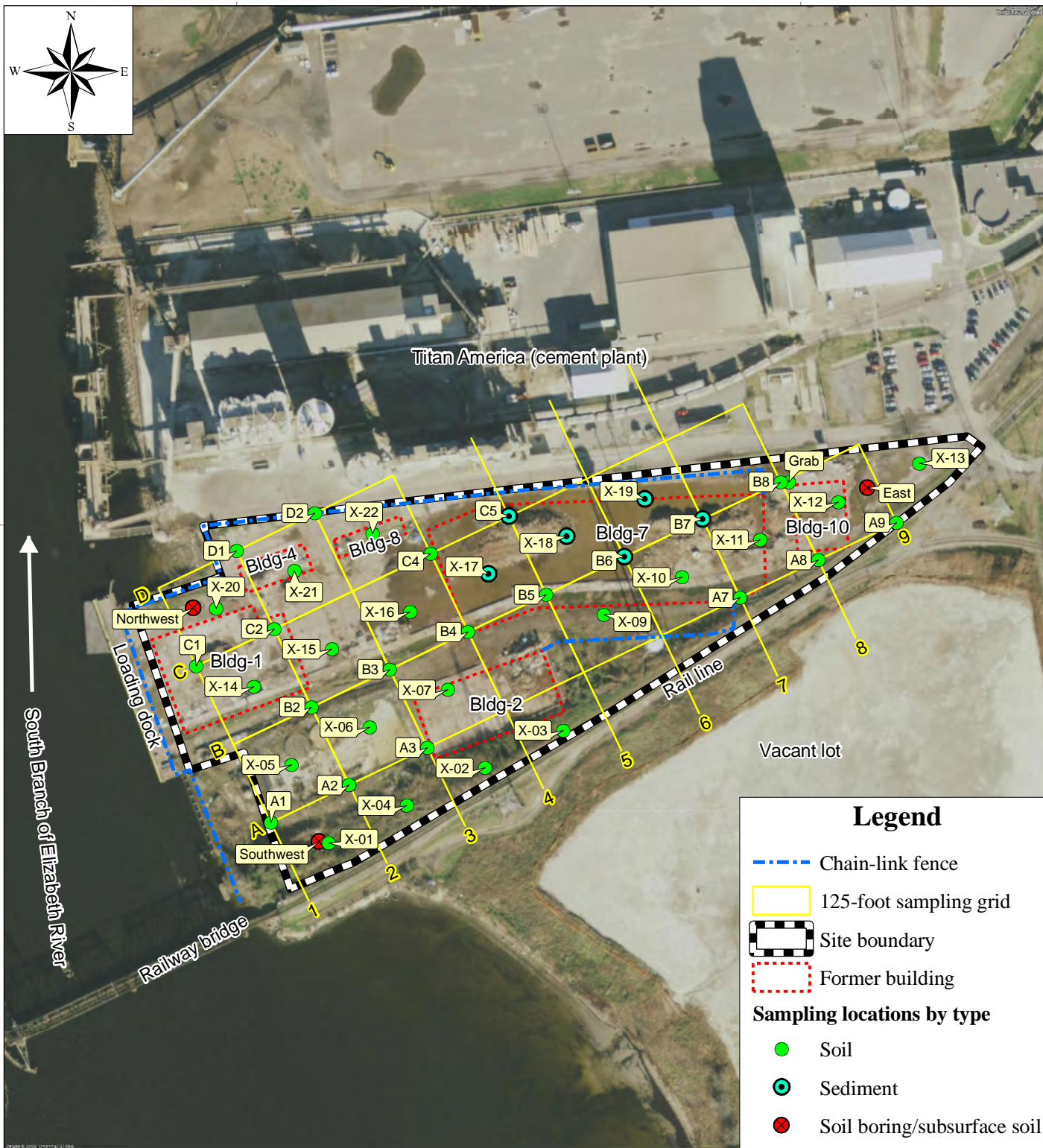
Chesapeake Products Site
Chesapeake, Virginia

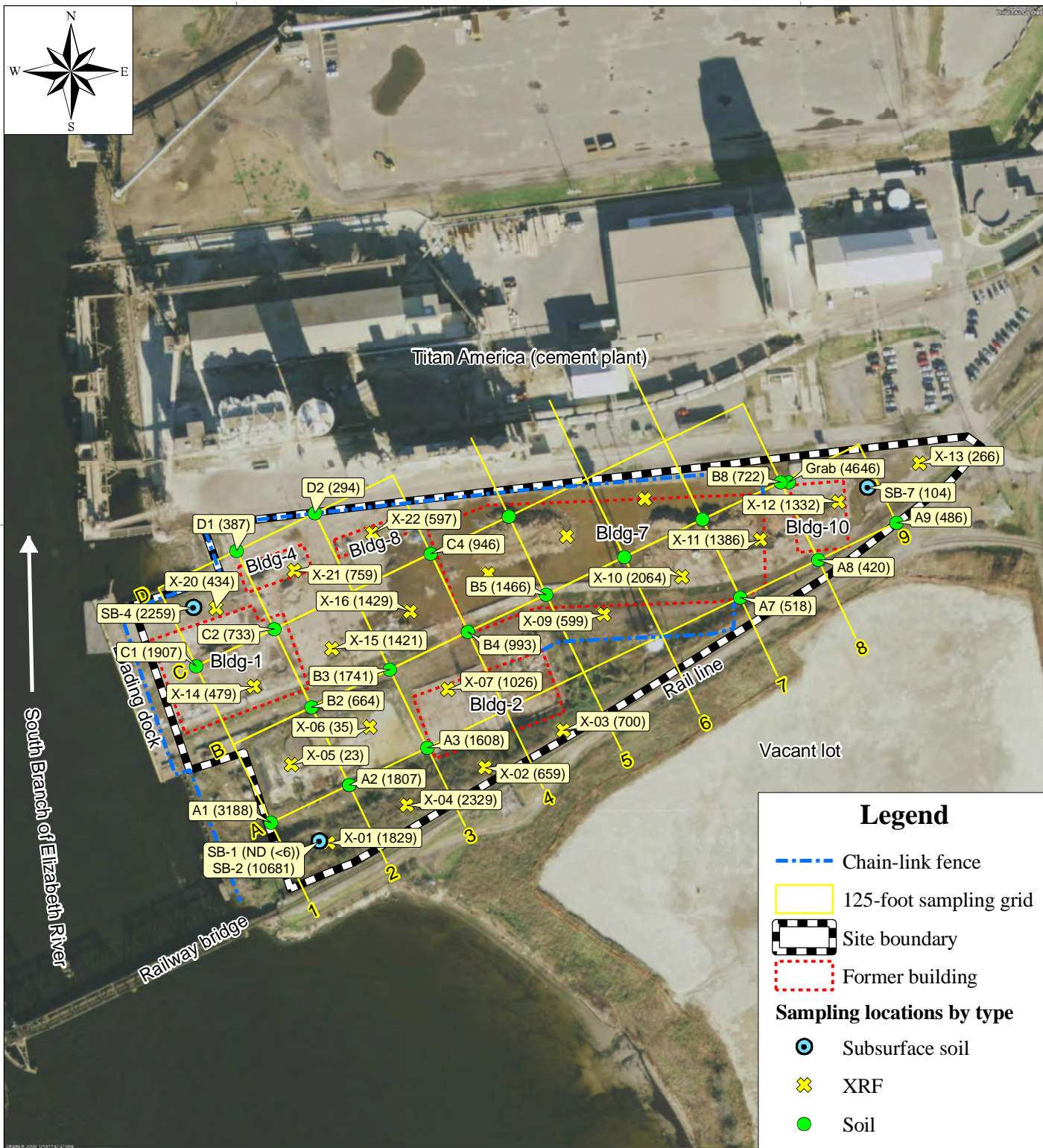
Figure 3
Surface Soil Sampling Location Map

TDD No. E43-026-09-07-018
EPA Contract No. EP-S3-05-02

Map created on September 16, 2009
by D. Call, Tetra Tech EM Inc.



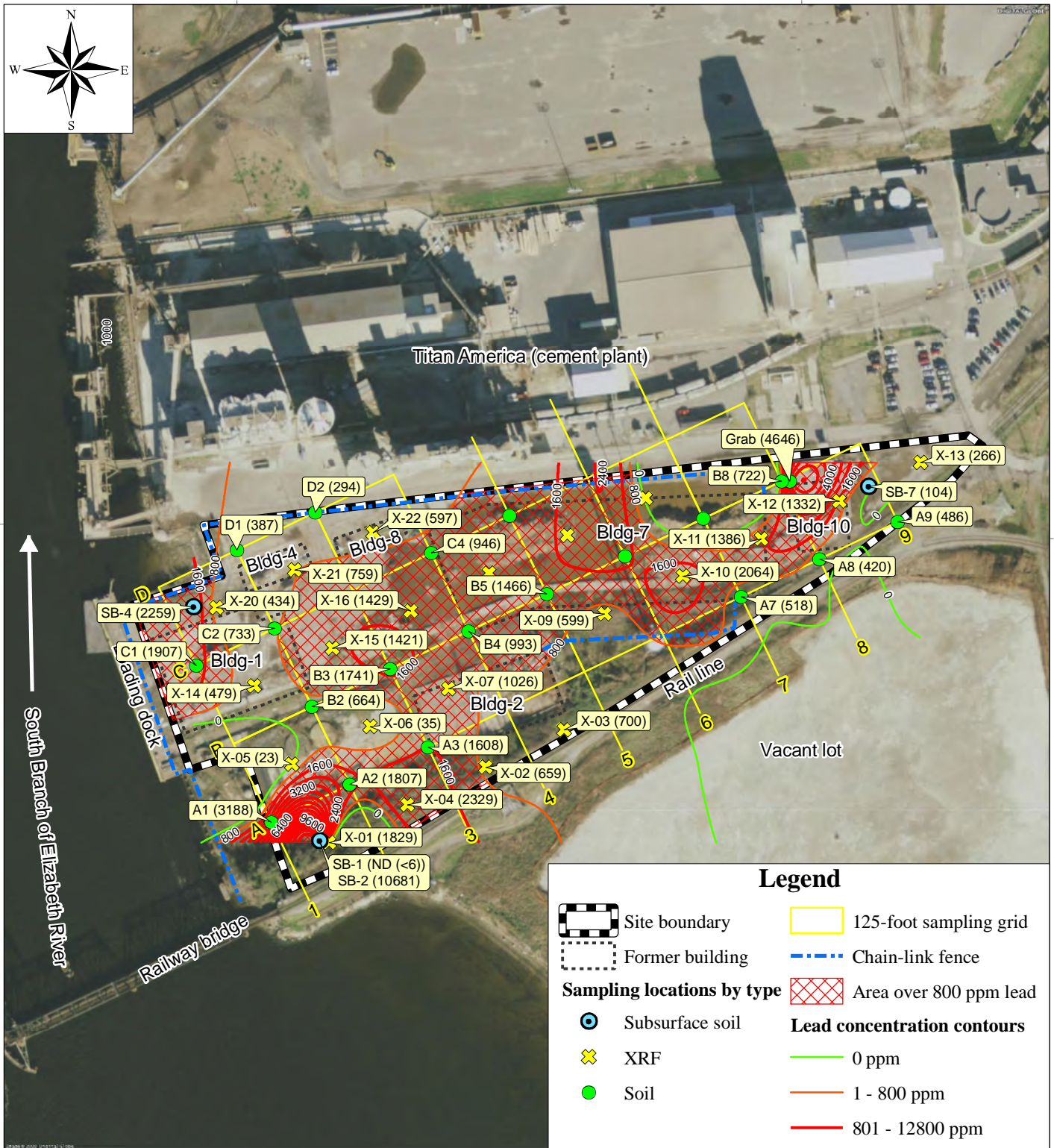




TDD No. E43-026-09-07-018
EPA Contract No. EP-S3-05-02

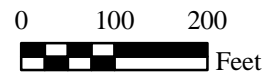
Map created on September 16, 2009
by D. Call, Tetra Tech EM Inc.





Source: Modified from DigitalGlobe aerial photography, January 1, 2009.

Notes: XRF readings for lead results are given in parentheses after each sample ID. All results in parts per million (ppm). Lead concentration contour interval is 800 ppm, contours are interpolated from known values and may not be accurate.



Approximate Site Location = ■



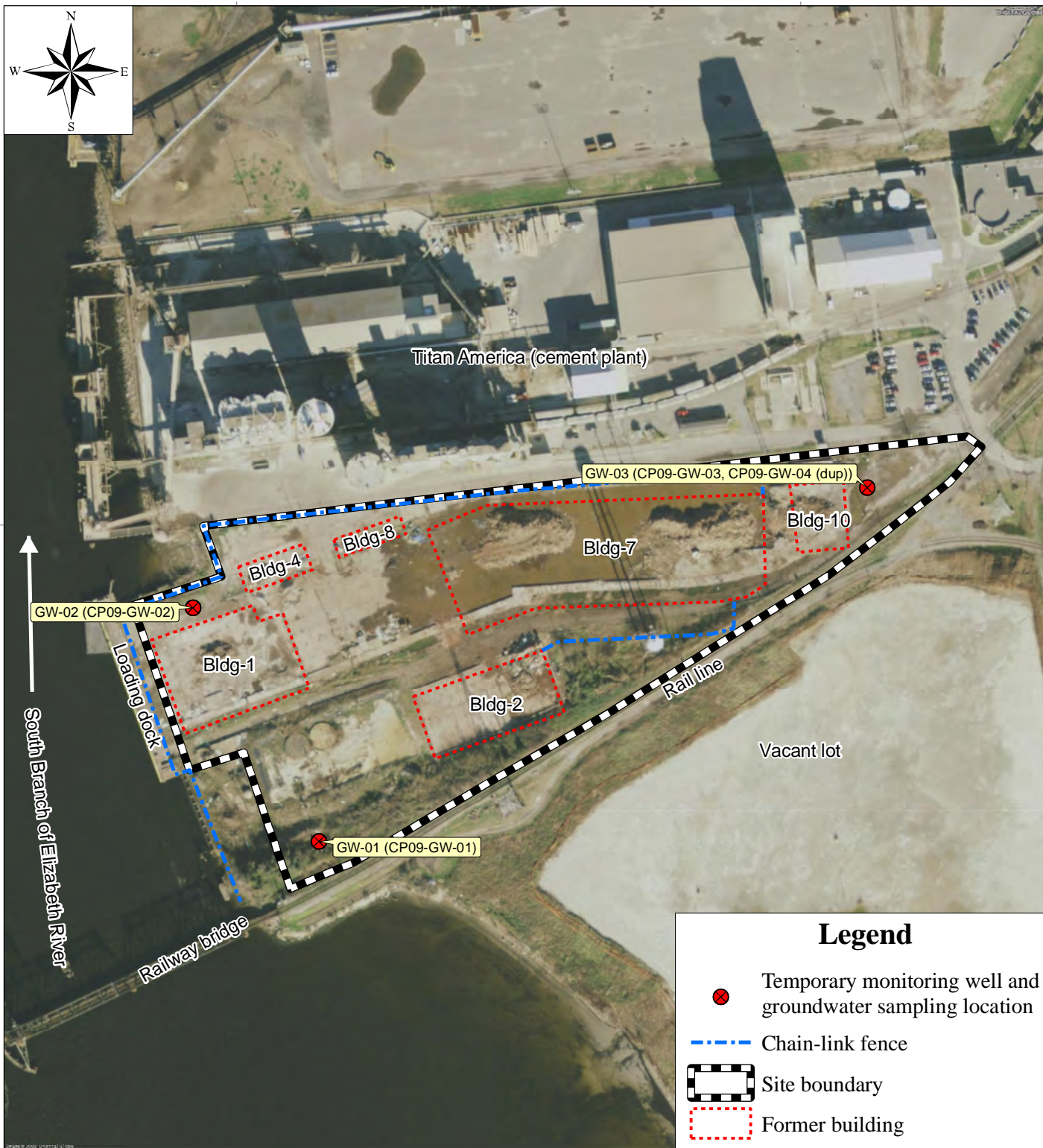
Chesapeake Products Site Chesapeake, Virginia

Figure 6
Isoconcentration Map Showing Estimated Lateral Extent of Lead Contamination Based on XRF Screening Results

TDD No. E43-026-09-07-018
EPA Contract No. EP-S3-05-02

Map created on July 28, 2009
by D. Call, Tetra Tech EM Inc.





Source: Modified from DigitalGlobe aerial photography, January 1, 2009.

0 100 200
Feet

Approximate Site Location = ■



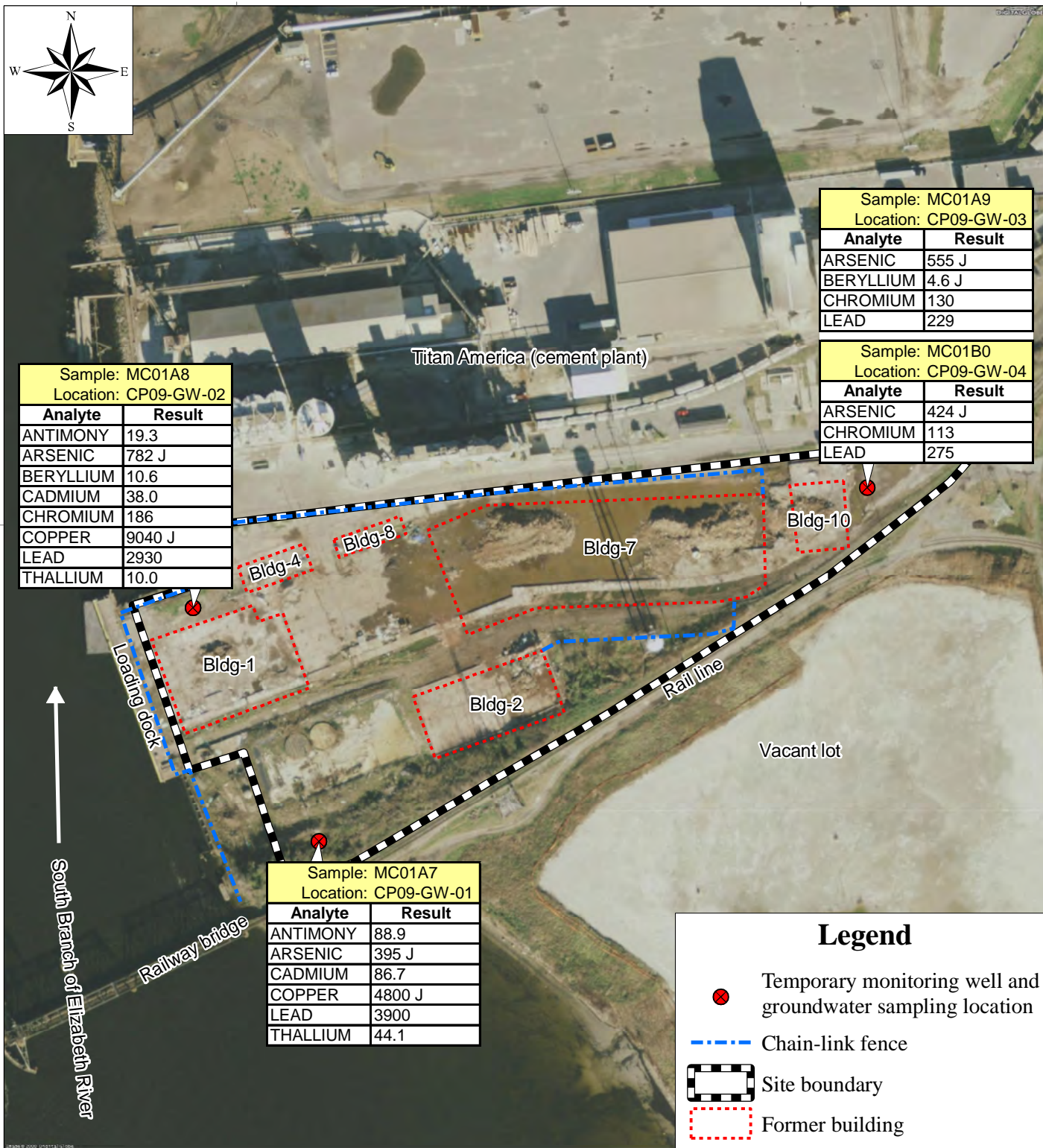
Chesapeake Products Site
Chesapeake, Virginia

Figure 7
Groundwater Sampling Location Map

TDD No. E43-026-09-07-018
EPA Contract No. EP-S3-05-02

Map created on September 28, 2009
by D. Call, Tetra Tech EM Inc.





Source: Modified from DigitalGlobe aerial photography, January 1, 2009.

Notes: In sampling location labels, all result concentrations are in µg/L.

J = Analyte present. Reported value may not be accurate or precise.

Approximate Site Location = ■



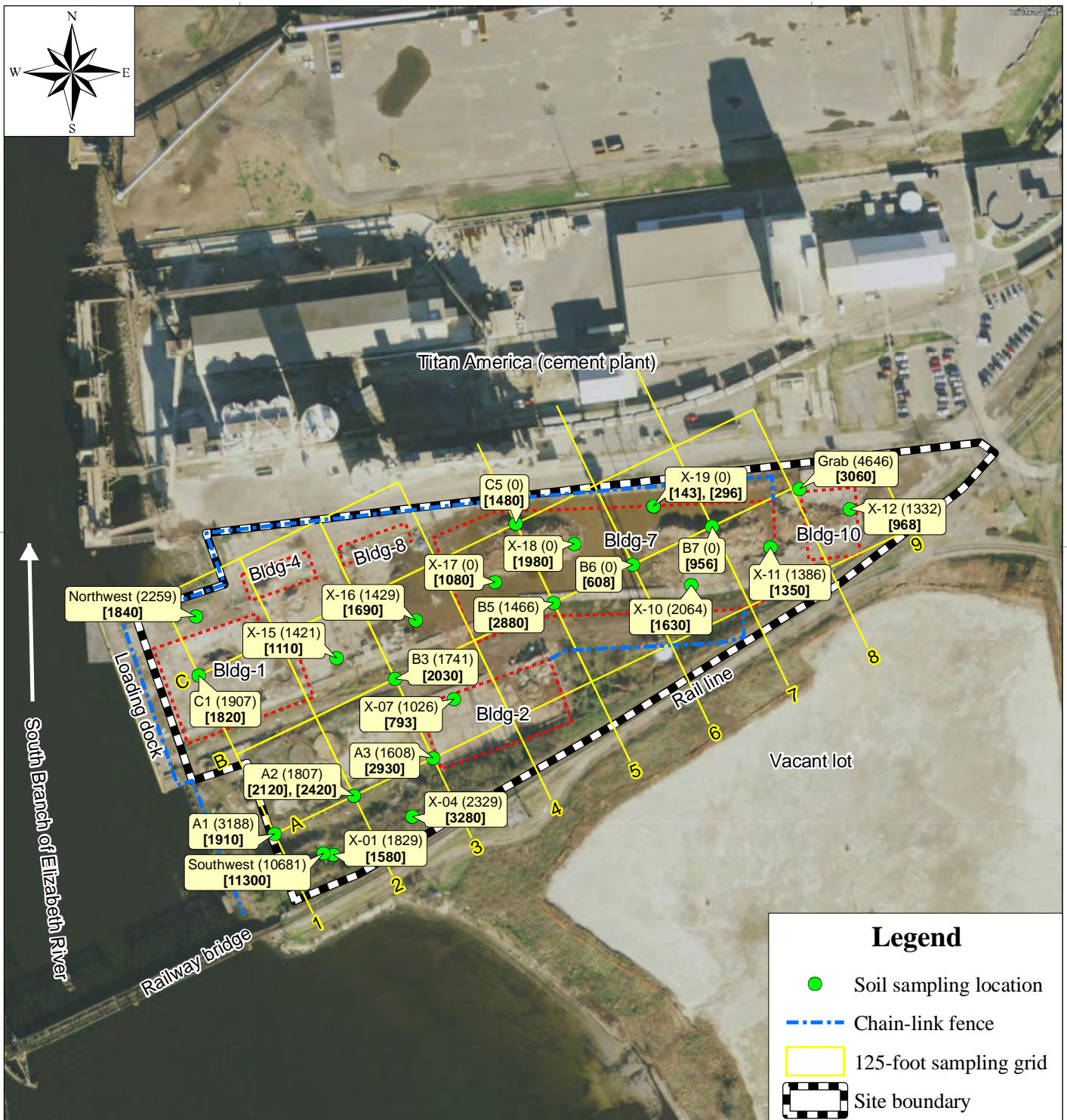
Chesapeake Products Site
Chesapeake, Virginia

Figure 8
Groundwater Sampling Location Map with Inorganic Contaminant Results

TDD No. E43-026-09-07-018
EPA Contract No. EP-S3-05-02

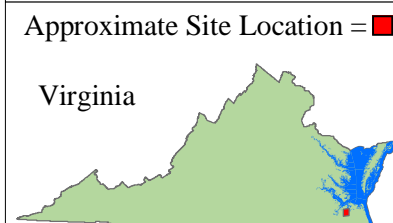
Map created on September 28, 2009
by D. Call, Tetra Tech EM Inc.





Source: Modified from DigitalGlobe aerial photography, January 1, 2009.

Notes: XRF readings for lead results are given in parentheses after each sample ID. Lab lead results are given in brackets, in bold text below each sample ID. All results in parts per million (ppm). Sampling locations A2 and X-19 have multiple samples taken at that location, lab lead results are given in brackets separated by commas.



Chesapeake Products Site Chesapeake, Virginia

Figure 9
Sampling Location Map with XRF Screening and Laboratory Lead Results

TDD No. E43-026-09-07-018
EPA Contract No. EP-S3-05-02

Map created on September 16, 2009
by D. Call, Tetra Tech EM Inc.



APPENDIX B

FIELD LOGBOOK NOTES



"Rite in the Rain"
ALL-WEATHER WRITING PAPER

ALL-WEATHER
FIELD BOOK

Name _____

Address _____

Phone _____

Project _____

This book is printed on "Rite in the Rain" All-Weather Writing Paper - A unique paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather. For best results, use a pencil or an all-weather pen.

Specifications for this book:

Page Pattern		Cover Options	
Left Page	Right Page	Polydura Cover	Fabricoid Cover
Columnar	1/4" Grid	Item No. 350N	Item No. 350NF

CONTENTS

DATE

REFERENCE

PAGE

Chesapeake Products
July/August 2009 Soil/GW Assessment

TDD: E43-026-09-07018

#1

Chesapeake Products, Inc. Site
Chesapeake, VA

Monday, July 20, 2007

0730 Kevin Scott (KS) of Tebra Tech
(TE) arrives at his rental car
and picks up rental vehicle
for job site (SUV) KS

0830 KS arrives @ TE Boothwyn
office & prints out copies
of final Sampling & Analysis
Plan (SAP) & Health & Safety
Plan (HASP) KS

1030 KS, Dave Scarbo (DS) & Ken
Eden (KE) of TE load
up vehicles with supplies
& Equipment. KS

1110 TE departs Boothwyn, PA for
Chesapeake Products site

1130 KS contacts EPA OSC
Dominic Ventura to provide
Estimated time of Arrival
(*1630) KS

1645 TE crew arrives onsite
& confers w/ Dominic Ventura
crew does site walk/Recon
Light rain, breezy. KS

Monday, 7/20/07 (con)

1700 TE crew locates sampling
& ~~SRF~~ pts with hand-
held trimble GPS - survey
flags &/or spray paint for
1830 All personnel offsite

~~Site~~
7/20/07

Chesapeake Resources, Inc. Site
Chesapeake, VA 23324

Tuesday, July 21, 2009

0700 TE personnel Kevin Scott (KS)
Ken Edson (KE) + Dave Scarbo

(DS) meet in Hotel lobby
(Staybridge Suites, Chesapeake,
VA) + depart for site

0730 TE crew arrives on site

Weather Partly Cloudy, 75°F
82% humidity Wind from
NW @ 5 mph.

0735 OSC Don Ventura (DV) on site
TE crew sets up tent shelter
for supplies + equipment on
concrete pad near east end
of site.

0800 TE subcontractor Vironex
Corey Gamwell (CG) on site
TE personnel provide 50w
briefing + H+S briefing.

845 TE + Vironex conduct site
walk to survey subsurface
boring (Temporary monitoring
well locations (TMW))

KS

Tuesday, 7/21/09 (cont.)

0845 Vironex begins setting up
over first soil boring/TMW
location.

0850 Wes Threadid, SES Engineers
on site as PRS rep. site
to collect split samples w/
TE/EPA. (for 1 split)

0900 D.S. contacts XRF maint.
regarding tech difficulties
with XRF instrument. unit
needs to be changed longer

KS takes several photographs
of site + site activities

KS + D.S. mark remaining
soil sample locations + XRF

Screening locations with
survey flags or orange
spray paint. Trimble GPS
with pre-loaded way points
used to locate soil sample +
XRF screening locations.

0950 Macro core soil boring retrieved
from Temp. monitoring well #3 (east)

KS

Tues 7/21/09 (cont)

1000	Surface soil / sample A1 collected - (dedicated plastic scoop & 1 gallon zip-lock baggie)
1005	SS (KS) XRF sample X-1 collected - (same as above)
1015	XRF Pt X-4 collected
	New GPS coordinates taken in / recorded w/ Trimble GPS, (original Pts in accessible) due to thick vegetation
1020	XRF Pt X-5 Surf. Soil - Sample A.3 collected
1030	XRF Pt X-2 collected
1040	" " X-5 " (beneath poly liner near AST foundation)
1044	SS A-2 collected
1105	SS A-8 "
1115	SS A-7 "
1130	X-9 collected
1135	SS B-5 collected
	VitraneX completed work + off site (see K.S. boring logs)
	KS

Chesapeake Products, Inc
Tues. 7/21/09 (cont)

1145	SS B-4 collected
1155	SS B-3 "
	LATE Entry
	Ken Eden collected the following samples:
X 11	- 11:25
B 6	11:30
X 16	11:33
X 15	11:35
X 14	11:37
C-1	11:48
C 2	11:54
1205	SS-B-2 collected
1225	-Lund
1325	XRF Pt X-10 collected
1335	XRF Pt X-3 collected
	LATE Entry
	Ken EDEN collected the following samples:
X-20	- 1335 C-4 1325
X-21	1333 D-2 1330
X-22	1328
1346	KS collects X-7
1357	" " X-6 (above + beneath liner)

Chesapeake Products, Inc. Site

Chesapeake, VA

Tuesday 7/21/09

1475 SS B 8 collected - Grab

Sample from under concrete slab also collected

Lake Entry -

Photo graphs of murrons

SS Location - XRF #12 collected

Lake Entry

Ken Eden collected the following

Samples

D1. 14:20

A9 14:50

1455 XRF #1 X-17 (sediment)

1405 XRF #4 X-18 "

1412 " " X-19 "

1525 SS B-67 (B) collected

1530 C-5

Lake Entry

X-12 - 1345 (Ken Eden)

D.S. screens all soil samples collected with XRF. 45 total number of soils collected from Grid

nodes ~~at~~ grid center, no samples collected at the

Tues. 7/21/09 (cont.)

following locations:

A4, A5, A6 (thick brush/vegetation)

A4, X8, C3 + B1 (concrete)

The following samples were collected from beneath pooled water on

concrete surface: X17, X18, X19

C5, B7, + B6 - ~~FS~~

D.S. recorded XRF reading

for each sample in Excel database

then sorted by highest lead

reading. All sediment samples

(X17, X18, X19, C5, B7 + B6) selected

as samples to be shipped to Lab

for analysis for lead (no XRF

screening performed on these

samples due to high moisture

content. Remaining 17

soil samples selected for

laboratory analysis for lead

based on highest observed XRF

screening measurement. These

17 samples all had XRF readings

above 1,000 ppm. Two

duplicates also taken, 1 from

sed + 1 from soil.

Chesapeake Products, Inc Site

Chesapeake, VA

Tuesday, July 21, 2009 (cont.)

1600 Split soil samples provided

to PRP representative, Wes

Harden, SCS Engineers, 23 of

25 soil samples split with

SCS Engineers (PRP did not

want split samples of the

two duplicates collected by

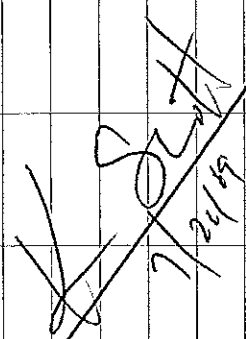
TZ.

1700 PRP rep offsite

TZ crew breaks down & repacks

gear into vehicles

1730 TZ + EPA personnel offsite



7/24/09

Chesapeake Products, Inc Site

Chesapeake, VA

Wednesday, July 22, 2009

0700 TZ personnel Kevin Scott (KS)

Ken Edan (K.E.) & Dave Scarbo (D.S.)

meet in hotel lobby (staybridge suite)

0730 TZ crew arrives on site, and

begins unloading gear +

equipment from rental vehicles.

Weather: Partly Cloudy 73°F

Humidity 87% Wind: Calm.

Expected high of 84°F.

Planned activities for today:

Survey in temporary monitoring

wells GPS soil & REF locations

that were off set, collect

GW samples from 3 temp. MWs

(Waiting on delivery of small dia.

tubing needed for bladder pump.)

label soil samples with CLP sample

labels.

0800 K.E. begins obtaining GPS coordinates

for off set samples location; collected

yesterday.

KS & D.S. begin survey

of T.M.W.s.

Chesapeake Products, Inc. Site

Chesapeake, VA

Wednesday, July 22, 2009 (cont.)

Base elevation 3.06'

TMW - NW

7.85' Top of

TMW - SW

7.32' casing (top)

TMW - E

5.31'

0840 TMW survey complete: OSC Dom.

Ventura onsite, PRP Rep Wes

Harding onsite.

0845 Depth to GW SW - 6.62'

" " "

E - 2.80'

" " "

NW - 4.69'

0850 GW elevation survey complete

Rough calculation indicates

GW flood is from East to

west toward Elizabeth River.

0900 Sample times provided to PRP

rep was (yesterday's samples).

0910 KS + K.E. collect measurements

to approximate volume of

waste piles on NW corner

of site: Range \approx 260' long

90' L x 10' high x 20' wide

Wed. 7/22/09 (cont.)

0940 K.S. departs site to retrieve

tubing needed to operate bladder

pump. (K.S. delivered to hotel via Fed-Ex)

also² pick up site fluids

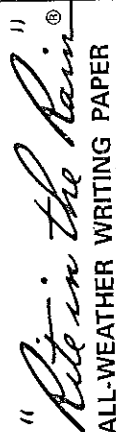
1015 KS retrieves tubing from

hotel & returns to site

1035 TC personnel begin purging

temporary monitoring well

on east end of site

[illegible]

ALL-WEATHER FIELD BOOK

Name _____

Address _____

Phone _____

Project _____

This book is printed on "Rite in the Rain" All-Weather Writing Paper - A unique paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather. For best results, use a pencil or an all-weather pen.

Specifications for this book:

Specifications for this book:		
Page Pattern		Cover Options
Left Page	Right Page	Fabrikoid Cover
Columnar	1/4" Grid	Item No. 350NF

Chesapeake Products

7/21/09

0730 KSF, D. Scerbo, Kevin Scott on

Site, Don Ventura, EPA on site.

0820 Vironex Drilling on site.

Correy - Driller.

0840 Health + Safety Briefing.

Preparing to setup Geoprobe

rig on GW-3 (east)

0920 Set Screen in GW-3 to 8' bgs. DTW = 0.75' bgs.

Collected SB-07/0.0-2.5' bgs.

for XRF analysis.

0950 Setting up on GW-2 (North west)

1010 Set Screen in GW-2 to 9.5' bgs.

DTW = 3.5' bgs.

Collected SB-04/0-2.5' (NW)

1020 Setting up on GW-1

1045 Set 10' of 0.010" PVC screen in

GW-1 to 9.0' bgs. DTW = 5.65' bgs.

Collected SB-01/0-2' (NE)

Collected SB-02/2-4' (SW)

~~Kevin S. Scott~~
7/21/09

Chesapeake Products

7/22/09

0730 KSF, DS, K Scott on site.

0830 Surveying Temp monitoring wells.

Well

DTW

DTB (From Top)

GW-1

6.62

10.04

GW-2

4.69

9.95

GW-3

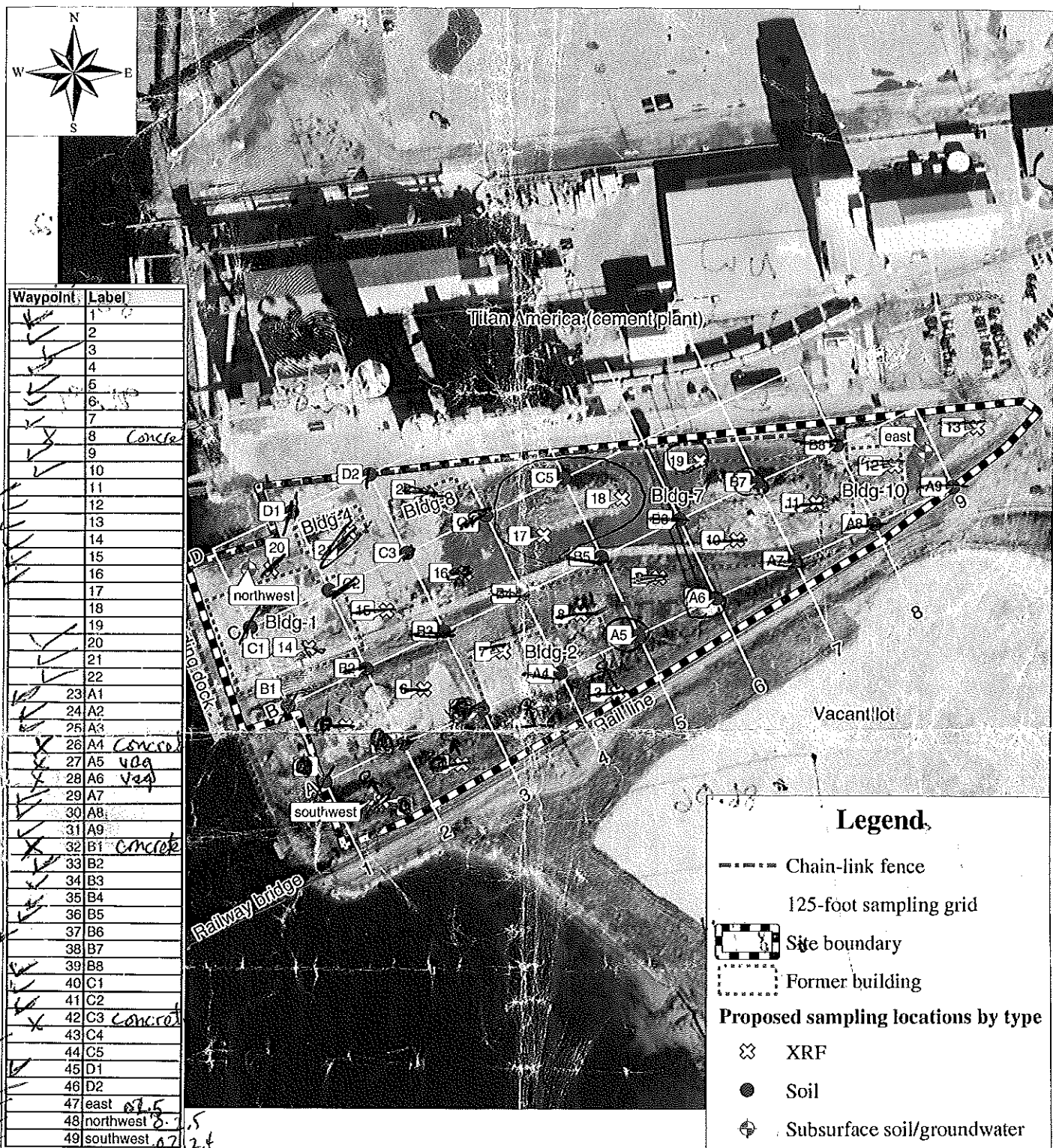
2.80

9.50

1040 Setting up to purge GW-3

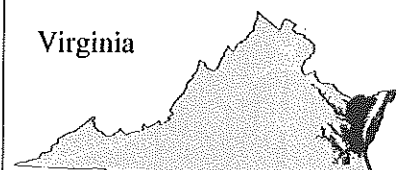
1140 Purged a 1.1 gallons.

1145 Collect GW-3 using a bailer



Source: Modified from DigitalGlobe aerial photography, January 1, 2009.

Approximate Site Location = ■



Chesapeake Products Site
Chesapeake, Virginia

Figure 3
Proposed Sampling Location Map, GPS Waypoint names

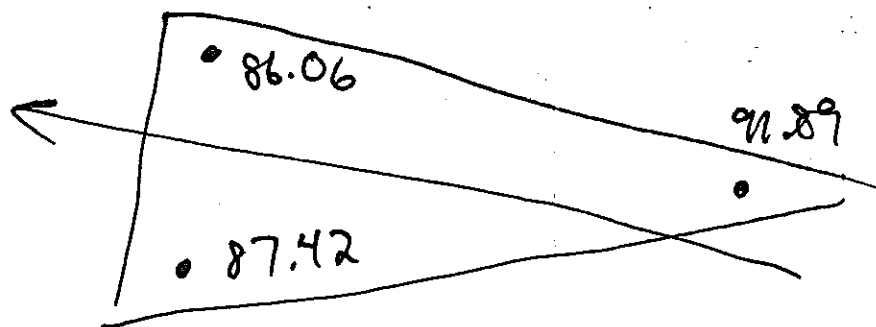
TDD No. E43-026-09-07-018
EPA Contract No. EP-S3-05-02

Map created on July 12, 2009
by D. Call, Tetra Tech EM Inc.



TETRA TECH

		<u>casing</u>	<u>otw</u>	<u>GW elev</u>
NW	-	7.89	4.69	87.42
JW		7.32	6.62	86.06
E		5.31	2.80	91.89



APPENDIX C
PHOTOGRAPHIC DOCUMENTATION LOG



Photographic Documentation

Client: U.S. EPA Region 3
Site Name: Chesapeake Products
Location: Chesapeake, Virginia
Date: July 20, 2009

Prepared by: Tetra Tech EM Inc.
Photographer: Kevin Scott
TDD Number: E43-026-09-07-018

Photograph No. 1

Photograph Date:
July 20, 2009

Photograph Time:
1800

Description:
View of the property looking west.



Photograph No. 2

Photograph Date:
July 20, 2009

Photograph Time:
1805

Description:
View of concrete slab from former building on east end of property looking northwest.





Photographic Documentation

Client: U.S. EPA Region 3
Site Name: Chesapeake Products
Location: Chesapeake, Virginia
Date: July 20, 2009

Prepared by: Tetra Tech EM Inc.
Photographer: Kevin Scott
TDD Number: E43-026-09-07-018

Photograph No. 3

Photograph Date:
July 20, 2009

Photograph Time:
1815

Description:
Close-up view of remaining concrete slab from on east end of property looking west.



Photograph No. 4

Photograph Date:
July 20, 2009

Photograph Time:
1830

Description:
View of debris below concrete slab on east end of property looking northeast.





Client: U.S. EPA Region 3
Site Name: Chesapeake Products
Location: Chesapeake, Virginia
Date: July 20, 2009

Photographic Documentation

Prepared by: Tetra Tech EM Inc.
Photographer: Kevin Scott
TDD Number: E43-026-09-07-018

Photograph No. 5

Photograph Date:
July 20, 2009

Photograph Time:
1835

Description:
Another view of the property
looking west.



Photograph No. 6

Photograph Date:
July 21, 2009

Photograph Time:
0900

Description:
Drilling temporary monitoring
well GW-3 using a Geoprobe.





Photographic Documentation

Client: U.S. EPA Region 3
Site Name: Chesapeake Products
Location: Chesapeake, Virginia
Date: July 20, 2009

Prepared by: Tetra Tech EM Inc.
Photographer: Kevin Scott
TDD Number: E43-026-09-07-018

Photograph No. 7

Photograph Date:
July 21, 2009

Photograph Time:
1100

Description:
Sampling of the waste pile on
west side of property.



Photograph No. 8

Photograph Date:
July 21, 2009

Photograph Time:
1130

Description:
View of former above ground
storage tanks secondary
containment berms.





Client: U.S. EPA Region 3
Site Name: Chesapeake Products
Location: Chesapeake, Virginia
Date: July 20, 2009

Photographic Documentation

Prepared by: Tetra Tech EM Inc.
Photographer: Kevin Scott
TDD Number: E43-026-09-07-018

Photograph No. 9

Photograph Date:
July 21, 2009

Photograph Time:
1200

Description:
Sampling of surface soils for on-site XRF analysis.



Photograph No. 10

Photograph Date:
July 21, 2009

Photograph Time:
1230

Description:
View of lithology from GW-1 soil boring. Upper soil core 0 to 5 feet bgs, lower core 5 to 10 feet bgs. The color change @ approximately 2 feet bgs.





Client: U.S. EPA Region 3
Site Name: Chesapeake Products
Location: Chesapeake, Virginia
Date: July 20, 2009

Photographic Documentation

Prepared by: Tetra Tech EM Inc.
Photographer: Kevin Scott
TDD Number: E43-026-09-07-018

Photograph No. 11

Photograph Date:
July 22, 2009

Photograph Time:
1200

Description:
Close up view of debris below
concrete slab (see Photo 4).



Photograph No. 12

Photograph Date:
July 22, 2009

Photograph Time:
1230

Description:
Sampling groundwater from
temporary monitoring well GW-3.



APPENDIX D
BORING LOGS



Tetra Tech EMI
7 Creek Parkway, Suite 700
Boothwyn, Pennsylvania 19061

Project No.: 0907018

Page: 1 of 1

Boring No.: GW-1

Drilling Rig: Geoprobe 6610 DT

Contractor: Vinmax

Drilling Method: 2" Direct Push

Project Location: Chesapeake Products

Drill Crew: Corney

Sampling Method: 5' - Core Barrel

Logged by: K. Eden

Date Started: 7/21/09

Date Finished: 7/21/09

DEPTH (feet)	SAMPLE INTERVAL (feet)	Recovered/ Attempted (inches)	PID (ppm)	WELL COMPLETION	LITHOLOGY DESCRIPTION
1	(0-5')	(36")			(0-2') Tan f.g. sand(sp), Dry (Collected SB-01/0-2')
2					(2-5') Reddish brown silty sand(sm) Moist. (Collected SB-02/24')
3					Sand Pack
4					(5-9') Brown to Red silty sand (sm), wet/saturated 5.65' DTW
5	(5-10')	(40")			1" PVC Screen
6					9' - Bottom of Screen
7					(9-10') Gray Clay, (CL) Moist.
8					10' End of Boring.
9					Hole Collapsed
10					
11					
12					

ppm = parts per million

ND = Non-Detect

bgs = below ground surface

= Depth to Water



Tetra Tech EMI
7 Creek Parkway, Suite 700
Boothwyn, Pennsylvania 19061

Project No.: 0907018

Page: 1 of 1

Boring No.: GW-2

Drilling Rig: Geoprobe 6610 DT

Contractor: Vironey

Drilling Method: 2" - Direct Push

Project Location: Chesapeake Products

Drill Crew: Conroy

Sampling Method: 5' - Core Barrel

Logged by: K. Eden

Date Started: 7/21/09

Date Finished: 7/21/09

DEPTH (feet)	SAMPLE INTERVAL (feet)	Recovered/ Attempted (Inches)	PID (ppm)	WELL COMPLETION	LITHOLOGY DESCRIPTION
1	(0-5')	(24")			(0-2') Tan to Brown silty sand, (SM), Fill, Bricks, gravel, Dry (Collected SB-04/0-2.5')
2					
3					
4					
5	(5-10')	(18")			(5-6.5') Brown silty sand, (SM), Saturated
6					Sand Pack
7					1" PVC 0.010" slot screen
8					
9					9.5' Bottom of Screen
10					Hole Collapsed.
11					10' End of Boring
12					

ppm = parts per million

ND = Non-Detect

bgs = below ground surface

DTW = Depth to Water



Tetra Tech EMI
7 Creek Parkway, Suite 700
Boothwyn, Pennsylvania 19061

Project No.: 0907018

Page: 1 of 1

Boring No.: GW-3

Drilling Rig: Geoprobe 6610 DT

Contractor: Virnux

Drilling Method: Direct Push-2"

Project Location: Chesapeake Products

Drill Crew: ~~Virnux~~ ^{Corral}

Sampling Method: 5' Core Barrel

Logged by: K. Eden

Date Started: 7/21/09

Date Finished: 7/21/09

DEPTH (feet)	SAMPLE INTERVAL (feet)	Recovered/ Attempted (Inches)	PID (ppm)	WELL COMPLETION	LITHOLOGY DESCRIPTION
1	(0-5')	50"	-		(0-2') Gray to light gray silty sand (ML) w/ some gravel. Dry.
2					(2-5') Dark gray to black silty sand (ML) Wet.
3					(Collect SB-07/0-2.5')
4					(5-9') Dark gray f.g. sand (SP) Saturated.
5	(5-10')	50"	-		Sand Pack
6					1" PVC 0.010" Screen
7					8' Bottom of Screen
8					(9-10') Light gray sandy silt (ML) Wet.
9					Some black wood @ 10'
10					2 Hole collapsed.
11					10' End of Boring @ 10'
12					DTW = 0.75' bgs
13					

ppm = parts per million

ND = Non-Detect

bgs = below ground surface

DTW = Depth to Water

APPENDIX E

MONITORING WELL PURGING FORMS



Monitoring Well Purging Form

WELL ID: <u>BW-1</u>	CONTAIN: YES – NO WITH WELL(S): _____
COMPANY: _____	HISTORICALLY DRY: YES - NO
CLIENT: _____	DEDICATED PUMP: YES – NO
PROJECT: _____	
LOCATION: _____	
COMMENTS: _____	

WELL OBSERVATIONS

CASING & LID: OK – DAMAGED – NO LID **LOCKED:** YES – NO **WELL DIAMETER:** 2' – 4' – 6' – OTHER: _____
MEASURING POINT: TIC – TOC – GRS **TUBING:** OK – DAMAGED – OTHER: _____

PURGING CALCULATIONS

(A) DEPTH TO WELL BOTTOM: 10.04 FT (E) CASING VOLUME (C x D): 0.14 GAL
(B) DEPTH TO WATER: 6.62 FT (F) VOLUMES TO BE PURGED: 0.42 GAL
(C) WATER COLUMN HEIGHT (A - B): 3.42 FT
(D) CASING VOLUME FACTOR: 0.041 GPF (G) TOTAL PURGE VOLUME (E x F): _____ GAL

CASING FACTOR (GPF FOR INCHES) = $0.041(\text{WELL DIAMETER})^2$
2"=0.16; 4"=0.65; 6"=1.47; 8"=2.61 GPF

PURGING INFORMATION

PURGING METHOD: GRUNDFOS PUMP – DEDICATED PUMP - PERISTALTIC PUMP – BLADDER PUMP
PURGING ENDPOINT: VOLUME OR WELL DRY 3 x (FOR GRUNDFOS) – ½ HR OR WELL DRY (FOR DEDICATED)
PUMP INTAKE: SCREEN/WELL BOTTOM **PURGE WATER:** DISCHARGED TO GROUND – STORED IN DRUMS
FIELD MEASUREMENTS METER: : _____

DATE	TIME	PURGE RATE or VOLUME (GPM)	FIELD MEASUREMENTS AND UNITS							COMMENTS
			pH	Cond.	D.O.	Sal.	Turb.	Temp.	ORP	
				mS/cm	mg/L	%	NTU	°C	mV	
										START PURGE
										COLLECT SAMPLE

TOTAL PURGE TIME: _____ MIN – HRS **TOTAL PURGE VOL.:** _____ GAL **RECOVERY:** FAST – SLOW – V.SLOW

SAMPLER: _____
SIGNATURE: _____

SAMPLE COMMENTS (COLOR/ODOR/DUPLICATE/ETC): _____

Monitoring Well Purging Form

WELL LOCATION ID:

GW-3 East

COMPANY: Tetra Tech EMI
 CLIENT: EPA Reg. III
 PROJECT: Chesapeake Prod.
 LOCATION: Chesapeake, VA.
 COMMENTS: _____

CONTAIN: YES NO WITH WELL(S): _____
 HISTORICALLY DRY: YES NO
 DEDICATED PUMP: YES NO Temp Well

WELL OBSERVATIONS

CASING & LID: OK - DAMAGED - NO LID LOCKED: YES NO WELL DIAMETER: 2' - 4' - 6' - OTHER: 1"
 MEASURING POINT: TIC TOC GRS TUBING: OK - DAMAGED - OTHER: _____

PURGING CALCULATIONS

(A) DEPTH TO WELL BOTTOM: 9.50 FT (E) CASING VOLUME (C x D): 0.27 GAL
 (B) DEPTH TO WATER: 2.80 FT (F) VOLUMES TO BE PURGED: 3
 (C) WATER COLUMN HEIGHT (A - B): 6.7 FT
 (D) CASING VOLUME FACTOR: 0.041 GPF (G) TOTAL PURGE VOLUME (E x F): 0.82 GAL

CASING FACTOR (GPF FOR INCHES) = 0.041(WELL DIAMETER)²

2"=0.16; 4"=0.65; 6"=1.47; 8"=2.61 GPF

PURGING INFORMATION

PURGING METHOD: GRUNDFOS PUMP - DEDICATED PUMP - PERISTALTIC PUMP - QED Micro 1"
 PURGING ENDPOINT: VOLUME OR WELL DRY 3 x (FOR GRUNDFOS) - ½ HR OR WELL DRY (FOR DEDICATED)
 PUMP INTAKE: SCREEN/WELL BOTTOM PURGE WATER: DISCHARGED TO GROUND - STORED IN DRUMS
 FIELD MEASUREMENTS IN: HORIBA U-10 WATER QUALITY METER QED YSI 650 MDS

DATE	TIME	PURGE RATE or VOLUME (GPM)	FIELD MEASUREMENTS AND UNITS							COMMENTS
			pH	Cond.	D.O.	Sal.	Turb.	Temp.	ORP	
				mS/cm	mg/L	%	NTU	°C	mV	
7/22	1038									START PURGE
	1104		7.37	3902	5.6	—	510.1	28.93	60.2	
	1120		7.46	3320	6.95	—	296.6	27.98	58.8	
	1125		7.39	3125	6.83		242.7	27.32	54.1	
	1130		7.41	3040	6.76		206.1	27.21	64.8	
7/22	1145									COLLECT SAMPLE

TOTAL PURGE TIME: 1 MIN HR TOTAL PURGE VOL.: 1.1 GAL RECOVERY: FAST SLOW V.SLOW

SAMPLER: Ken S. Eden
 SIGNATURE: Ken S. Eden

SAMPLE COMMENTS (COLOR/ODOR/DUPPLICATE/ETC): _____
Used 1" Bailer to collect Sample
GW-4 Dup; Color 1/2 DK Gray

WELL LOCATION ID:

GW-2 (Northwest)

CONTAIN: YES – NO WITH WELL(S):

HISTORICALLY DRY: YES - NO

DEDICATED PUMP: YES – NO

COMMENTS:

CASING & LID: OK – DAMAGED – NO LID **LOCKED:** YES – NO **WELL DIAMETER:** 2' – 4' – 6' – OTHER:

MEASURING POINT: TIC - TOC - GRS TUBING: OK - DAMAGED - OTHER:

(A) DEPTH TO WELL BOTTOM: 9.05 FT (E) CASING VOLUME (C x D): 0.22 GAL

(B) DEPTH TO WATER: 9.69 FT (F) VOLUMES TO BE PURGED: 3

(C) WATER COLUMN HEIGHT (A - B): 5.26 FT

(D) CASING VOLUME FACTOR: 0.041 GPF (G) TOTAL PURGE VOLUME (E x F): 0.69 GAL

CASING FACTOR (GPF FOR INCHES) = 0.041(WELL DIAMETER)²

 $2^n=0.16; 4^n=0.65; 6^n=1.47; 8^n=2.61 \text{ GPF}$

PURGING METHOD: GRUNDFOS PUMP – DEDICATED PUMP - PERISTALTIC PUMP

PURGING ENDPOINT: VOLUME OR WELL DRY 3 x (FOR GRUNDFOS) – ½ HR OR WELL DRY (FOR DEDICATED)

PUMP INTAKE: SCREEN/WELL BOTTOM PURGE WATER: DISCHARGED TO GROUND – STORED IN DRUMS

FIELD MEASUREMENTS IN: HORIBA U-10 WATER QUALITY METER

[illegible]

TOTAL PURGE TIME: MIN - HRS TOTAL PURGE VOL.: _____ GAL RECOVERY: FAST - SLOW - V.SLOW

SAMPLE COMMENTS (COLOR/ODOR/DUPLICATE/ETC): _____

SIGNATURE: _____

APPENDIX F

TRAFFIC REPORTS AND CHAIN OF CUSTODY RECORDS



USEPA Contract Laboratory Program Inorganic Traffic Report & Chain of Custody Record

Case No: 38801

DAS No:

R

Region: 3 Project Code: CT4638 Account Code: CERCLIS ID: VAN000306156 Spill ID: ADV Site Name/State: Chesapeake Products/VA Project Leader: Kevin Scott Action: Removal Assessment Sampling Co: Tetra Tech EMI	Date Shipped: 7/23/2009 Carrier Name: FedEx Airbill: 857499852073, 2084 Shipped to: A4 Scientific 1544 Sawdust Road Suite 505 The Woodlands TX 77380 (281) 292-5277	Chain of Custody Record <table border="1"> <tr> <th>Relinquished By</th> <th>(Date / Time)</th> <th>Received By</th> <th>(Date / Time)</th> </tr> <tr><td>1</td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td></tr> </table>	Relinquished By	(Date / Time)	Received By	(Date / Time)	1				2				3				4				Sampler Signature:
Relinquished By	(Date / Time)	Received By	(Date / Time)																				
1																							
2																							
3																							
4																							

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		ORGANIC SAMPLE No.	QC Type
MC01A7	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	771 (HNO3), 777 (HNO3), 779 (NaOH) (3)	CP09-GW-01	S: 7/22/2009	13:10	C01A7	--
MC01A8	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	783 (HNO3), 784 (HNO3), 785 (HNO3), 786 (HNO3), 787 (NaOH), 788 (NaOH) (6)	CP09-GW-02	S: 7/22/2009	12:27	C01A8	--
MC01A9	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	648 (HNO3), 653 (NaOH), 773 (HNO3) (3)	CP09-GW-03	S: 7/22/2009	11:45	C01A9	--
MC01B0	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	655 (HNO3), 660 (NaOH), 774 (HNO3) (3)	CP09-GW-04	S: 7/22/2009	13:35	C01B0	Field Duplicate - of CP09-GW-03
MC01B1	Ground Water/ Ken Eden	L/G	CN (14), DM (14), TM (14)	662 (HNO3), 667 (NaOH), 775 (HNO3) (3)	CP09-FB-01	S: 7/22/2009	14:15	C01B1	Rinsate
MC01F1	Soil (>12")/ Ken Eden	H/G	Pb - soil (14)	743 (Ice Only) (1)	CP09-SB-02	S: 7/21/2009	10:50		--
MC01F4	Soil (>12")/ Ken Eden	M/G	Pb - soil (14)	746 (Ice Only) (1)	CP09-SB-04	S: 7/21/2009	10:15		--
MC01F5	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	747 (Ice Only) (1)	CP09-SS-01	S: 7/21/2009	10:00		--
MC01F6	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	748 (Ice Only) (1)	CP09-SS-02	S: 7/21/2009	10:44		--
MC01F7	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	749 (Ice Only) (1)	CP09-SS-03	S: 7/21/2009	10:20		--

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: MC01A8, MC01F8	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____
CN = Cyanide, DM = CLP TAL Dissolved Metals, Pb - soil = Lead - soil, TM = CLP TAL Total Metals			

TR Number: 3-510515489-072309-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

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USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: 38801

DAS No:

R

Region: 3	Date Shipped: 7/23/2009	Chain of Custody Record	Sampler Signature:	
Project Code: CT4638	Carrier Name: FedEx		Relinquished By (Date / Time)	Received By (Date / Time)
Account Code:	Airbill: 857499852073, 2084		1	
CERCLIS ID: VAN000306156	Shipped to: A4 Scientific 1544 Sawdust Road Suite 505 The Woodlands TX 77380 (281) 292-5277		2	
Spill ID: ADV			3	
Site Name/State: Chesapeake Products/VA		4		
Project Leader: Kevin Scott				
Action: Removal Assessment				
Sampling Co: Tetra Tech EMI				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		ORGANIC SAMPLE No.	QC Type
MC01F8	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	750 (Ice Only) (1)	CP09-SS-12	S: 7/21/2009	11:55		--
MC01F9	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	751 (Ice Only) (1)	CP09-SS-14	S: 7/21/2009	11:35		--
MC01G0	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	752 (Ice Only) (1)	CP09-SS-15	S: 7/21/2009	11:30		--
MC01G1	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	753 (Ice Only) (1)	CP09-SS-16	S: 7/21/2009	15:25		--
MC01G2	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	754 (Ice Only) (1)	CP09-SS-18	S: 7/21/2009	11:48		--
MC01G3	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	755 (Ice Only) (1)	CP09-SS-23	S: 7/21/2009	15:30		--
MC01G5	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	757 (Ice Only) (1)	CP09-SS-27	S: 7/21/2009	14:20		--
MC01G6	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	758 (Ice Only) (1)	CP09-SS-28	S: 7/21/2009	10:15		--
MC01G7	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	759 (Ice Only) (1)	CP09-SS-29	S: 7/21/2009	13:25		--
MC01G8	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	760 (Ice Only) (1)	CP09-SS-30	S: 7/21/2009	10:05		--
MC01G9	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	761 (Ice Only) (1)	CP09-SS-31	S: 7/21/2009	11:33		--

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: MC01A8, MC01F8	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: CN = Cyanide, DM = CLP TAL Dissolved Metals, Pb - soil = Lead - soil, TM = CLP TAL Total Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TR Number: 3-510515489-072309-0001

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USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: 38801

DAS No:

R

Region: 3	Date Shipped: 7/23/2009	Chain of Custody Record	Sampler Signature:	
Project Code: CT4638	Carrier Name: FedEx		Relinquished By (Date / Time)	Received By (Date / Time)
Account Code:	Airbill: 857499852073, 2084		1	
CERCLIS ID: VAN000306156	Shipped to: A4 Scientific 1544 Sawdust Road Suite 505 The Woodlands TX 77380 (281) 292-5277		2	
Spill ID: ADV			3	
Site Name/State: Chesapeake Products/VA		4		
Project Leader: Kevin Scott				
Action: Removal Assessment				
Sampling Co: Tetra Tech EMI				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		ORGANIC SAMPLE No.	QC Type
MC01H0	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	762 (Ice Only) (1)	CP09-SS-32	S: 7/21/2009	11:35		--
MC01H1	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	763 (Ice Only) (1)	CP09-SS-33	S: 7/21/2009	11:25		--
MC01H2	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	764 (Ice Only) (1)	CP09-SS-34	S: 7/21/2009	13:45		--
MC01H3	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	765 (Ice Only) (1)	CP09-SS-35	S: 7/21/2009	13:46		--
MC01H4	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	766 (Ice Only) (1)	CP09-SS-36	S: 7/21/2009	14:55		--
MC01H5	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	767 (Ice Only) (1)	CP09-SS-37	S: 7/21/2009	14:05		--
MC01H6	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	768 (Ice Only) (1)	CP09-SS-38	S: 7/21/2009	14:12		--
MC01H7	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	769 (Ice Only) (1)	CP09-SS-40	S: 7/21/2009	14:15		Duplicate - of SS-38
MC01H8	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	770 (Ice Only) (1)	CP09-SS-41	S: 7/21/2009	10:36		Duplicate of SS-02

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: MC01A8, MC01F8	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____
CN = Cyanide, DM = CLP TAL Dissolved Metals, Pb - soil = Lead - soil, TM = CLP TAL Total Metals			

TR Number: 3-510515489-072309-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

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USEPA Contract Laboratory Program
Organic Traffic Report & Chain of Custody Record

Case No: 38801

DAS No:

R

Region: 3 Project Code: CT4638 Account Code: CERCLIS ID: VAN000306156 Spill ID: ADV Site Name/State: Chesapeake Products/VA Project Leader: Kevin Scott Action: Removal Assessment Sampling Co: Tetra Tech EMI	Date Shipped: 7/23/2009 Carrier Name: FedEx Airbill: 857499852154, 2165 Shipped to:	Chain of Custody Record <table border="1"> <tr> <th>Relinquished By</th> <th>(Date / Time)</th> <th>Received By</th> <th>(Date / Time)</th> </tr> <tr><td>1</td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td></tr> </table>	Relinquished By	(Date / Time)	Received By	(Date / Time)	1				2				3				4				Sampler Signature:
Relinquished By	(Date / Time)	Received By	(Date / Time)																				
1																							
2																							
3																							
4																							

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		INORGANIC SAMPLE No.	QC Type
C01A7	Ground Water/ Ken Eden	M/G	BNA/PEST (14), VOA (14)	780 (HCL), 781 (HCL), 782 (HCL), 807 (Ice Only), 808 (Ice Only), 809 (Ice Only), 810 (Ice Only) (7)	CP09-GW-01	S: 7/22/2009	13:10	MC01A7	--
C01A8	Ground Water/ Ken Eden	M/G	BNA/PEST (14), VOA (14)	643 (HCL), 644 (HCL), 645 (HCL), 789 (Ice Only), 790 (Ice Only), 791 (Ice Only), 792 (Ice Only), 793 (Ice Only), 794 (Ice Only), 795 (Ice Only), 796 (Ice Only) (11)	CP09-GW-02	S: 7/22/2009	12:27	MC01A8	--
C01A9	Ground Water/ Ken Eden	M/G	BNA/PEST (14), VOA (14)	650 (HCL), 651 (HCL), 652 (HCL), 727 (Ice Only), 728 (Ice Only), 729 (Ice Only), 730 (Ice Only) (7)	CP09-GW-03	S: 7/22/2009	11:45	MC01A9	--
C01B0	Ground Water/ Ken Eden	M/G	BNA/PEST (14), VOA (14)	657 (HCL), 658 (HCL), 659 (HCL), 713 (Ice Only), 714 (Ice Only), 715 (Ice Only), 716 (Ice Only) (7)	CP09-GW-04	S: 7/22/2009	13:35	MC01B0	Field Duplicate - of CP09-GW-01
C01B1	Ground Water/ Ken Eden	L/G	BNA/PEST (14), VOA (14)	663 (Ice Only), 664 (HCL), 665 (HCL), 666 (HCL), 668 (Ice Only), 669 (Ice Only), 670 (Ice Only) (7)	CP09-FB-01	S: 7/22/2009	14:15	MC01B1	Rinsate
C01B2	Ground Water/ Ken Eden	L/G	VOA (14)	671 (HCL), 672 (HCL), 673 (HCL) (3)	CP09-TB-01	S: 7/22/2009	12:00		Trip Blank

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: C01A8	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: BNA/PEST = CLP TCL Semivolatiles and Pesticides/PC, VOA = CLP TCL Volatiles	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TR Number: 3-510515489-072309-0002

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

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APPENDIX G
DATA SUMMARY TABLES

TABLE G-1
SUMMARY OF LEAD AND ARSENIC CONCENTRATIONS IN SOIL MEASURED WITH PORTABLE XRF
CHESAPEAKE PRODUCTS SITE
CHESAPEAKE, VIRGINIA
Page 1 of 1

Sample ID / XRF Screening Location	XRF Reading (Pb) ppm	XRF Reading (As) ppm
Surface Soil Samples		
X1	1829 +/- 29	1037 +/- 22
X2	659 +/- 14	73 +/- 9
X3	700 +/- 19	121 +/- 13
X4	2329 +/- 35	1055 +/- 24
X5	23 +/- 3	ND (<6)
X6	35 +/- 3	ND (<6)
X7	1026 +/- 23	179 +/- 15
X8	NS - concrete	NS - concrete
X9	599 +/- 13	59 +/- 9
X10	2064 +/- 42	180 +/- 23
X11	1386 +/- 28	90 +/- 16
X12	1332 +/- 27	104 +/- 16
X13	266 +/- 8	22 +/- 6
X14	479 +/- 13	69 +/- 9
X14 (D)	574	56
X15	1421 +/- 29	ND (<49)
X16	1429 +/- 36	76 +/- 21
X17	W	W
X18	W	W
X19	W	W
X20	434 +/- 10	ND (<20)
X21	759 +/- 16	56 +/- 10
X22	597 +/- 14	45 +/- 9
A1	3188 +/- 42	401 +/- 21
A1 (D)	1927	568
A2	1807 +/- 31	243 +/- 18
A3	1608 +/- 23	183 +/- 13
A4	NS - concrete	NS - concrete
A5	NS - vegetation	NS - vegetation
A6	NS - vegetation	NS - vegetation
A7	518 +/- 12	56 +/- 8
A8	420 +/- 11	53 +/- 7
A9	486 +/- 12	33 +/- 8
B1	NS - concrete	NS - concrete
B2	664 +/- 13	70 +/- 9
B3	1741 +/- 26	241 +/- 15
B4	993 +/- 18	97 +/- 11
B5	1466 +/- 26	120 +/- 15
B6	W	W
B7	W	W
B8	722 +/- 16	83 +/- 11
C1	1907 +/- 35	111 +/- 19
C2	733 +/- 15	93 +/- 10
C2 (D)	609	62
C3	NS - concrete	NS - concrete
C4	946 +/- 22	ND (<40)
C5	W	W
D1	387 +/- 9	23 +/- 6
D2	294 +/- 10	ND (<20)
Grab, beneath concrete slab	4646 +/- 77	98 +/- 31
Subsurface Soil Samples		
southwest SB-1 (0-2')	ND (<6)	ND (<5)
southwest SB-2 (2-4')	10681 +/- 264	550 +/- 79
east SB-7 (0-2.5')	104 +/- 5	25 +/- 4
northwest SB-4 (0-2.5')	2259 +/- 34	362 +/- 19

Notes:

As - arsenic
ND - not detected
NS - not sampled
Pb - lead
ppm = parts per million
SB - soil boring
W - submerged sample, not screened with XRF

TABLE G-2
SUMMARY OF SOIL SAMPLES SELECTED FOR ANALYSIS FOR LEAD BY ICP-AES
CHESAPEAKE PRODUCTS SIE
CHESAPEAKE, VIRGINIA

Page 1 of 1

XRF Screening Location	XRF Reading (Pb) ppm	Laboratory Sample ID	Sample Date and Time	QC Type
B6	W	CP09-SS-15	07/21/2009; 1130	
B7	W	CP09-SS-16	07/21/2009; 1525	
C5	W	CP09-SS-23	07/21/2009; 1530	
X17	W	CP09-SS-36	07/21/2009; 1455	
X18	W	CP09-SS-37	07/21/2009; 1405	
X19	W	CP09-SS-38/CP09-SS-40	07/21/2009; 1412/1415	Duplicate Pair
Southwest SB-2 (2-4')	10,681	CP09-SB-02	07/21/2009; 1050	
Grab, beneath slab	4,646	CP09-SS-27	07/21/2009; 1420	
A1	3,188	CP09-SS-01	07/21/2009; 1000	
X-04	2,329	CP09-SS-28	07/21/2009; 1015	
Northwest SB-4 (0-2.5')	2,259	CP09-SB-04	07/21/2009; 1015	
X10	2,064	CP09-SS-29	07/21/2009; 1325	
C1	1,907	CP09-SS-18	07/21/2009; 1148	
X-01	1,829	CP09-SS-30	07/21/2009; 1005	
A2	1,807	CP09-SS-02/CP09-SS-41	07/21/2009; 1044/1036	Duplicate Pair
B3	1,741	CP09-SS-12	07/21/2009; 1155	MS/MSD
A3	1,608	CP09-SS-03	07/21/2009; 1020	
B5	1,466	CP09-SS-14	07/21/2009; 1135	
X16	1,429	CP09-SS-31	07/21/2009; 1133	
X15	1,421	CP09-SS-32	07/21/2009; 1135	
X11	1,386	CP09-SS-33	07/21/2009; 1125	
X12	1,332	CP09-SS-34	07/21/2009; 1345	
X-07	1,026	CP09-SS-35	07/21/2009; 1346	

Notes:

ID = Identification

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Pb - lead

ppm = parts per million

SB - soil boring/subsurface soil

SS - surface soil

W - submerged sample, not screened with XRF

TABLE G-3
SUMMARY OF INORGANIC COMPOUNDS (TOTAL METALS)
DETECTED IN GROUNDWATER SAMPLES
CHESAPEAKE PRODUCTS SITE
CHESAPEAKE, VIRGINIA

Page 1 of 1

Sample Number :			MC01A7		MC01A8		MC01A9		MC01B0		MC01B1		
Sampling Location :			CP09-GW-01		CP09-GW-02		CP09-GW-03		CP09-GW-04		CP09-FB-01		
Field QC :							Dup. of MC01B0		Dup. of MC01A9		Field Blank		
Matrix :			Water		Water		Water		Water		Water		
Laboratory			A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		
Case #:			38801		38801		38801		38801		38801		
SDG:			MC01A7		MC01A7		MC01A7		MC01A7		MC01A7		
Units :			ug/L		ug/L		ug/L		ug/L		ug/L		
Date Sampled :			7/22/2009		7/22/2009		7/22/2009		7/22/2009		7/22/2009		
Time Sampled :			13:10		12:27		11:45		13:35		14:15		
Dilution Factor :			5.0		5.0		5.0		5.0		5.0		
ANALYTE		CRQL	MCL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY		2	6	88.9		19.3							
ARSENIC		1	10	395	J	782	J	555	J	424	J	8.4	J
BARIUM		10	2000			662		227		252			
BERYLLIUM		1	4	1.9	J	10.6		4.6	J	3.4	J		
CADMIUM		1	5	86.7		38.0							
CHROMIUM		2	100	30.6		186		130		113			
COBALT		1	NA	47.0		45.9		19.4		11.8			
COPPER		2	1300	4800	J	9040	J	31.9	J	31.1	J		
LEAD		1	15	3900		2930		229		275			
MANGANESE		1	NA	1350		3170		1720		1370			
NICKEL		1	NA	88.0		48.5		22.8		13.1			
SELENIUM		5	50	38.1	L		R		R		R		R
SILVER		1	NA			3.5	J						
THALLIUM		1	2	44.1		10.0							
VANADIUM		5	NA	28.7		152		88.4		70.2			
ZINC		2	NA	9900	J	12100	J	3570	J	2350	J	6.7	J
CYANIDE		10	200	+		12.4 +		13.5 +		15.7 +		+	

Notes:

ug/L = Micrograms per liter

"+" = Concentration reported from diluted sample.

CRQL = Contract Required Quantitation Limit

FB = Field blank

GW = groundwater

J = Analyte present. Reported value may not be accurate or precise.

MCL = Maximum Contaminant Level

NA = Not applicable, MCL not established for this substance

QC = Quality Control

SDG = Sample Delivery Group

Bold font indicates value above corresponding MCL

TABLE G-4
SUMMARY OF INORGANIC COMPOUNDS
(DISSOLVED METALS)
DETECTED IN GROUNDWATER SAMPLES
CHESAPEAKE PRODUCTS SITE
CHESAPEAKE, VIRGINIA

Page 1 of 1

Sample Number :			MC01A7		MC01A8		MC01A9		MC01B0		MC01B1		
Sampling Location :			CP09-GW-01		CP09-GW-02		CP09-GW-03		CP09-GW-04		CP09-FB-01		
Field QC :							Dup. of MC01B0		Dup. of MC01A9		Field Blank		
Matrix :			Water		Water		Water		Water		Water		
Laboratory			A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		
Case #:			38801		38801		38801		38801		38801		
SDG:			MC01A8		MC01A8		MC01A8		MC01A8		MC01A8		
Units :			ug/L		ug/L		ug/L		ug/L		ug/L		
Date Sampled :			7/22/2009		7/22/2009		7/22/2009		7/22/2009		7/22/2009		
Time Sampled :			13:10		12:27		11:45		13:35		14:15		
Dilution Factor :			5.0		5.0		5.0		5.0		5.0		
ANALYTE		CRQL	MCL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY		2	6	81.8		16.0		5.6	J	3.9	J		
ARSENIC		1	10	295	J	68.9	J	378	J	376	J	7.2	J
BARIUM		10	2000	22.2	J	23.5	J	21.3	J	21.2	J		
BERYLLIUM		1	4										
CADMIUM		1	5	50.8		12.8							
CHROMIUM		2	100	19.5									
COBALT		1	NA	40.3		7.5							
COPPER		2	1300	2420	J	196	J	4.3	J				
LEAD		1	15	4730	K	4.2	J	2.8	J				
MANGANESE		1	NA	1050		1110		327		311		1.6	J
NICKEL		1	NA	77.3		29.4							
SELENIUM		5	50	37.7	L								
SILVER		1	NA			3.8	J						
THALLIUM		1	2	33.2		6.9							
VANADIUM		5	NA	19.2	J	9.7	J						
ZINC		2	NA	7490	J	2030	J	15.6	B	12.1	B	11.9	J

Notes:

ug/L = Micrograms per liter

"+" = Concentration reported from diluted sample.

CRQL = Contract Required Quantitation Limit

Dup = Duplicate sample

FB = Field blank

GW = groundwater

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value is biased high, actual value is expected to be lower.

L = Analyte present. Reported value is biased low, actual value is expected to be higher.

MCL = Maximum Contaminant Level

NA = Not applicable, MCL not established for this substance

QC = Quality Control

SDG = Sample Delivery Group

Bold font indicates value above corresponding MCL

To calculate sample quantitation limits: (CRQL * Dilution Factor)

Empty cell indicated substance not reported above detection limit.

TABLE G-5
SUMMARY OF LEAD CONCENTRATIONS IN SOIL SAMPLES
CHESAPEAKE PRODUCTS SITE
CHESAPEAKE, VIRGINIA
Page 1 of 3

Sample Number :			MC01F5		MC01F6		MC01F7		MC01F8		MC01F9		MC01G0		MC01G1		MC01G2		MC01G3	
Sampling Location :			CP09-SS-01		CP09-SS-02		CP09-SS-03		CP09-SS-12		CP09-SS-14		CP09-SS-15		CP09-SS-16		CP09-SS-18		CP09-SS-23	
Field QC :																				
Matrix :			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :			mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Laboratory			A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific	
Case #:			38801		38801		38801		38801		38801		38801		38801		38801		38801	
SDG:			MC01F1		MC01F1		MC01F1		MC01F1		MC01F1		MC01F1		MC01F1		MC01F1		MC01F1	
Date Sampled :			7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009	
Time Sampled :			10:00		10:44		10:20		11:55		11:35		11:30		15:25		11:48		15:30	
%Solids :			88.4		73.7		90.9		89.3		65.9		74.0		63.9		85.7		75.4	
Dilution Factor :			1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	EPA Action Level	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
LEAD	1	800	1910		2420		2930		2030		2880		608		956		1820		1480	

Notes:

mg/Kg = Milligrams per kilogram

CRQL = Contract Required Quantitation Limit

Dup = Duplicate sample

QC = Quality control

SB = Subsurface soil

SDG = Sample delivery group

SS = Surface soil

To calculate sample quantitation limits: (CRQL * Dilution Factor) / (%Solids/ 100)

Shaded cell indicates value above the EPA action level for lead in industrial soils of 800 mg/kg.

TABLE G-5
SUMMARY OF LEAD CONCENTRATIONS IN SOIL SAMPLES
CHESAPEAKE PRODUCTS SITE
CHESAPEAKE, VIRGINIA
Page 2 of 3

Sample Number :			MC01G6		MC01G7		MC01G8		MC01G9		MC01H0		MC01H1		MC01H2		MC01H3	
Sampling Location :			CP09-SS-28		CP09-SS-29		CP09-SS-30		CP09-SS-31		CP09-SS-32		CP09-SS-33		CP09-SS-34		CP09-SS-35	
Field QC :																		
Matrix :			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :			mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Laboratory			A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific	
Case #:			38801		38801		38801		38801		38801		38801		38801		38801	
SDG:			MC01F1		MC01F1		MC01F1		MC01F1		MC01F1		MC01F1		MC01F1		MC01F1	
Date Sampled :			7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009	
Time Sampled :			10:15		13:25		10:05		11:33		11:35		11:25		13:45		13:46	
%Solids :			77.7		98.4		83.1		94.1		94.8		79.9		98.2		98.7	
Dilution Factor :			1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	EPA Action Level	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result
LEAD	1	800		3280		1630		1580		1690		1110		1350		968		793

Notes:

mg/Kg = Milligrams per kilogram

CRQL = Contract Required Quantitation Limit

Dup = Duplicate sample

QC = Quality control

SB = Subsurface soil

SDG = Sample delivery group

SS = Surface soil

To calculate sample quantitation limits: (CRQL * Dilution F:

Shaded cell indicates value above the EPA action level for

TABLE G-5
SUMMARY OF LEAD CONCENTRATIONS IN SOIL SAMPLES
CHESAPEAKE PRODUCTS SITE
CHESAPEAKE, VIRGINIA
Page 3 of 3

Sample Number :			MC01H4		MC01H5		MC01H6		MC01H7		MC01H8		MC01F1		MC01F4	
Sampling Location :			CP09-SS-36		CP09-SS-37		CP09-SS-38		CP09-SS-40		CP09-SS-41		CP09-SB-02		CP09-SB-04	
Field QC :							Dup. of MC01H7		Dup. of MC01H6							
Matrix :			Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :			mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Laboratory			A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific		A4 Scientific	
Case #:			38801		38801		38801		38801		38801		38801		38801	
SDG:			MC01H4		MC01H4		MC01H4		MC01H4		MC01H4		MC01F1		MC01F1	
Date Sampled :			7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009	
Time Sampled :			14:55		14:05		14:12		14:15		10:36		10:50		10:15	
%Solids :			77.0		64.0		74.0		71.1		74.8		75.9		86.2	
Dilution Factor :			1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE		CRQL	EPA Action Level		Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
LEAD		1	800		1080		1980		143		296		2120		11300	

Notes:

mg/Kg = Milligrams per kilogram

CRQL = Contract Required Quantitation Limit

Dup = Duplicate sample

QC = Quality control

SB = Subsurface soil

SDG = Sample delivery group

SS = Surface soil

To calculate sample quantitation limits: (CRQL * Dilution F;

Shaded cell indicates value above the EPA action level for

TABLE G-6
COMPARISON OF LABORATORY AND XRF MEASUREMENTS FOR LEAD IN SOIL SAMPLES
CHESAPEAKE PRODUCTS SITE
CHESAPEAKE, VIRGINIA

Page 1 of 3

Sample Number :	MC01F5	MC01F6	MC01F7	MC01F8	MC01F9	MC01G0	MC01G1	MC01G2	MC01G3
Sampling Location :	CP09-SS-01	CP09-SS-02	CP09-SS-03	CP09-SS-12	CP09-SS-14	CP09-SS-15	CP09-SS-16	CP09-SS-18	CP09-SS-23
Sample Grid ID	A1	A2	A3	B3	B5	B6	B7	C1	C5
Field QC :									
Matrix :	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Units :	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
ANALYTE	Result	Result	Result	Result	Result	Result	Result	Result	Result
Lead - Laboratory Measurement	1910	2420	2930	2030	2880	608	956	1820	1480
Lead - XRF Measurement	3188	1807	1608	1741	1466	NA	NA	1907	NA
RPD	12.53	7.25	14.57	3.83	16.27			1.17	

Notes:

mg/Kg = Milligrams per kilogram

Dup = Duplicate sample

ID = Identification

SB = Subsurface soil

SS = Surface soil

RPD = Relative Percent Difference

QC = Quality control

TABLE G-6
COMPARISON OF LABORATORY AND XRF MEASUREMENTS FOR LEAD IN SOIL SAMPLES
CHESAPEAKE PRODUCTS SITE
CHESAPEAKE, VIRGINIA

Page 2 of 3

Sample Number :	MC01G5	MC01G6	MC01G7	MC01G8	MC01G9	MC01H0	MC01H1	MC01H2	MC01H3
Sampling Location :	CP09-SS-27	CP09-SS-28	CP09-SS-29	CP09-SS-30	CP09-SS-31	CP09-SS-32	CP09-SS-33	CP09-SS-34	CP09-SS-35
Sample Grid ID	grab beneath slab	X4	X10	X1	X16	X15	X11	X12	X7
Field QC :									
Matrix :	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Units :	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
ANALYTE	Result	Result	Result	Result	Result	Result	Result	Result	Result
Lead - Laboratory Measurement	3060	3280	1630	1580	1690	1110	1350	968	793
Lead - XRF Measurement	4646	2329	2064	1829	1429	1421	1386	1332	1026
RPD	10.29	8.48	5.87	3.65	4.18	6.14	0.66	7.91	6.40

Notes:

mg/Kg = Milligrams per kilogram

Dup = Duplicate sample

ID = Identification

SB = Subsurface soil

SS = Surface soil

RPD = Relative Percent Difference

QC = Quality control

TABLE G-6
COMPARISON OF LABORATORY AND XRF MEASUREMENTS FOR LEAD IN SOIL SAMPLES
CHESAPEAKE PRODUCTS SITE
CHESAPEAKE, VIRGINIA

Page 3 of 3

Sample Number :	MC01H4	MC01H5	MC01H6	MC01H7	MC01H8	MC01F1	MC01F4
Sampling Location :	CP09-SS-36	CP09-SS-37	CP09-SS-38	CP09-SS-40	CP09-SS-41	CP09-SB-02	CP09-SB-04
Sample Grid ID	X17	X18	X19	X19	A2	SW	NW
Field QC :			Dup. of MC01H7	Dup. of MC01H6			
Matrix :	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Units :	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
ANALYTE	Result	Result	Result	Result	Result	Result	Result
Lead - Laboratory Measurement	1080	1980	143	296	2120	11300	1840
Lead - XRF Measurement	NA	NA	NA	NA	1807	10681	2259
RPD					3.99	1.41	5.11

Notes:

mg/Kg = Milligrams per kilogram

Dup = Duplicate sample

ID = Identification

SB = Subsurface soil

SS = Surface soil

RPD = Relative Percent Difference

QC = Quality control

ATTACHMENT 1

LABORATORY ANALYTICAL DATA PACKAGES



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
ENVIRONMENTAL SCIENCE CENTER
701 MAPES ROAD
FORT MEADE, MARYLAND 20755-5350

DATE : September 1, 2009

SUBJECT: Region III Data QA Review

FROM : Colleen Walling *Colleen K. Walling*
Region III ESAT RPO (3ES20)

TO : Dominic Ventura
Regional Project Manager

Attached is the organic data validation report for the Chesapeake Products, Inc. site (Case #: 38801, SDG#: C01A7) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III ESD.

If you have any questions regarding this review, please call me at (410) 305-2629.

Attachments

cc: Joshua Cope (TTEMI)

TO File #: 0021

TDF#: 08063

OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

Lockheed Martin Information Technology
ESAT Region 3
US EPA Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Telephone 410-305-3037 Facsimile 410-305-3597

DATE: August 25, 2009

SUBJECT: Level M2 Organic Data Validation for Case 38801
SDG: C01A7
Site: Chesapeake Products, Inc.

FROM: Shilpa Udani
Organic Data Reviewer

Mahboobeh Mecanic ^{MM}
Senior Oversight Chemist

TO: Colleen Walling
ESAT Region 3 Project Officer

OVERVIEW

Case 38801, Sample Delivery Group (SDG) C01A7, consisted of five (5) aqueous samples analyzed for volatile, semivolatile, pesticide and aroclor compounds and one (1) trip blank analyzed for volatile compounds only. All samples were submitted to KAP Technologies, Inc. (KAP) for analyses. The samples set included one (1) rinsate blank and (1) field duplicate pair. Samples were analyzed according to Contract Laboratory Program (CLP) Statement of Work (SOW) SOM01.1 through Routine Analytical Services (RAS) program.

SUMMARY

Data were validated according to Region 3 Innovative Approaches for Validation of Organic Data, Level M2. This level of review includes assessment of all Quality Assurance/Quality Control (QA/QC) data and review of chromatograms, but excludes review of raw data and sample spectra. Areas that may impact data usability are listed below.

MINOR PROBLEMS

- Several compounds failed precision criteria [Percent Differences (%Ds)] in the volatile and semivolatile continuing calibrations. Positive results reported for acetone in affected samples were qualified "J" on the Data Summary Forms (DSFs) unless superseded by "B. Precision did not exceed fifty percent (50%) criteria; therefore, quantitation limits were not qualified.

- The semivolatile sample C01B1 had a recovery of Deuterated Monitoring Compound (DMC) 4-methylphenol-d8 outside the lower Quality Control (QC) limits. Quantitation limits for compounds associated with this DMC were qualified "UL" on the DSFs.

NOTES

- Concentrations of target compounds found in the analysis of trip, rinsate, method and storage blanks are listed below. Only compounds used to qualify data are listed. Samples with concentrations of common laboratory contaminant less than ten times (<10X) blank concentration or with concentration of other contamination less than five times (<5X) blank concentration have been qualified "B" on the DSFs.

<u>Fraction</u>	<u>Blank</u>	<u>Compound</u>	<u>Concentration</u>	<u>Affected Samples</u>
VOC	Storage (VHBLK01)	Methylene chloride*	4.4 J ug/L	All Samples
		Toluene	2.8 J ug/L	All Samples
	Trip (C01B2)	Acetone*	23.0 J ug/L	C01A9, C01B0

* Common Laboratory Contaminant

- The following samples had recoveries of Deuterated Monitoring Compounds (DMCs) outside the upper QC limits. The sample results associated with these DMCs were non-detects; therefore, no data were qualified based on this outlier.

<u>Fraction</u>	<u>Samples</u>	<u>DMCs</u>
VOC	C01B0	trans-1,3-Dichloropropene-d4
	C01B1, C01B2	1,2-Dichloropropane-d6, trans-1,3-Dichloropropene-d4

- Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses of pesticide sample C01A8 reported Relative Percent Differences (RPDs) for all spiked compounds on both columns outside the QC limits. No data were qualified based on these QC outliers.
- Reported recoveries for aroclor in Laboratory Control Samples (LCS) and/MS/MSD analyses and for pesticide in LCS analysis were within QC limits on both columns.
- Sample volumes other than 1000 ml in pesticide and aroclor aqueous analyses were used for samples associated with this case. Dilution factors reported on DSFs reflect actual sample volumes used.

- Results for volatile and semivolatile field duplicate pair samples C01A9/C01B0, were comparable.
- No positive results were reported in the analyses of pesticide and aroclor field duplicate pair C01A9/C01B0.
- Tentatively Identified Compounds (TICs) were reviewed during data validation. Compounds identified as blank contaminants were crossed off TIC Form Is by the reviewer. TIC Form Is for samples in which TICs were identified are included in Appendix E.
- Compounds detected below Contract Required Quantitation Limits (CRQLs) were qualified "J" unless superseded by "B" on DSFs.

All data for Case 38801, SDG C01A7, were reviewed in accordance with Region 3 Innovative Approaches for Validation of Organic Data (Level M2), June 1995.

ATTACHMENTS

- 1) Appendix A Glossary of Data Qualifier Terms
- 2) Appendix B Data Summary Forms
- 3) Appendix C Chain-of-Custody Records
- 4) Appendix D Laboratory Case Narrative
- 5) Appendix E Tentatively Identified Compounds (TICs)

DCN: 38801 – C01A7

Appendix A

Glossary of Data Qualifiers

GLOSSARY OF DATA QUALIFIER CODES (ORGANIC)

CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of compounds)

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

NO CODE = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unusable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

CODES RELATED TO QUANTITATION

(can be used for both positive results and sample quantitation limits):

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

NJ = Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.

Q = No analytical result.

Appendix B

Data Summary Forms

Page 1 of 8

Number of Soil Samples : 0

CHESAPEAKE PRODUCTS, INC.

Number of Water Samples : 6

KAP

[illegible]

DATA SUMMARY FORM: Volatiles

Page 2 of 8

Case #: 38801

SDG : C01A7

Site :

CHESAPEAKE PRODUCTS, INC.

Lab. :

KAP

Sample Number :		C01A7		C01A8		C01A9		C01B0		C01B1	
Sampling Location :		CP09-GW-01		CP09-GW-02		CP09-GW-03		CP09-GW-04		CP09-FB-01	
Field QC :						Dup. of C01B0		Dup. of C01A9		Rinsate Blank	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		7/22/2009		7/22/2009		7/22/2009		7/22/2009		7/22/2009	
Time Sampled :		13:10		12:27		11:45		13:35		14:15	
pH :		< 2		< 2		< 2		< 2		< 2	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
1,1,2-Trichloroethane	5.0										
*Tetrachloroethene	5.0										
2-Hexanone	10										
Dibromochloromethane	5.0										
1,2-Dibromoethane	5.0										
*Chlorobenzene	5.0										
*Ethylbenzene	5.0										
o-Xylene	5.0										
m,p-Xylene	5.0										
*Styrene	5.0										
Bromoform	5.0										
Isopropylbenzene	5.0										
1,1,2,2-Tetrachloroethane	5.0										
*1,3-Dichlorobenzene	5.0										
*1,4-Dichlorobenzene	5.0										
1,2-Dichlorobenzene	5.0										
1,2-Dibromo-3-chloropropane	5.0										
1,2,4-Trichlorobenzene	5.0										
1,2,3-Trichlorobenzene	5.0										

CRQL = Contract Required Quantitation Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor)

Revised 09/99

Page 3 of 8

SDG : C01A7

CHESAPEAKE PRODUCTS, INC.

KAP

[illegible]

DATA SUMMARY FORM: Volatiles

Page 4 of 8

Case #: 38801

SDG : C01A7

Site :

CHESAPEAKE PRODUCTS, INC.

Lab. :

KAP

Sample Number :		C01B2									
Sampling Location :		CP09-TB-01									
Field QC :											
Matrix :		Water									
Units :		ug/L									
Date Sampled :		7/22/2009									
Time Sampled :		12:00									
pH :		< 2									
Dilution Factor :		1.0									
Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
1,1,2-Trichloroethane	5.0										
*Tetrachloroethene	5.0										
2-Hexanone	10										
Dibromochloromethane	5.0										
1,2-Dibromoethane	5.0										
*Chlorobenzene	5.0										
*Ethylbenzene	5.0										
o-Xylene	5.0										
m,p-Xylene	5.0										
*Styrene	5.0										
Bromoform	5.0										
Isopropylbenzene	5.0										
1,1,2,2-Tetrachloroethane	5.0										
*1,3-Dichlorobenzene	5.0										
*1,4-Dichlorobenzene	5.0										
1,2-Dichlorobenzene	5.0										
1,2-Dibromo-3-chloropropane	5.0										
1,2,4-Trichlorobenzene	5.0										
1,2,3-Trichlorobenzene	5.0										

CRQL = Contract Required Quantitation Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor)

Revised 09/99

Page 5 of 8

Number of Soil Samples : 0

Number of Water Samples : 5

KAP

[illegible]

DATA SUMMARY FORM: BNA

Page 6 of 8

Case #: 38801

SDG : C01A7

Site :

CHESAPEAKE PRODUCTS, INC.

Lab. :

KAP

Sample Number :		C01A7 CP09-GW-01		C01A8 CP09-GW-02		C01A9 CP09-GW-03 Dup. of C01B0		C01B0 CP09-GW-04 Dup. of C01A9		C01B1 CP09-FB-01 Rinsate Blank	
Sampling Location :		Water		Water		Water		Water		Water	
Field QC :		ug/L		ug/L		ug/L		ug/L		ug/L	
Matrix :		7/22/2009		7/22/2009		7/22/2009		7/22/2009		7/22/2009	
Units :		13:10		12:27		11:45		13:35		14:15	
Date Sampled :		1.0		1.0		1.0		1.0		1.0	
Time Sampled :											
Dilution Factor :											
Semivolatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
2,4-Dinitrophenol	10										
4-Nitrophenol	10										
Dibenzofuran	5.0										
2,4-Dinitrotoluene	5.0										
Diethylphthalate	5.0	3.0	J								
Fluorene	5.0										
4-Chlorophenyl-phenylether	5.0										
4-Nitroaniline	10										
4,6-Dinitro-2-methylphenol	10										
N-Nitrosodiphenylamine	5.0										
1,2,4,5-Tetrachlorobenzene	5.0										
4-Bromophenyl-phenylether	5.0										
*Hexachlorobenzene	5.0										
Atrazine	5.0										
*Pentachlorophenol	10										
Phenanthrene	5.0									1.3	J
Anthracene	5.0										
Carbazole	5.0										
Di-n-butylphthalate	5.0										
Fluoranthene	5.0									1.5	J
Pyrene	5.0									1.0	J
Butylbenzylphthalate	5.0										
3,3'-Dichlorobenzidine	5.0										
Benzo(a)anthracene	5.0										
Chrysene	5.0										
Bis(2-ethylhexyl)phthalate	5.0										
Di-n-octylphthalate	5.0										
Benzo(b)fluoranthene	5.0										
Benzo(k)fluoranthene	5.0										
Benzo(a)pyrene	5.0										
Indeno(1,2,3-cd)pyrene	5.0										
Dibenzo(a,h)anthracene	5.0										
Benzo(g,h,i)perylene	5.0										
2,3,4,6-Tetrachlorophenol	5.0										

CRQL = Contract Required Quantitation Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor)

Revised 09/99

DATA SUMMARY FORM: Pesticides

Page 7 of 8

Case #: 38801

SDG : C01A7

Number of Soil Samples : 0

Site :

CHESAPEAKE PRODUCTS, INC.

Number of Water Samples : 5

Lab. :

KAP

Sample Number :		C01A7		C01A8		C01A9		C01B0		C01B1	
Sampling Location :		CP09-GW-01		CP09-GW-02		CP09-GW-03		CP09-GW-04		CP09-FB-01	
Field QC :						Dup. of C01B0		Dup. of C01A9		Rinsate Blank	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		7/22/2009		7/22/2009		7/22/2009		7/22/2009		7/22/2009	
Time Sampled :		13:10		12:27		11:45		13:35		14:15	
Dilution Factor :		1.05		1.02		1.06		1.02		1.04	
Pesticide Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	0.050										
beta-BHC	0.050										
delta-BHC	0.050										
*gamma-BHC (Lindane)	0.050										
*Heptachlor	0.050										
Aldrin	0.050										
Heptachlor epoxide	0.050										
Endosulfan I	0.050										
Dieldrin	0.10										
4,4'-DDE	0.10										
*Endrin	0.10										
Endosulfan II	0.10										
4,4'-DDD	0.10										
Endosulfan sulfate	0.10										
4,4'-DDT	0.10										
*Methoxychlor	0.50										
Endrin ketone	0.10										
Endrin aldehyde	0.10										
alpha-Chlordane	0.050										
gamma-Chlordane	0.050										
*Toxaphene	5.0										

CRQL = Contract Required Quantitation Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor)

Revised 09/99

DATA SUMMARY FORM: Aroclor

Page 8 of 8

Case #: 38801

SDG : C01A7

Number of Soil Samples : 0

Site :

CHESAPEAKE PRODUCTS, INC.

Number of Water Samples : 5

Lab. :

KAP

Sample Number :		C01A7		C01A8		C01A9		C01B0		C01B1	
Sampling Location :		CP09-GW-01		CP09-GW-02		CP09-GW-03		CP09-GW-04		CP09-FB-01	
Field QC :						Dup. of C01B0		Dup. of C01A9		Rinsate Blank	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		7/22/2009		7/22/2009		7/22/2009		7/22/2009		7/22/2009	
Time Sampled :		13:10		12:27		11:45		13:35		14:15	
Dilution Factor :		1.15		1.06		1.05		1.0		1.02	
Aroclor Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*Aroclor-1016	1.0										
*Aroclor-1221	1.0										
*Aroclor-1232	1.0										
*Aroclor-1242	1.0										
*Aroclor-1248	1.0										
*Aroclor-1254	1.0										
*Aroclor-1260	1.0										
*Aroclor-1262	1.0										
*Aroclor-1268	1.0										

CRQL = Contract Required Quantitation Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor)

Revised 09/99

Appendix C

Chain of Custody (COC) Records



USEPA Contract Laboratory Program
Organic Traffic Report & Chain of Custody Record

Case No: 38801

R

DAS No:

Region: 3		Date Shipped: 7/23/2009		Chain of Custody Record	
Project Code: CT4638	Carrier Name: FedEx	Relinquished By		Sampler Signature:	
Account Code: VAN000306156	Airbill: 85749852154, 2165	(Date / Time)		Received By	
CERCLIS ID:	Shipped to:	1			
Spill ID: ADV		2			
Site Name/State: Chesapeake Products/VA		3			
Project Leader: Kevin Scott		4			
Action: Removal Assessment					
Sampling Co: Tetra Tech EMI					

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNOVER	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATETIME	INORGANIC SAMPLE No.	QC Type
C01A7	Ground Water/ Ken Eden	M/G	BNA/PEST (14), VOA (14)	780 (HCL), 781 (HCL), 782 (HCL), 807 (Ice Only), 808 (Ice Only), 809 (Ice Only), 810 (Ice Only) (7)	CP09-GW-01	S: 7/22/2009 13:10	MC01A7	-
C01A8	Ground Water/ Ken Eden	M/G	BNA/PEST (14), VOA (14)	643 (HCL), 644 (HCL), 645 (HCL), 789 (Ice Only), 790 (Ice Only), 791 (Ice Only), 792 (Ice Only), 793 (Ice Only), 794 (Ice Only), 795 (Ice Only), 796 (Ice Only) (11)	CP09-GW-02	S: 7/22/2009 12:27	MC01A8	-
C01A9	Ground Water/ Ken Eden	M/G	BNA/PEST (14), VOA (14)	650 (HCL), 651 (HCL), 652 (HCL), 727 (Ice Only), 728 (Ice Only), 729 (Ice Only), 730 (Ice Only) (7)	CP09-GW-03	S: 7/22/2009 11:45	MC01A9	-
C01B0	Ground Water/ Ken Eden	M/G	BNA/PEST (14), VOA (14)	657 (HCL), 658 (HCL), 659 (HCL), 713 (Ice Only), 714 (Ice Only), 715 (Ice Only), 716 (Ice Only) (7)	CP09-GW-04	S: 7/22/2009 13:35	MC01B0	field Duplicate - of CP09-GW-03 C01A9 Su 08/24/09.
C01B1	Ground Water/ Ken Eden	L/G	BNA/PEST (14), VOA (14)	663 (Ice Only), 664 (HCL), 665 (HCL), 666 (HCL), 668 (Ice Only), 669 (Ice Only), 670 (Ice Only) (7)	CP09-FB-01	S: 7/22/2009 14:15	MC01B1	Rinsate
C01B2	Ground Water/ Ken Eden	L/G	VOA (14)	671 (HCL), 672 (HCL), 673 (HCL) (3)	CP09-TB-01	S: 7/22/2009 12:00		Trip Blank

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: C01A8	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: BNA/PEST = CLP TCL Semivolatiles and Pesticides/PC, VOA = CLP TCL Volatiles	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TR Number: 3-510515489-072309-0002

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

REGION COPY

F2V5.1.047 Page 1 of 1

U.S. EPA Region III Analytical Request Form

Revision 10.06

38801

ASQAB USE ONLY	
RAS#	CT4638
DAS#	Analytical TAT
NSF#	21

Date: 7/13/2009		Site Activity: Removal Assessment	
Site Name: Chesapeake Products, Inc.		Street Address: 100 Ohio Street	
City: Chesapeake	State: VA	Latitude: 36.81359	Longitude: -76.28753
Program: Superfund	Act. #: 2009 T03 302DC6C A3DVRS00	CERCLIS #: VAN000 306 156	
Site ID:	Spill ID: A3DV	Operable Unit:	
Site Specific QA Plan Submitted: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Title: START 3 QAPP	Date Approved: November 2006
EPA Project Leader: Dominic Ventura	Phone#: 215.814.2363	Cell Phone #:	E-mail: ventura.dominic@epa.gov
Request Preparer: JOSHUA COPE	Phone#:	Cell Phone #: 215-768-8114	E-mail: Joshua.cope@ttemi.com
Site Leader: Kevin Scott	Phone#: 610.364.2119	Cell Phone #: 215.768.8116	E-mail: kevin.scott@ttemi.com
Contractor: Tetra Tech EM Inc.			
EPA CO/PO: Andrew Blaney/Karen Wodarczyk			
#Samples 25	Matrix: Soil	Parameter: total lead	Method: ILM05.4 ICP- AES 30940
#Samples 5	Matrix: water-non potable	Parameter: TCL VOC, SVOC, Pest/PCBs	Method: SOM01.2 30935-38
#Samples 5	Matrix: water-non potable	Parameter: TAL metals + CN	Method: ILM05.4 ICP-MS 30939
#Samples 1	Matrix: trip blank	Parameter: TCL VOC	Method: SOM01.2 30935
#Samples 5	Matrix: water-non potable-filtered	Parameter: Dissolved metals	Method: ILM05.4 ICP-MS 30939
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
Ship Date From: 7/22/2009	Ship Date To: 7/25/2009	Org. Validation Level M2	Inorg. Validation Level IM1
Unvalidated Data Requested: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If Yes, TAT Needed: <input type="checkbox"/> 14days <input type="checkbox"/> 7days <input type="checkbox"/> 72hrs <input type="checkbox"/> 48hrs <input type="checkbox"/> 24hrs <input checked="" type="checkbox"/> Other (Specify) 21 Days PR's by CAT			
Validated Data Package Due: <input type="checkbox"/> 42 days <input checked="" type="checkbox"/> 30 days <input type="checkbox"/> 21days <input type="checkbox"/> 14 days <input type="checkbox"/> Other (Specify) 21/9			
Electronic Data Deliverables Required: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (EDDs will be provided in Region 3 EDD Format)			
Special Instructions: Detection limits/Required limits are attached.			



TETRA TECH EM INC.

Kevin Scott
Project Manager

August 17, 2009

MEMO TO FILE
CASE 38801

Attn: Judy Snyder
ESAT Auditor Region 3
Lockheed Martin Enterprise Solutions & Services EPA Environmental Science Center
701 Mapes Road
Fort Meade, MD 20755

Dear Ms. Snyder:

This memo to file is being submitted to correct a paper work error for samples that were shipped to KAP Technologies, Inc. on July 23, 2009 under Case # 38801. Please note that there should be 7 different tag numbers associated with sample C01A9. These tag numbers should be 650, 651, 652, 727, 728, 729, and 730. The duplicate tag #651 received by the laboratory should be relabeled 729.

Additional pertinent case information is provided below:

Carrier used: Federal Express

Airbill number: 8574 9985 2165

Sample Station Location: CP-09-GW-03

Time and date of sampling: 7/22/2009, 11:45

If further clarification is needed, please contact me at 610.364.2119 or
Kevin.scott@ttemi.com

Sincerely,

Kevin Scott
Project Manager

cc: R3 Client Services Team
EPA WAM Dominic Ventura (3HS32)
START 3 TDD Files

7 Creek Parkway, Suite 700, Boothwyn, PA 19061
Tel 610.485.6410 Fax 610.485.8587
www.tetratech.com

Judy
Snyder/ESC/R3/USEPA/US
08/17/2009 10:56 AM

To Colleen Walling/DC/USEPA/US, Andrew
Blaney/R3/USEPA/US, Karen Wodarczyk/R3/USEPA/US,
Dominic Ventura/R3/USEPA/US,
cc joshua.cope@ttemi.com, kevin.scott@ttemi.com, Dan
Slizys/ESC/R3/USEPA/US, Carroll
Harris/ESC/R3/USEPA/US, Victor
bcc

Subject 38801, Chesapeake Products, Inc. memo to file needed

**DISCLAIMER: INFORMATION CONTAINED BELOW DOES NOT CONSTITUTE TECHNICAL
DIRECTION; THE SAMPLING/FIELD CONTRACTOR SHALL CONTACT HIS EPA CONTRACTING
OFFICER FOR TECHNICAL DIRECTION.**

Case: 38801, Chesapeake Products, Inc.
Lab: Kap
SDG: C01A7
EPA Lead: Dominic Ventura
Site Lead: Kevin Scott

There were two tags numbered 651 for sample C01A9 while tag 729 is missing from the data package and was not received by the laboratory, as indicated by its absence on the DC-1. The sampler will please resolve this discrepancy by assigning # 729 to one of the #651 tags or deleting tag 729. Thank you for your attention to this matter.

Judy Snyder
ESAT Auditor, Region 3
Lockheed Martin Enterprise Solutions & Services
701 Mapes Road
Ft. Meade, MD 20755-5350
Phone 410-305-3015
Fax 410-305-3095

Appendix D

Laboratory Case Narrative

Contract No. EPW05032

Case No. 38801

SDG No. C01A7

SDG NARRATIVE

SAMPLE RECEIPT:

On 07/24/09 @ 09:50 A.M. - Received two coolers via FedEx with shipment numbers 857499852154 and 857499852165. The cooler temperatures were 2.3°C and 2.7°C.

The package contained the following samples for VOA, BNA, PESTICIDES and AROCLORS analyses. The custody seals and the samples were intact.

EPA SAMPLE ID	pH	EPA SAMPLE ID	pH
C01A7	<2	C01A8MS	<2
C01A8	<2	C01A8MSD	<2
C01A9	<2		
C01B0	<2		
C01B1	<2		
C01B2	<2		

No problems were encountered during sample receiving and login.

For the sample C0041 one 1L amber bottle was broken upon sample receipt. SMO was notified and the resolution is enclosed.

VOLATILES WATER:

The sample for VOA was analyzed on instrument A-5973 GC/MS using a 30 meters long RTX-VMS column having a 0.25mm ID and 3µm film thickness. The trap used was OV-1/Tenax/Silica Gel (Tekmar #6 CAT #14-1755-003).

A 5 mL purge volume was used for water sample analyses, blanks and calibration standards. The concentrations of the standards and spikes were maintained at the levels required by the Statement of Work (SOW).

The water samples were analyzed for Volatiles according the SOM 1.2 statement of work.

No problems were encountered during the analysis of this sample.

The formula used to calculate the Sample concentration:

$$\text{Concentration in ug/L} = \frac{(A_x) (I_s) (DF)}{(A_{is}) (RRF) (V_o)}$$

Where,

Contract No. EPW05032

Case No. 38801

SDG No. C01A7

SDG NARRATIVE

A_x = Area of the characteristic ion (EICP) for the compound to be measured.

A_{is} = Area of the characteristic ion (EICP) for the internal standard.

I_s = Amount of internal standard added in ng.

RRF = Mean relative Response Factor from the initial calibration standard.

V_o = Total Volume of water purged, in ml.

DF = Dilution Factor.

SEMIVOLATILES:

The water samples were extracted on 07/25/09 using continuous Liquid/Liquid Extraction as per statement of work SOM 1.2. No problems were encountered during extraction and analysis.

The samples were analyzed on instrument F-5973 GC/MS using a 30 meters long RTX-5MS column having a 0.25mm ID and 0.25µm film thickness.

No problems were encountered during the sample analyses.

The formula used to calculate the Sample concentration:

WATER SAMPLES:

$$\text{Concentration ug/L} = \frac{(A_x)(I_s)(V_t)(DF)}{(A_{is})(RRF)(V_o)(V_i)}$$

Where,

A_x = Area of the characteristic ion for the compound to be measured.

A_{is} = Area of the characteristic ion for the internal standard.

I_s = Amount of internal standard injected in ng

V_o = Volume of water extracted in mL.

V_i = Volume of extract injected in µL.

RRF = Mean Relative Response Factor determined from the initial calibration Standard.

DF = Dilution Factor.

PESTICIDES:

The water sample was extracted using separatory funnel extraction method on 07/25/09 as per statement of work SOM 1.2.

As per the SOW, one liter of water sample was extracted to an intermediary volume of 10ml. From this 2ml of extract was cleaned by florisil and concentrated to a final volume of 2ml.

No problems were encountered during extraction and sample analyses.

1) RTX – CLP2: 30m*0.53mmID*0.41µm film thickness. (Primary Column)

2) RTX – CLP: 30m*0.53mmID*0.50µm film thickness. (Confirmation Column)

Contract No. EPW05032

Case No. 38801

SDG No. C01A7

SDG NARRATIVE

A 1uL injection was used.

The formula used to calculate the Sample concentration:

WATER SAMPLES:

$$\text{Concentration ug/L} = \frac{(A_x)(V_t)(DF)}{(CF)(V_o)(V_i)}$$

Where,

A_x = Response of the compound to be measured.
CF = Mean calibration factor from the initial calibration (area/ng)
V_t = Volume of the concentrated extract (uL)
V_i = Volume of extract injected.
V_o = Volume of water extracted
DF = Dilution Factor.

AROCLORS:

The water sample was extracted using separatory funnel extraction method on 07/24/09 as per statement of work SOM 1.2.

All samples were analyzed on a P-6890 GC using two columns manufactured by Restek

RTX – CLP2: 30m*0.53mmID*0.41um film thickness. (Primary Column)

RTX – CLP: 30m*0.53mmID*0.50um film thickness. (Confirmation Column)

A 1uL injection was used.

The QC sample was analyzed using reduced volume due to insufficient sample volume. SMO was notified and the resolution is enclosed.

The formula used to calculate the Sample concentration:

WATER SAMPLES:

$$\text{Concentration of the sample ug/L} = \frac{(A_x)(V_t)(DF)}{(CF)(V_o)(V_i)}$$

Where,

A_x = Response of the compound to be measured.
CF = Mean calibration factor from the initial calibration (area/ng)
V_t = Volume of the concentrated extract (uL)
V_i = Volume of extract injected.
V_o = Volume of water extracted
DF = Dilution Factor.

KAP TECHNOLOGIES, INC.

9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38801	SDG No. C01A7
------------------------------	-----------------------	----------------------

SDG NARRATIVE

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy sample data package and in the electronic data deliverable has been authorized by the laboratory manager or the manager's designee, as verified by the following signature:



Signature/Title

8/13/09

Date of Signature

Appendix E

TIC Form Is

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

C01A7

Lab Name: KAP TECHNOLOGIES, INC.

Contract: EPW05032

Lab Code: KAP

Case No.: 38801

Mod. Ref No.: _____ SDG No.: C01A7

Matrix: (SOIL/SED/WATER) WATER

Lab Sample ID: S-2536.01

Sample wt/vol: 5.000 (g/mL) ML

Lab File ID: A22242

Level: (TRACE or LOW/MED) LOW

Date Received: 07/24/2009

% Moisture: not dec. _____

Date Analyzed: 08/03/2009

GC Column: RTX-VMS ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.14	42	J
02		Unknown-02	11.00	76	J
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796 ¹	Total Alkanes	N/A		

¹ EPA-designated Registry Number.

50 08119/09

SOM01.2 (6/2007)

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

C01A7

Lab Name: KAP TECHNOLOGIES, INC.

Contract: EPW05032

Lab Code: KAP

Case No.: 38801

Mod. Ref No.: _____ SDG No.: C01A7

Matrix: (SOIL/SED/WATER) WATER

Lab Sample ID: S-2536.01

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: F31568

Level: (LOW/MED) LOW

Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N

Date Received: 07/24/2009

Concentrated Extract Volume: 1000 (uL)

Date Extracted: 07/25/2009

Injection Volume: 1.0 (uL)

Date Analyzed: 08/06/2009

GPC Cleanup: (Y/N) N pH: 7.1

Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	6.05	5.5	J
02	000464-48-2	Bicyclo[2.2.1]heptan-2-one, 1	7.96	5.4	NJ
03		Unknown-02	18.53	7.2	J
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796 ²	Total Alkanes	N/A		

² EPA-designated Registry Number.

SOM01.2 (6/2007)

0230

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C01A8

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032
Lab Code: KAP Case No.: 38801 Mod. Ref No.: _____ SDG No.: C01A7
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-2536.02
Sample wt/vol: 1000 (g/mL) ML Lab File ID: F31569
Level: (LOW/MED) LOW Extraction: (Type) CONT
% Moisture: _____ Decanted: (Y/N) N Date Received: 07/24/2009
Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/25/2009
Injection Volume: 1.0 (uL) Date Analyzed: 08/06/2009
GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 1.0
CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	000099-87-6	Benzene, 1-methyl-4-(1-methyl	5.98	5.1	NJ
02	005989-27-5	D-Limonene	6.05	6.4	NJ
03	000057-10-3	n-Hexadecanoic acid	15.08	5.0	NJ
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
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16					
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19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796 ²	Total Alkanes	N/A		

² EPA-designated Registry Number.

SOM01.2 (6/2007)

0244

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C01A9

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032
Lab Code: KAP Case No.: 38801 Mod. Ref No.: _____ SDG No.: C01A7
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-2536.03
Sample wt/vol: 1000 (g/mL) ML Lab File ID: F31570
Level: (LOW/MED) LOW Extraction: (Type) CONT
% Moisture: _____ Decanted: (Y/N) N Date Received: 07/24/2009
Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/25/2009
Injection Volume: 1.0 (uL) Date Analyzed: 08/06/2009
GPC Cleanup: (Y/N) N pH: 6.9 Dilution Factor: 1.0
CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.73	3.2	J
02	000138-86-3	Limonene	6.05	4.6	NJ
03	082304-66-3	7,9-Di-tert-butyl-1-oxaspiro(15.00	3.2	NJ
04	000301-02-0	9-Octadecenamide, (Z)-	18.13	3.6	NJ
05	007683-64-9	Squalene	18.30	3.2	NJ
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796 ²	Total Alkanes	N/A		

² EPA-designated Registry Number.

SOM01.2 (6/2007)

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

C01B0

Lab Name: KAP TECHNOLOGIES, INC.

Contract: EPW05032

Lab Code: KAP

Case No.: 38801

Mod. Ref No.: _____ SDG No.: C01A7

Matrix: (SOIL/SED/WATER) WATER

Lab Sample ID: S-2536.04

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: F31571

Level: (LOW/MED) LOW

Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N

Date Received: 07/24/2009

Concentrated Extract Volume: 1000 (uL)

Date Extracted: 07/25/2009

Injection Volume: 1.0 (uL)

Date Analyzed: 08/06/2009

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	4.73	14	J
02	005989-27-5	D-Limonene	6.05	5.7	NJ
03	000464-48-2	Bicyclo[2.2.1]heptan-2-one, 1	7.96	5.7	NJ
04		Unknown-02	11.52	12	J
05		Unknown-03	11.57	21	J
06	013798-23-7	Sulfur	12.64	14	NJ
07		Unknown-04	15.33	4.7	J
08		Unknown-05	15.55	13	J
09	010544-50-0	Cyclic octaatomic sulfur	15.66	22	NJ
10		Unknown-06	15.70	9.8	J
11		Unknown-07	15.74	25	J
12		Unknown-08	15.83	7.0	J
13		Unknown-09	15.91	6.6	J
14		Unknown-10	16.66	6.6	J
15					
16					
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27					
28					
29					
30					
	E966796 ²	Total Alkanes	N/A		

² EPA-designated Registry Number.

SOM01.2 (6/2007)

0273

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

C01B1

Lab Name: KAP TECHNOLOGIES, INC.

Contract: EPW05032

Lab Code: KAP

Case No.: 38801

Mod. Ref No.: _____ SDG No.: C01A7

Matrix: (SOIL/SED/WATER) WATER

Lab Sample ID: S-2536.05

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: F31572

Level: (LOW/MED) LOW

Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N

Date Received: 07/24/2009

Concentrated Extract Volume: 1000 (uL)

Date Extracted: 07/25/2009

Injection Volume: 1.0 (uL)

Date Analyzed: 08/06/2009

GPC Cleanup: (Y/N) N pH: 7.3

Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.72	3.7	J
02	005989-27-5	D-Limonene	6.05	5.6	NJ
03		Unknown-02	17.07	2.4	J
04					
05					
06					
07					
08					
09					
10					
11					
12					
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27					
28					
29					
30					
	E966796 ²	Total Alkanes	N/A		

² EPA-designated Registry Number.

SOM01.2 (6/2007)

0299



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
ENVIRONMENTAL SCIENCE CENTER
701 MAPES ROAD
FORT MEADE, MARYLAND 20755-5350

DATE : August 25, 2009

SUBJECT: Region III Data QA Review

FROM : Colleen Walling *Colleen K. Walling*
Region III ESAT RPO (3ES20)

TO : Dominic Ventura
Regional Project Manager

Attached is the inorganic data validation report for the Chesapeake Products, Inc. site (Case #: 38801, SDG#: MC01A7, MC01A8) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III ESD.

If you have any questions regarding this review, please call me at (410) 305-2629.

Attachments

cc: Joshua Cope (TTEMI)

TO File #: 0021

TDF#: 08060


OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE



Lockheed Martin Enterprise Solutions & Services
ESAT Region 3
US EPA Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Telephone 410-305-3037 Facsimile 410-305-3597



Date: August 19, 2009

Subject: Inorganic Data Validation (IM1 Level)
Case: 38801
SDGs : MC01A7, MC01A8
Site : Chesapeake Products, Inc.

From: Kurt Roby 
Inorganic Data Reviewer

Mahboobeh Mecanic 
 Senior Oversight Chemist

To: Colleen Walling
ESAT Region 3 Project Officer

OVERVIEW

Case 38801, Sample Delivery Groups (SDGs) MC01A7 and MC01A8, consisted of five (5) non-filtered aqueous samples analyzed for total metals and cyanide (CN⁻) and five (5) field filtered aliquots of these same samples analyzed for dissolved metals, respectively. Metals analyses were by ICP-MS and CN⁻ analyses were by spectrophotometry. The sample set included one (1) field duplicate pair and one (1) rinsate blank for each matrix. All samples were analyzed by A4 Scientific, Inc. (A4) according to Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.4 through the Routine Analytical Services (RAS) program.

SUMMARY

Data were validated according to EPA Region III Innovative Approaches (Level IM1) for Validation of Inorganic Data, June 1995, which includes review of all Forms but excludes review of raw data. Areas of concern with respect to data usability are listed below.

Data in this case have been impacted by outliers present in the rinsate blank as well as matrix spike and ICP serial dilution analyses. Details of these outliers are discussed under "Major and Minor Problems" and qualified analytical results for all samples are summarized on the Data Summary Forms (DSFs).

MAJOR PROBLEM

Matrix spike recoveries were extremely low (<30%) for selenium (Se) in both SDGs MC01A7 and MC01A8. Low recoveries may be attributed to matrix interferences or analyte lost during the digestion process. Positive results for Se in both matrices of sample MC01A7 may be biased low and are qualified "L" on the DSFs. Quantitation limits for Se in affected samples in both matrices may be biased low and have been rejected and qualified "R" on the DSFs.

MINOR PROBLEMS

The Rinsate Blank (RB) had a reported result greater than the Method Detection Limit (MDL) for zinc (Zn) in SDG MC01A8. Positive results for this analyte in affected samples of this SDG which are less than five times (<5X) the blank concentration may be biased high and have been qualified "B" on the DSF.

Percent differences (%Ds) in the ICP serial dilution analyses were outside the control limit (>10%) for arsenic (As), copper (Cu) and Zn in both SDGs MC01A7 and MC01A8. Positive results for these analytes in affected samples of both matrices are estimated due to possible matrix interferences and have been qualified "J" unless superseded by "B" on the DSFs.

The matrix spike recovery was high (>125%) for lead (Pb) in SDG MC01A8. Positive results for this analyte in affected samples may be biased high and have been qualified "K" unless superseded by "J" on the DSF.

NOTES

The laboratory did not analyze the samples in this data set for mercury (Hg) even though this analyte is included in the Target Analyte List (TAL) referenced on the Chain-of-Custody.

Reported results between MDLs and Contract Required Quantitation Limits (CRQLs) were qualified "J" on the DSFs.

The laboratory reported internal standard recoveries for all samples at approximately thirty percent (30%) in initial and two fold (2X) diluted analyses. After a rigorous digestion and five fold (5X) dilution analysis for all samples, internal standard recoveries reported within control limits. CRQLs for all analytes except CN⁻ in all samples are elevated due to the dilutions.

Post-digestion spike recoveries were extremely low (<30%) for Se in both SDGs and for Pb in SDG MC01A8; however, data are not qualified based on the post-digestion spike recovery.

Reported results for field duplicate pair samples MC01A9/MC01B0 were within 20% Relative Percent Difference (RPD), \pm CRQL for all analytes except for As, cobalt (Co), manganese (Mn), nickel (Ni) and Zn in the total metals fraction.

Data for Case 38801, SDG MC01A7 and MC01A8, were reviewed in accordance with EPA Region III Innovative Approaches (Level IM1) for Validation of Inorganic data, June 1995.

ATTACHMENTS

INFORMATION REGARDING REPORT CONTENT

Appendix A Glossary of Data Qualifier Codes
Appendix B Data Summary Form(s)
Appendix C Chain of Custody Records
Appendix D Laboratory Case Narrative

DCN: 38801_ MC01A7_8

Appendix A

Glossary of Data Qualifier Codes

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of compounds)

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unusable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

CODES RELATED TO QUANTITATION

(can be used for both positive results and sample quantitation limits):

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

Q = No analytical result.

Appendix B

Data Summary Forms

DATA SUMMARY FORM: INORGANIC

Page 2 of 2

Case #: 38801

SDG : MC01A8

Number of Soil Samples : 0

Site :

CHESAPEAKE PRODUCTS, INC.

Number of Water Samples : 5

Lab. :

A4

All Dissolved Metals

Sample Number :		MC01A7		MC01A8		MC01A9		MC01B0		MC01B1	
Sampling Location :		CP09-GW-01		CP09-GW-02		CP09-GW-03		CP09-GW-04		CP09-FB-01	
Field QC :						Dup. of MC01B0		Dup. of MC01A9		Rinsate Blank	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		7/22/2009		7/22/2009		7/22/2009		7/22/2009		7/22/2009	
Time Sampled :		13:10		12:27		11:45		13:35		14:15	
Dilution Factor :		5.0		5.0		5.0		5.0		5.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	2	81.8		16.0		5.6	J	3.9	J		
*ARSENIC	1	295	J	68.9	J	378	J	376	J	7.2	J
BARIUM	10	22.2	J	23.5	J	21.3	J	21.2	J		
BERYLLIUM	1										
*CADMIUM	1	50.8		12.8							
*CHROMIUM	2	19.5									
COBALT	1	40.3		7.5							
COPPER	2	2420	J	196	J	4.3	J				
*LEAD	1	4730	K	4.2	J	2.8	J				
MANGANESE	1	1050		1110		327		311		1.6	J
*NICKEL	1	77.3		29.4							
SELENIUM	5	37.7	L		R		R		R		R
SILVER	1			3.8	J						
THALLIUM	1	33.2		6.9							
VANADIUM	5	19.2	J	9.7	J						
ZINC	2	7490	J	2030	J	15.6	B	12.1	B	11.9	J

CRQL = Contract Required Quantitation Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor)

Revised 09/99

DATA SUMMARY FORM: INORGANIC

Page __1__ of __2__

Case #: 38801

SDG : MC01A7

Number of Soil Samples : 0

Site :

CHESAPEAKE PRODUCTS, INC.

Number of Water Samples : 5

Lab. :

A4

All Total Metals

Sample Number :		MC01A7		MC01A8		MC01A9		MC01B0		MC01B1	
Sampling Location :		CP09-GW-01		CP09-GW-02		CP09-GW-03		CP09-GW-04		CP09-FB-01	
Field QC :						Dup. of MC01B0		Dup. of MC01A9		Rinsate Blank	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		7/22/2009		7/22/2009		7/22/2009		7/22/2009		7/22/2009	
Time Sampled :		13:10		12:27		11:45		13:35		14:15	
Dilution Factor :		5.0		5.0		5.0		5.0		5.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	2	88.9		19.3							
*ARSENIC	1	395	J	782	J	555	J	424	J	8.4	J
BARIUM	10			662		227		252			
BERYLLIUM	1	1.9	J	10.6		4.6	J	3.4	J		
*CADMIUM	1	86.7		38.0							
*CHROMIUM	2	30.6		186		130		113			
COBALT	1	47.0		45.9		19.4		11.8			
COPPER	2	4800	J	9040	J	31.9	J	31.1	J		
*LEAD	1	3900		2930		229		275			
MANGANESE	1	1350		3170		1720		1370			
*NICKEL	1	88.0		48.5		22.8		13.1			
SELENIUM	5	38.1	L		R		R		R		R
SILVER	1			3.5	J						
THALLIUM	1	44.1		10.0							
VANADIUM	5	28.7		152		88.4		70.2			
ZINC	2	9900	J	12100	J	3570	J	2350	J	6.7	J
*CYANIDE	10	+		12.4 +		13.5 +		15.7 +		+	

CRQL = Contract Required Quantitation Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor)

Revised 09/99

"+" = Cyanide analyzed at 1X dilution

Appendix C

Chain of Custody Records



**EPA USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record**

Case No: 38801

R

DAS No:

Region: 3	Date Shipped: 7/23/2009	Chain of Custody Record	Sampler Signature:
Project Code: CT4638	Carrier Name: FedEx	Relinquished By	Received By
Account Code: VAN000306156	Airbill: 85749852073, 2084	(Date / Time)	(Date / Time)
CERCLIS ID: ADV	Shipped to: A4 Scientific 1544 Sawdust Road Suite 505 The Woodlands TX 77380 (281) 292-5277	1	
Spill ID: Chesapeake Products/VA		2	
Site Name/State: Kevin Scott		3	
Project Leader: Removal Assessment		4	
Action: Tetra Tech EMI			
Sampling Co:			

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	PRESERVATIVE/ Bottles	TAG No./	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	QC Type
MC01A7	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	771 (HNO3), 777 (HNO3), 779 (NaOH) (3)		CP09-GW-01	S: 7/22/2009 13:10	C01A7	--
MC01A8	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	783 (HNO3), 784 (HNO3), 785 (HNO3), 786 (HNO3), 787 (NaOH), 788 (NaOH) (6)		CP09-GW-02	S: 7/22/2009 12:27	C01A8	--
MC01A9	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	648 (HNO3), 653 (NaOH), 773 (HNO3) (3)		CP09-GW-03	S: 7/22/2009 11:45	C01A9	--
MC01B0	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	655 (HNO3), 660 (NaOH), 774 (HNO3) (3)		CP09-GW-04	S: 7/22/2009 13:35	C01B0	field Duplicate - of CP09-GW-0:
MC01B1	Ground Water/ Ken Eden	L/G	CN (14), DM (14), TM (14)	662 (HNO3), 667 (NaOH), 775 (HNO3) (3)		CP09-FB-01	S: 7/22/2009 14:15	C01B1	Rinsate
MC01F1	Soil (>12")/ Ken Eden	H/G	Pb - soil (14)	743 (Ice Only) (1)		CP09-SB-02	S: 7/21/2009 10:50		--
MC01F4	Soil (>12")/ Ken Eden	M/G	Pb - soil (14)	746 (Ice Only) (1)		CP09-SB-04	S: 7/21/2009 10:15		--
MC01F5	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	747 (Ice Only) (1)		CP09-SS-01	S: 7/21/2009 10:00		--
MC01F6	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	748 (Ice Only) (1)		CP09-SS-02	S: 7/21/2009 10:44		--
MC01F7	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	749 (Ice Only) (1)		CP09-SS-03	S: 7/21/2009 10:20		--

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: MC01A8, MC01F8	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: CN = Cyanide, DM = CLP TAL Dissolved Metals, Pb - soil = Lead - soil, TM = CLP TAL Total Metals	Concentration: L = Low, M = Low/Medium, H = High Type/Designate: Composite = C, Grab = G	Shipment Iced?	

TR Number: 3-510515489-072309-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

REGION COPY

U.S. EPA Region III Analytical Request Form

Revision 10.06

ASQAB USE ONLY	
RAS#	CT4638
DAS#	Analytical TAT
NSF#	21

38801

Date: 7/13/2009		Site Activity: Removal Assessment	
Site Name: Chesapeake Products, Inc.		Street Address: 100 Ohio Street	
City: Chesapeake	State: VA	Latitude: 36.81359	Longitude: -76.28753
Program: Superfund		CERCLIS #: VAN000 306 156	
Site ID:		Operable Unit:	
Site Specific QA Plan Submitted: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Title: START 3 QAPP	
EPA Project Leader: Dominic Ventura		Phone#: 215.814.2363	
Request Preparer: JOSHUA COPE		Cell Phone #: 215-768-8114	
Site Leader: Kevin Scott		Cell Phone #: 215.768.8116	
Contractor: Tetra Tech EM Inc.		EPA CO/PO: Andrew Blaney/Karen Wodarczyk	
#Samples 25	Matrix: Soil	Parameter: total lead	Method: ILM05.4 ICP-AES
#Samples 5	Matrix: water-non potable	Parameter: TCL VOC, SVOC, Pest/PCBs	Method: SOM01.2
#Samples 5	Matrix: water-non potable	Parameter: TAL metals + CN	Method: ILM05.4 ICP-MS
#Samples 1	Matrix: trip blank	Parameter: TCL VOC	Method: SOM01.2
#Samples 5	Matrix: water-non potable-filtered	Parameter: Dissolved metals	Method: ILM05.4 ICP-MS
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
Ship Date From: 7/22/2009		Ship Date To: 7/25/2009	
Unvalidated Data Requested: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		If Yes, TAT Needed: <input type="checkbox"/> 14days <input type="checkbox"/> 72hrs <input type="checkbox"/> 48hrs <input type="checkbox"/> 24hrs <input checked="" type="checkbox"/> Other (Specify) 21 Days	
Validated Data Package Due: <input type="checkbox"/> 42 days <input checked="" type="checkbox"/> 30 days <input type="checkbox"/> 14 days <input type="checkbox"/> Other (Specify)		21/9	
Electronic Data Deliverables Required: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (EDDs will be provided in Region 3 EDD Format)			
Special Instructions: Detection limits/Required limits are attached.			

Appendix D

Laboratory Case Narrative

SDG MC01A7

USEPA-CLP

COVER PAGE

Lab Name: A4 Scientific, Inc. Contract: EPW08063
Lab Code: A4 Case No: 38801 NRAS No.: _____ SDG No: MC01A7
SOW No.: ILM05.4

EPA Sample No.

Lab Sample ID

<u>MC01A7</u>	<u>0010612-01</u>
<u>MC01A8</u>	<u>0010612-02</u>
<u>MC01A8D</u>	<u>0010612-02D</u>
<u>MC01A8S</u>	<u>0010612-02S</u>
<u>MC01A9</u>	<u>0010612-03</u>
<u>MC01B0</u>	<u>0010612-04</u>
<u>MC01B1</u>	<u>0010612-05</u>

		ICP-AES	ICP-MS
Were ICP-AES and ICP-MS interelement corrections applied?	(Yes/No)	<u>YES</u>	<u>YES</u>
Were ICP-AES and ICP-MS background corrections applied?	(Yes/No)	<u>YES</u>	<u>YES</u>
If yes, were raw data generated before application of background corrections?	(Yes/No)	<u>NO</u>	<u>NO</u>

Comments: The %D for As, Cu & Zn were exceeded the QC limits in the serial dilution. Interferences are suspected.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette (or via an alternate means of electronic transmission, if approved in advance by USEPA) has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Sree Teerupalli

Name: SREE LAKSHMI TEERUPALLI

Date: 08/13/09

Title: QA SPECIALIST

000000001

A4 SCIENTIFIC, INC.

1544 Sawdust Road, Suite 505 • The Woodlands, TX 77380 • Phone (281) 292-5277

Contract #: EPW08063

Case #: 38801

SDG #: MC01A7

SDG NARRATIVE

SAMPLE RECIEPT & LOGIN

The following samples were received on the dates listed against them. The samples were logged in for analysis as listed.

<u>Client Sample</u>	<u>Lab Sample</u>	<u>Matrix</u>	<u>#Cont.</u>	<u>Received</u>	<u>Analysis</u>	<u>Comments</u>
MC01A7	0010612-01	Water	2	07/24/09 10:01	ILM05.4-ICPMS ILM05.4-CN	SDG FIRST SX-CN, ICP Metals
MC01A8	0010612-02	Water	3	07/24/09 10:01	ILM05.4-ICPMS ILM05.4-CN	CN, ICP Metals - MS/DUP
MC01A9	0010612-03	Water	2	07/24/09 10:01	ILM05.4-ICPMS ILM05.4-CN	CN, ICP Metals
MC01B0	0010612-04	Water	2	07/24/09 10:01	ILM05.4-ICPMS ILM05.4-CN	CN, ICP Metals
MC01B1	0010612-05	Water	2	07/24/09 10:01	ILM05.4-ICPMS ILM05.4-CN	CN, ICP Metals -SDG FINAL SX

Issue: The laboratory received 10 water samples for ICP-MS analysis. The internal standards recovery for all samples was around 30% in both 1x and 2x analysis. The laboratory also analyzed some samples at 5x and the recoveries were low. Due to the low IS recoveries, the results are going to be grossly incorrect. The analyst felt that a rigorous digestion would reduce the interference; however, it was unsuccessful. The laboratory would like to analyze the samples for the 16 MS analytes by AES instead because of the internal standard failures.

Resolution: Per Region 3, the laboratory can analyze the samples by AES instead of MS. The laboratory must document all issues encountered with the ICP-MS analysis in the Case/SDG Narrative.

In regards to the above resolution, lab was able to perform the analysis at 5X dilution on ICPMS with rigorous digestion method. Lab is reporting the 5X analysis data for ICPMS since this gives the lower detection limits than ICPAES.

SMO was notified. Directive is enclosed. No other discrepancies of issues were noted during receipt and login.

pH of the water samples was verified upon sample receipt and is listed below:

EPA SAMPLE #	LAB SAMPLE #	pH- ICP-MS	pH CN
MC01A7	0010612-01	<2	>12
MC01A8	0010612-02	<2	>12
MC01A9	0010612-03	<2	>12
MC01B0	0010612-04	<2	>12
MC01B1	0010612-05	<2	>12

000000002

A4 SCIENTIFIC, INC.
1544 Sawdust Road, Suite 505 • The Woodlands, TX 77380 • Phone (281) 292-5277

Contract #: EPW08063	Case #: 38801	SDG #: MC01A7
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SDG NARRATIVE

CYANIDE

Water samples were distilled using the Midi-Distillation technique (DW2 and analyzed on a GENISYS-20 spectrophotometer at a wavelength of 588.0).

Test for sulfide and oxidizing agents for the water samples were negative.

MS and DUP were performed on sample "MC01A8" and they were within the QC limits.

No problems were encountered during sample preparation or analysis.

ICP-MS

Water samples were digested by Hot-Block technique (HW3) and analyzed using a Thermo Electron Corporation ICP MS model X-II.

No problems were encountered during sample preparation or analysis.

MS and DUP were performed on sample "MC01A8" and they were within the QC limits.

Serial Dilution was performed on sample "MC01A8" and they were within the QC limits.

No other problems were encountered during sample preparation or analysis.

The following equations are used for calculation of sample results from raw instrument output data:

CYANIDE

WATER Samples:

$$\text{CN Concentration } (\mu\text{g/L}) = \frac{A * D * F}{B}$$

Where,

A = $\mu\text{g/L}$ CN of sample from regression analysis

B = Volume of original Sample for distillation (0.050 L)

D = any dilution factor necessary to bracket sample value within standard values

F = Sample receiving solution volume (0.050 L)

The minimum value that can be substituted for A is the MDL value.

ICP-MS

WATER Samples:

$$\text{Concentration } (\mu\text{g/L}) = C * \frac{V_f}{V_i} * DF$$

Where,

C = Instrument value in $\mu\text{g/L}$ (The average of all replicate integrations).

V_f = Final digestion volume (mL) (50ml)

V_i = Initial digestion volume (mL) (50ml)

DF = Dilution Factor

000000003

SAMPLE LOG-IN SHEET

Lab Name A4 SCIENTIFIC, INC.				Page <u>1</u> of <u>1</u>		
Received By (Print Name) <u>Jessica Schulze</u>				Log-in Date <u>7.24.09</u>		
Received By (Signature) <u>Jessica Schulze</u>						
Case Number <u>38801</u>		Sample Delivery Group No. <u>MCDIA8</u>		NRAS Number <u>JA</u>		
Remarks:		Corresponding				
		EPA Sample #	Aqueous Sample pH	Sample Tag #	Assigned Lab #	Remarks: Condition of Sample Shipment, etc.
1. Custody Seal(s) <u>Present/Absent*</u> <u>Intact/Broken</u>		<u>MCDIA7</u>	<u>2/12</u>	<u>771, 777, 779</u>	<u>0010612</u> <u>-01</u>	<u>1-1K</u> <u>plastic</u>
2. Custody Seal Nos. _____		<u>A8</u>	<u>1</u>	<u>783, 784, 785</u> <u>786, 787, 788</u>	<u>-02</u>	<u>2</u>
3. Traffic Reports/Chain of Custody Records or Packing Lists <u>Present/Absent*</u>		<u>A9</u>	<u>1</u>	<u>648, 653, 778</u>	<u>-03</u>	<u>1</u>
4. Airbill <u>Airbill/Sticker Present/Absent*</u>		<u>B0</u>	<u>1</u>	<u>655, 660, 779</u>	<u>-04</u>	<u>1</u>
5. Airbill No. <u>8574-9985</u> <u>2073</u>		<u>B1</u>	<u>1</u>	<u>662, 667, 775</u>	<u>-05</u>	<u>1</u>
6. Sample Tags <u>Present/Absent*</u>						
Sample Tag Numbers <u>Listed/Not Listed on Traffic Report/Chain of Custody Record</u>						
7. Sample Condition <u>Intact/Broken*/Leaking</u>						
8. Cooler Temperature Indicator Bottle <u>Present/Absent*</u>						
9. Cooler Temperature <u>58</u>						
10. Does information on Traffic Reports/Chain of Custody Records and sample tags agree? <u>Yes/No*</u>						
11. Date Received at Lab <u>7.24.09</u>						<u>7.22.09</u>
12. Time Received <u>10:05</u>						
Sample Transfer						
Fraction <u>Metals</u>	Fraction					
Area # <u>Cooler A</u>	Area #					
By <u>JS</u>	By					
On <u>7.24.09</u>	On					

* Contact SMO and attach record of resolution

Reviewed By <u>JS</u>	Logbook No. <u>NA</u>	<u>0000000004</u>
Date <u>08/13/11</u>	Logbook Page No. <u>NA</u>	

laxmi@a4scientific.com

From: <laxmi@a4scientific.com>
To: "Kramer, Caroline" <ckramer5@fedcsc.com>; "Jessica Schulze" <jschulze@a4scientific.com>;
 "Rabina Shreshta" <rabina@a4scientific.com>; "Reddy Pakanati" <Pakanati@a4scientific.com>
Cc: "Carroll Harris" <harris.carroll@epa.gov>; "Dan Slizys" <slizys.dan@epa.gov>; "John Kwedar"
 <kwedar.john@epa.gov>
Sent: Thursday, August 13, 2009 9:29 AM
Subject: Re: Region 03 | Case 38801 | Lab A4 | Issue Laboratory problems | FINAL
 Caroline,

In regards to the below resolution, lab was able to perform the analysis at 5X dilution on ICPMS with rigorous digestion method. Lab would like to report the 5X analysis data for ICPMS since this gives the lower detection limits than ICPAES.

Please let me know if you have any questions.

Thank you,
 Laxmi Teerupalli
 A4 Scientific Inc.
laxmi@a4scientific.com
 1544 Sawdust Rd. Suite 505
 The Woodlands, Texas 77380
 (281) 292-5277

----- Original Message -----

From: "Kramer, Caroline" <ckramer5@fedcsc.com>
To: "Jessica Schulze" <jschulze@a4scientific.com>; "Laxmi Teerupalli" <laxmi@a4scientific.com>; "Rabina Shreshta" <rabina@a4scientific.com>; "Reddy Pakanati" <Pakanati@a4scientific.com>
Cc: "Carroll Harris" <harris.carroll@epa.gov>; "Dan Slizys" <slizys.dan@epa.gov>; "John Kwedar" <kwedar.john@epa.gov>
Sent: Thursday, August 13, 2009 7:29 AM
Subject: Region 03 | Case 38801 | Lab A4 | Issue Laboratory problems | FINAL

Laxmi,

This is Kristin Von Moll, Caroline is out of the office today.

-Record of Communication Update-

This ROC has been updated for new information in the issue and a new resolution.

Summary Start

Issue: The laboratory received 10 water samples for ICP-MS analysis. The internal standards recovery for all samples was around 30% in both 1x and 2x analysis. The laboratory also analyzed some samples at 5x and

000000263

8/13/2009

laxmi@a4scientific.com

From: "Kramer, Caroline" <ckramer5@fedcsc.com>
To: "Jessica Schulze" <jschulze@a4scientific.com>; "Laxmi Teerupalli" <laxmi@a4scientific.com>;
 "Rabina Shreshta" <rabina@a4scientific.com>; "Reddy Pakanati" <Pakanati@a4scientific.com>
Cc: "Carroll Harris" <harris.carroll@epa.gov>; "Dan Slizys" <slizys.dan@epa.gov>; "John Kwedar"
 <kwedar.john@epa.gov>
Sent: Thursday, August 13, 2009 7:29 AM
Subject: Region 03 | Case 38801 | Lab A4 | Issue Laboratory problems | FINAL
 Laxmi,

This is Kristin Von Moll, Caroline is out of the office today.

-Record of Communication Update-

This ROC has been updated for new information in the issue and a new resolution.

Summary Start

Issue: The laboratory received 10 water samples for ICP-MS analysis. The internal standards recovery for all samples was around 30% in both 1x and 2x analysis. The laboratory also analyzed some samples at 5x and the recoveries were low. Due to the low IS recoveries, the results are going to be grossly incorrect. The analyst felt that a rigorous digestion would reduce the interference; however, it was unsuccessful.

The laboratory would like to analyze the samples for the 16 MS analytes by AES instead because of the internal standard failures.

Resolution: Per Region 3, the laboratory can analyze the samples by AES instead of MS. The laboratory must document all issues encountered with the ICP-MS analysis in the Case/SDG Narrative.

Summary End

Please let me know if you have any questions.

Thanks,

Kristin for,

Caroline L. Kramer
 Environmental Coordinator - Regions 3 and 9
 CSC

15000 Conference Center Drive, Chantilly VA 20151
 Civil Division | (p) 703-818-4248 | (f) 703-818-4602 |
ckramer5@fedcsc.com | www.csc.com

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9/12/2009

SDG MC01A8

USEPA-CLP

COVER PAGE

Lab Name: A4 Scientific, Inc. Contract: EPW08063
Lab Code: A4 Case No: 38801 NRAS No.: _____ SDG No: MC01A8
SOW No.: ILM05.4

EPA Sample No.	Lab Sample ID
<u>MC01A7</u>	<u>0010613-01</u>
<u>MC01A8</u>	<u>0010613-02</u>
<u>MC01A8D</u>	<u>0010613-02D</u>
<u>MC01A8S</u>	<u>0010613-02S</u>
<u>MC01A9</u>	<u>0010613-03</u>
<u>MC01B0</u>	<u>0010613-04</u>
<u>MC01B1</u>	<u>0010613-05</u>

		ICP-AES	ICP-MS
Were ICP-AES and ICP-MS interelement corrections applied?	(Yes/No)	<u>YES</u>	<u>YES</u>
Were ICP-AES and ICP-MS background corrections applied?	(Yes/No)	<u>YES</u>	<u>YES</u>
If yes, were raw data generated before application of background corrections?	(Yes/No)	<u>NO</u>	<u>NO</u>

Comments: The %D for As, Cu & Zn were exceeded the QC limits in the serial dilution. Interferences are suspected.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette (or via an alternate means of electronic transmission, if approved in advance by USEPA) has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: *Sree*

Name: SREE LAKSHMI TEERUPALLI

Date: 08/13/08

Title: QA SPECIALIST

0000000001

A4 SCIENTIFIC, INC.
1544 Sawdust Road, Suite 505 • The Woodlands, TX 77380 • Phone (281) 292-5277

Contract #: EPW08063

Case #: 38801

SDG #: MC01A8

SDG NARRATIVE

SAMPLE RECIEPT & LOGIN

The following samples were received on the dates listed against them. The samples were logged in for analysis as listed.

<u>Client Sample</u>	<u>Lab Sample</u>	<u>Matrix</u>	<u>#Cont.</u>	<u>Received</u>	<u>Analysis</u>	<u>Comments</u>
MC01A7	0010613-01	Water	1	07/24/09 10:01	ILM05.4-DISSOLVED ICPMS	SDG FIRST SX- (Filtered) ICP Metals
MC01A8	0010613-02	Water	3	07/24/09 10:01	ILM05.4-DISSOLVED ICPMS	(Filtered) ICP Metals - MS/DUP
MC01A9	0010613-03	Water	1	07/24/09 10:01	ILM05.4-DISSOLVED ICPMS	(Filtered) ICP Metals
MC01B0	0010613-04	Water	1	07/24/09 10:01	ILM05.4-DISSOLVED ICPMS	(Filtered) ICP Metals
MC01B1	0010613-05	Water	1	07/24/09 10:01	ILM05.4-ICPMS	(Filtered) ICP Metals

Issue: The laboratory received 10 water samples for ICP-MS analysis. The internal standards recovery for all samples was around 30% in both 1x and 2x analysis. The laboratory also analyzed some samples at 5x and the recoveries were low. Due to the low IS recoveries, the results are going to be grossly incorrect. The analyst felt that a rigorous digestion would reduce the interference; however, it was unsuccessful. The laboratory would like to analyze the samples for the 16 MS analytes by AES instead because of the internal standard failures.

Resolution: Per Region 3, the laboratory can analyze the samples by AES instead of MS. The laboratory must document all issues encountered with the ICP-MS analysis in the Case/SDG Narrative.

In regards to the above resolution, lab was able to perform the analysis at 5X dilution on ICPMS with rigorous digestion method. Lab is reporting the 5X analysis data for ICPMS since this gives the lower detection limits than ICPAES.

SMO was notified. Directive is enclosed. No other discrepancies of issues were noted during receipt and login.

pH of the water samples was verified upon sample receipt and is listed below:

EPA SAMPLE #	LAB SAMPLE #	pH- ICP-MS
MC01A7	0010612-01	<2
MC01A8	0010612-02	<2
MC01A9	0010612-03	<2
MC01B0	0010612-04	<2
MC01B1	0010612-05	<2

ICP-MS

Water samples were digested by Hot-Block technique (HW3) and analyzed using a Thermo Electron Corporation ICP MS model X-II.

No problems were encountered during sample preparation or analysis.

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A4 SCIENTIFIC, INC.

1544 Sawdust Road, Suite 505 • The Woodlands, TX 77380 • Phone (281) 292-5277

Contract #: EPW08063

Case #: 38801

SDG #: MC01A8

SDG NARRATIVE

MS and DUP were performed on sample "MC01A8" and they were within the QC limits.

Serial Dilution was performed on sample "MC01A8" and they were within the QC limits.

No other problems were encountered during sample preparation or analysis.

The following equations are used for calculation of sample results from raw instrument output data:

ICP-MS

WATER Samples:

$$\text{Concentration } (\mu\text{g/L}) = C * \frac{V_f}{V_i} * DF$$

Where,

C = Instrument value in $\mu\text{g/L}$ (The average of all replicate integrations).

V_f = Final digestion volume (mL) (50ml)

V_i = Initial digestion volume (mL) (50ml)

DF = Dilution Factor

000000003

laxmi@a4scientific.com

From: <laxmi@a4scientific.com>
To: "Kramer, Caroline" <ckramer5@fedcsc.com>; "Jessica Schulze" <jschulze@a4scientific.com>; "Rabina Shreshta" <rabina@a4scientific.com>; "Reddy Pakanati" <Pakanati@a4scientific.com>
Cc: "Carroll Harris" <harris.carroll@epa.gov>; "Dan Slizys" <slizys.dan@epa.gov>; "John Kwedar" <kwedar.john@epa.gov>
Sent: Thursday, August 13, 2009 9:29 AM
Subject: Re: Region 03 | Case 38801 | Lab A4 | Issue Laboratory problems | FINAL
 Caroline,

In regards to the below resolution, lab was able to perform the analysis at 5X dilution on ICPMS with rigorous digestion method. Lab would like to report the 5X analysis data for ICPMS since this gives the lower detection limits than ICPAES.

Please let me know if you have any questions.

Thank you,
 Laxmi Teerupalli
 A4 Scientific Inc.
laxmi@a4scientific.com
 1544 Sawdust Rd. Suite 505
 The Woodlands, Texas 77380
 (281) 292-5277

----- Original Message -----

From: "Kramer, Caroline" <ckramer5@fedcsc.com>
To: "Jessica Schulze" <jschulze@a4scientific.com>; "Laxmi Teerupalli" <laxmi@a4scientific.com>; "Rabina Shreshta" <rabina@a4scientific.com>; "Reddy Pakanati" <Pakanati@a4scientific.com>
Cc: "Carroll Harris" <harris.carroll@epa.gov>; "Dan Slizys" <slizys.dan@epa.gov>; "John Kwedar" <kwedar.john@epa.gov>
Sent: Thursday, August 13, 2009 7:29 AM
Subject: Region 03 | Case 38801 | Lab A4 | Issue Laboratory problems | FINAL

Laxmi,

This is Kristin Von Moll, Caroline is out of the office today.

-Record of Communication Update-

This ROC has been updated for new information in the issue and a new resolution.

Summary Start

Issue: The laboratory received 10 water samples for ICP-MS analysis. The internal standards recovery for all samples was around 30% in both 1x and 2x analysis. The laboratory also analyzed some samples at 5x and

000000228

8/13/2009

the recoveries were low. Due to the low IS recoveries, the results are going to be grossly incorrect. The analyst felt that a rigorous digestion would reduce the interference; however, it was unsuccessful. The laboratory would like to analyze the samples for the 16 MS analytes by AES instead because of the internal standard failures. Resolution: Per Region 3, the laboratory can analyze the samples by AES instead of MS. The laboratory must document all issues encountered with the ICP-MS analysis in the Case/SDG Narrative.
Summary End

Please let me know if you have any questions.
Thanks,

Kristin for,

Caroline L. Kramer
Environmental Coordinator - Regions 3 and 9
CSC

15000 Conference Center Drive, Chantilly VA 20151
Civil Division | (p) 703-818-4248 | (f) 703-818-4602 |
ckramer5@fedcsc.com | www.csc.com

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-----Original Message-----

From: Slizys.Dan@epamail.epa.gov [mailto:Slizys.Dan@epamail.epa.gov]
Sent: Thursday, August 13, 2009 6:14 AM
To: Kramer, Caroline
Subject: Re: Region 03 | Case 38801 | Lab A4 | Issue Laboratory problems

Carolin,

The lab can analyze the samples by AES. The lab must document all issues they had with the ICP-MS analysis in the case narrative.

"Kramer,
Caroline"

000000229

8/13/2009

SAMPLE LOG-IN SHEET

Lab Name A4 SCIENTIFIC, INC.				Page <u>1</u> of <u>1</u>		
Received By (Print Name) <u>Jessica Schulte</u>				Log-in Date <u>7.24.09</u>		
Received By (Signature) <u>Jessica Schulte</u>						
Case Number <u>38801</u>		Sample Delivery Group No. <u>MCBIA 7 7.24.09</u>		NRAS Number		
Remarks: 1. Custody Seal(s) <u>Present/Absent*</u> <u>Intact/Broken</u> 2. Custody Seal Nos. <u>NA</u> 3. Traffic Reports/Chain of Custody Records or Packing Lists <u>Present/Absent*</u> 4. Airbill <u>Airbill/Sticker Present/Absent*</u> <u>Present/Absent*</u> 5. Airbill No. <u>8571-9985</u> <u>2073</u> 6. Sample Tags <u>Present/Absent*</u> Sample Tag Numbers <u>Listed/Not Listed on Traffic Report/Chain of Custody Record</u> 7. Sample Condition <u>Intact/Broken*/Leaking</u> 8. Cooler Temperature Indicator Bottle <u>Present/Absent*</u> 9. Cooler Temperature <u>58</u> 10. Does information on Traffic Reports/Chain of Custody Records and sample tags agree? <u>Yes/No*</u> 11. Date Received at Lab <u>7.24.09</u> 12. Time Received <u>10:05</u>	EPA Sample #	Aqueous Sample pH	Sample Tag #	Assigned Lab #	Remarks: Condition of Sample Shipment, etc.	
				Corresponding		
	<u>MCBIA 7</u>	<u>←</u>	<u>771, 777, 779</u>	<u>7.24.09 3</u>	<u>0010612</u>	<u>1-14 plastic</u>
	<u>A8</u>		<u>783, 784, 785, 786 - 788</u>	<u>-01</u>	<u>27</u>	
	<u>A9</u>		<u>648, 653, 773</u>	<u>-03</u>	<u>12</u>	
	<u>B0</u>		<u>665, 660, 774</u>	<u>-04</u>	<u>↓</u>	
	<u>B1</u>	<u>↓</u>	<u>662, 667, 975</u>	<u>-05</u>	<u>↓</u>	
Sample Transfer						
Fraction <u>Metals</u>	Fraction					
Area # <u>Cooler A</u>	Area #					
By <u>JS</u>	By <u>JS</u>					
On <u>7.24.09</u>	On <u>7.24.09</u>					

* Contact SMO and attach record of resolution

Reviewed By <u>SRL</u>	Logbook No. <u>NA</u>
Date <u>08/13/09</u>	Logbook Page No. <u>NA</u> 0000000006



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
ENVIRONMENTAL SCIENCE CENTER
701 MAPES ROAD
FORT MEADE, MARYLAND 20755-5350

DATE : August 25, 2009

SUBJECT: Region III Data QA Review

FROM : Colleen Walling *Colleen Walling*
Region III ESAT RPO (3ES20)

TO : Dominic Ventura
Regional Project Manager

Attached is the inorganic data validation report for the Chesapeake Products, Inc. site (Case #: 38801, SDG#: MC01F1, MC01H4) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III ESD.

If you have any questions regarding this review, please call me at (410) 305-2629.

Attachments

cc: Joshua Cope (TTEMI)

TO File #: 0021

TDF#: 08061

OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

Lockheed Martin Enterprise Solutions & Services
ESAT Region 3
US EPA Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Telephone 410-305-3037 Facsimile 410-305-3597



Date: August 19, 2009

Subject: Inorganic Data Validation (IM1 Level)
Case: 38801
SDGs : MC01F1, MC01H4
Site : Chesapeake Products, Inc.

From: Kurt Roby *KR*
Inorganic Data Reviewer

SM Mahboobeh Mecanic *me*
Senior Oversight Chemist

To: Colleen Walling
ESAT Region 3 Project Officer

OVERVIEW

Case 38801, Sample Delivery Groups (SDGs) MC01F1 and MC01H4, consisted of twenty-five (25) soil samples including one (1) field duplicate pair analyzed for lead (Pb) by ICP-AES. Samples were analyzed by A4 Scientific, Inc. (A4) according to Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.4 through the Routine Analytical Services (RAS) program.

SUMMARY

Data were validated according to EPA Region III Innovative Approaches (Level IM1) for Validation of Inorganic Data, June 1995, which includes review of all Forms but excludes review of raw data. No problems were detected during the validation of this data set.

Rinsate blank MC01B1 is associated with the soil samples in this case and has been analyzed in SDG MC01A7 by ICP-MS. Results for this sample may be found on the Data Summary Form (DSF) in Appendix C.

NOTES

Reported results for field duplicate pair samples MC01H6/MC01H7 were not within 35% Relative Percent Difference (RPD), $\pm 2XCRQL$.

During the review of SDG MC01F1, the reviewer noted discrepancies between the percent solids logbook and the Form Is, sample log-in sheet DC-1 and raw data for samples MC01F1, MC01F4, MC01F5, MC01F6, MC01F7, MC01F8, MC01F9, MC01G0, MC01G1, MC01G2 and MC01G3. The reviewer corrected the client ID entries on the percent solids logbook to match the laboratory sample IDs found on all Forms and raw data. No data were impacted due to these errors.

Data for Case 38801, SDGs MC01F1 and MC01H4, were reviewed in accordance with EPA Region III Innovative Approaches (Level IM1) for Validation of Inorganic data, June 1995.

ATTACHMENTS

INFORMATION REGARDING REPORT CONTENT

- Appendix A Glossary of Data Qualifier Codes
- Appendix B Data Summary Form(s)
- Appendix C Chain of Custody Records
- Appendix D Laboratory Case Narrative

DCN: 38801_MC01F1_H4

Appendix A

Glossary of Data Qualifier Codes

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of compounds)

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unusable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

CODES RELATED TO QUANTITATION

(can be used for both positive results and sample quantitation limits):

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

Q = No analytical result.

Appendix B

Data Summary Forms

DATA SUMMARY FORM: INORGANIC

Page 1 of 2

Case #: 38801

SDG : MC01F1

Number of Soil Samples : 20

Site :

CHESAPEAKE PRODUCTS, INC.

Number of Water Samples : 0

Lab. :

A4

Sample Number :		MC01F1		MC01F4		MC01F5		MC01F6		MC01F7	
Sampling Location :		CP09-SB-02		CP09-SB-04		CP09-SS-01		CP09-SS-02		CP09-SS-03	
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009	
Time Sampled :		10:50		10:15		10:00		10:44		10:20	
%Solids :		75.9		86.2		88.4		73.7		90.9	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*LEAD	1	11300		1840		1910		2420		2930	

Sample Number :		MC01F8		MC01F9		MC01G0		MC01G1		MC01G2	
Sampling Location :		CP09-SS-12		CP09-SS-14		CP09-SS-15		CP09-SS-16		CP09-SS-18	
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009	
Time Sampled :		11:55		11:35		11:30		15:25		11:48	
%Solids :		89.3		65.9		74.0		63.9		85.7	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*LEAD	1	2030		2880		608		956		1820	

Sample Number :		MC01G3		MC01G5		MC01G6		MC01G7		MC01G8	
Sampling Location :		CP09-SS-23		CP09-SS-27		CP09-SS-28		CP09-SS-29		CP09-SS-30	
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009	
Time Sampled :		15:30		14:20		10:15		13:25		10:05	
%Solids :		75.4		89.0		77.7		98.4		83.1	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*LEAD	1	1480		3060		3280		1630		1580	

Sample Number :		MC01G9		MC01H0		MC01H1		MC01H2		MC01H3		
Sampling Location :		CP09-SS-31		CP09-SS-32		CP09-SS-33		CP09-SS-34		CP09-SS-35		
Matrix :		Soil		Soil		Soil		Soil		Soil		
Units :		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		
Date Sampled :		7/21/2009		7/21/2009		7/21/2009		7/21/2009		7/21/2009		
Time Sampled :		11:33		11:35		11:25		13:45		13:46		
%Solids :		94.1		94.8		79.9		98.2		98.7		
Dilution Factor :		1.0		1.0		1.0		1.0		1.0		
ANALYTE		CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*LEAD		1	1690		1110		1350		968		793	

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor) / (%Solids/ 100)

Revised 09/99

DATA SUMMARY FORM: INORGANIC

Page 2 of 2

Case #: 38801

SDG : MC01H4

Number of Soil Samples : 5

Site :

CHESAPEAKE PRODUCTS, INC.

Number of Water Samples : 0

Lab. :

A4

Sample Number :	MC01H4	MC01H5	MC01H6	MC01H7	MC01H8						
Sampling Location :	CP09-SS-36	CP09-SS-37	CP09-SS-38	CP09-SS-40	CP09-SS-41						
Field QC :			Dup. of MC01H7	Dup. of MC01H6							
Matrix :	Soil	Soil	Soil	Soil	Soil						
Units :	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg						
Date Sampled :	7/21/2009	7/21/2009	7/21/2009	7/21/2009	7/21/2009						
Time Sampled :	14:55	14:05	14:12	14:15	10:36						
%Solids :	77.0	64.0	74.0	71.1	74.8						
Dilution Factor :	1.0	1.0	1.0	1.0	1.0						
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*LEAD	1	1080		1980		143		296		2120	

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor) / (%Solids/ 100)

Revised 09/99

Appendix C

Chain of Custody Records



USEPA Contract Laboratory Program Inorganic Traffic Report & Chain of Custody Record

Case No: 38801
DAS No: R

Region: 3	Date Shipped: 7/23/2009	Carrier Name: FedEx	Shipped to: A4 Scientific 1544 Sawdust Road Suite 505 The Woodlands TX 77380 (281) 292-5277
Project Code: CT4638	Airbill: 857498852073, 2084		
Account Code: VAN000306156			
CERCLUS ID: ADV			
Spill ID: Chesapeake Products/VA			
Site Name/State: Kevin Scott			
Project Leader: Removal Assessment			
Action: Tetra Tech EMI			
Sampling Co:			

Chain of Custody Record		Sampler Signature:
Relinquished By	(Date / Time)	Received By
1		
2		
3		
4		

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	QC Type
MC01A7	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	771 (HNO3), 777 (HNO3), 779 (NaOH) (3)	CP09-GW-01	S: 7/22/2009 13:10	C01A7	-
MC01A8	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	783 (HNO3), 784 (HNO3), 785 (HNO3), 786 (HNO3), 787 (NaOH), 788 (NaOH) (6)	CP09-GW-02	S: 7/22/2009 12:27	C01A8	-
MC01A9	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	648 (HNO3), 653 (NaOH), 773 (HNO3) (3)	CP09-GW-03	S: 7/22/2009 11:45	C01A9	-
MC01B0	Ground Water/ Ken Eden	M/G	CN (14), DM (14), TM (14)	655 (HNO3), 660 (NaOH), 774 (HNO3) (3)	CP09-GW-04	S: 7/22/2009 13:35	C01B0	field Duplicate - of CP09-GW-0;
MC01B1	Ground Water/ Ken Eden	L/G	CN (14), DM (14), TM (14)	662 (HNO3), 667 (NaOH), 775 (HNO3) (3)	CP09-FB-01	S: 7/22/2009 14:15	C01B1	Rinsate
MC01F1	Soil (>12")/ Ken Eden	H/G	Pb - soil (14)	743 (Ice Only) (1)	CP09-SB-02	S: 7/21/2009 10:50		-
MC01F4	Soil (>12")/ Ken Eden	M/G	Pb - soil (14)	746 (Ice Only) (1)	CP09-SB-04	S: 7/21/2009 10:15		-
MC01F5	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	747 (Ice Only) (1)	CP09-SS-01	S: 7/21/2009 10:00		-
MC01F6	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	748 (Ice Only) (1)	CP09-SS-02	S: 7/21/2009 10:44		-
MC01F7	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	749 (Ice Only) (1)	CP09-SS-03	S: 7/21/2009 10:20		-

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: MC01A8, MC01F8	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: CN = Cyanide, DM = CLPTAL Dissolved Metals, Pb - soil = Lead - soil, TM = CLPTAL Total Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TR Number: 3-510515489-072309-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

REGION COPY



**USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record**

Case No: 38801
DAS No:

R

Region: 3		Date Shipped: 7/23/2009		Chain of Custody Record	
Project Code: CT4638		Carrier Name: FedEx		Sampler Signature:	
Account Code: VAN000306156		Airbill: 85749852073, 2084		Relinquished By (Date / Time)	
Spill ID: ADV		Shipped to: A4 Scientific 1544 Sawdust Road Suite 505 The Woodlands TX 77380 (281) 292-5277		Received By (Date / Time)	
Site Name/State: Chesapeake Products/VA				1	
Project Leader: Kevin Scott				2	
Action: Removal Assessment				3	
Sampling Co: Tetra Tech EMI				4	

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	PRESERVATIVE/ BOTTLES	TAG No./	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	QC Type
MC01F8	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	750 (Ice Only) (1)		CP09-SS-12	S: 7/21/2009 11:55		-
MC01F9	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	751 (Ice Only) (1)		CP09-SS-14	S: 7/21/2009 11:35		-
MC01G0	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	752 (Ice Only) (1)		CP09-SS-15	S: 7/21/2009 11:30		-
MC01G1	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	753 (Ice Only) (1)		CP09-SS-16	S: 7/21/2009 15:25		-
MC01G2	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	754 (Ice Only) (1)		CP09-SS-18	S: 7/21/2009 11:48		-
MC01G3	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	755 (Ice Only) (1)		CP09-SS-23	S: 7/21/2009 15:30		-
MC01G5	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	757 (Ice Only) (1)		CP09-SS-27	S: 7/21/2009 14:20		-
MC01G6	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	758 (Ice Only) (1)		CP09-SS-28	S: 7/21/2009 10:15		-
MC01G7	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	759 (Ice Only) (1)		CP09-SS-29	S: 7/21/2009 13:25		-
MC01G8	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	760 (Ice Only) (1)		CP09-SS-30	S: 7/21/2009 10:05		-
MC01G9	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	761 (Ice Only) (1)		CP09-SS-31	S: 7/21/2009 11:33		-

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: MC01A8, MC01F8	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: CN = Cyanide, DM = CLP TAL Dissolved Metals, Pb - soil = Lead - soil, TM = CLP TAL Total Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced?

TR Number: 3-510515489-072309-0001

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**USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record**

Case No: 38801

R

DAS No:

Region: 3		Date Shipped: 7/23/2009	
Project Code: CT4638	Carrier Name: FedEx	Chain of Custody Record	
Account Code: VAN000306156	Airbill: 857499852073, 2084	Relinquished By	(Date / Time)
Spill ID: ADV	Shipped to: A4 Scientific 1544 Sawdust Road Suite 505 The Woodlands TX 77380 (281) 292-5277	1	
Site Name/State: Chesapeake Products/VA		2	
Project Leader: Kevin Scott		3	
Action: Removal Assessment		4	
Sampling Co: Tetra Tech EMI			

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	PRESERVATIVE/ Bottles	TAG No./	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	QC Type
MC01H0	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	762 (Ice Only) (1)		CP09-SS-32	S: 7/21/2009 11:35		--
MC01H1	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	763 (Ice Only) (1)		CP09-SS-33	S: 7/21/2009 11:25		--
MC01H2	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	764 (Ice Only) (1)		CP09-SS-34	S: 7/21/2009 13:45		--
MC01H3	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	765 (Ice Only) (1)		CP09-SS-35	S: 7/21/2009 13:46		--
MC01H4	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	766 (Ice Only) (1)		CP09-SS-36	S: 7/21/2009 14:55		--
MC01H5	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	767 (Ice Only) (1)		CP09-SS-37	S: 7/21/2009 14:05		--
MC01H6	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	768 (Ice Only) (1)		CP09-SS-38	S: 7/21/2009 14:12		--
MC01H7	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	769 (Ice Only) (1)		CP09-SS-40	S: 7/21/2009 14:15		Duplicate - of SS-38
MC01H8	Soil (0"-12")/ Ken Eden	M/G	Pb - soil (14)	770 (Ice Only) (1)		CP09-SS-41	S: 7/21/2009 10:36		Duplicate of SS-02

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: MC01A8, MC01F8	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: CN = Cyanide, DM = CLP TAL Dissolved Metals, Pb - soil = Lead - soil, TM = CLP TAL Total Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced?

TR Number: 3-510515489-072309-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

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U.S. EPA Region III Analytical Request Form

Revision 10.06

ASQAB USE ONLY	
RAS#	CT4638
DAS#	Analytical TAT
NSF#	21

38801

Date: 7/13/2009		Site Activity: Removal Assessment	
Site Name: Chesapeake Products, Inc.		Street Address: 100 Ohio Street	
City: Chesapeake	State: VA	Latitude: 36.81359	Longitude: -76.28753
Program: Superfund	Acct. #: 2009 T03 302DC6C A3DVRS00	CERCLIS #: VAN000 306 156	
Site ID:	Spill ID: A3DV	Operable Unit:	
Site Specific QA Plan Submitted: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Title: START 3 QAPP	Date Approved: November 2006
EPA Project Leader: Dominic Ventura	Phone#: 215.814.2363	Cell Phone #:	E-mail: ventura.dominic@epa.gov
Request Preparer: JOSHUA COPE	Phone#:	Cell Phone #: 215-768-8114	E-mail: Joshua.cope@ttemi.com
Site Leader: Kevin Scott	Phone#: 610.364.2119	Cell Phone #: 215.768.8116	E-mail: kevin.scott@ttemi.com
Contractor: Tetra Tech EM Inc.			
#Samples 25	Matrix: Soil	Parameter: total lead	Method: ILM05.4 ICP-AES 30940
#Samples 5	Matrix: water-non potable	Parameter: TCL VOC, SVOC, Pest/PCBs	Method: SOM01.2 30935-38
#Samples 5	Matrix: water-non potable	Parameter: TAL metals + CN	Method: ILM05.4 ICP-MS 30939
#Samples 1	Matrix: trip blank	Parameter: TCL VOC	Method: SOM01.2 30935
#Samples 5	Matrix: water-non potable-filtered	Parameter: Dissolved metals	Method: ILM05.4 ICP-MS 30939
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
Ship Date From: 7/22/2009		Ship Date To: 7/25/2009	Inorg. Validation Level IM1
Unvalidated Data Requested: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		If Yes, TAT Needed: <input type="checkbox"/> 14days <input type="checkbox"/> 7days <input type="checkbox"/> 48hrs <input type="checkbox"/> 24hrs	Other (Specify) 21 Days PRS by CAT
Validated Data Package Due: <input type="checkbox"/> 42 days <input checked="" type="checkbox"/> 30 days <input type="checkbox"/> 21days <input type="checkbox"/> 14 days		Other (Specify) 21/9	
Electronic Data Deliverables Required: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (EDDs will be provided in Region 3 EDD Format)			
Special Instructions: Detection limits/Required limits are attached.			

DATA SUMMARY FORM: INORGANIC

Case #: 38801

SDG : MC01A7

Site :

CHESAPEAKE PRODUCTS, INC.

Lab. :

A4

Sample Number :		MC01B1									
Sampling Location :		CP09-FB-01									
Field QC :		Rinsate Blank									
Matrix :		Aqueous									
Units :		ug/L									
Date Sampled :		7/22/2009									
Time Sampled :		14:15									
Dilution Factor :		1.0									
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*LEAD	5										

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: $(CRQL * Dilution Factor) / (\%Solids / 100)$

Revised 09/99

Appendix D

Laboratory Case Narrative

SDG MC01F1

USEPA-CLP

COVER PAGE

Lab Name: A4 Scientific, Inc. Contract: EPW08063
Lab Code: A4 Case No: 38801 NRAS No.: _____ SDG No: MC01F1
SOW No.: ILM05.4

EPA Sample No.	Lab Sample ID
MC01F1	0010611-01
MC01F4	0010611-02
MC01F5	0010611-03
MC01F6	0010611-04
MC01F7	0010611-05
MC01F8	0010611-06
MC01F8D	0010611-06D
MC01F8S	0010611-06S
MC01F9	0010611-07
MC01G0	0010611-08
MC01G1	0010611-09
MC01G2	0010611-10
MC01G3	0010611-11
MC01G5	0010611-12
MC01G6	0010611-13
MC01G7	0010611-14
MC01G8	0010611-15
MC01G9	0010611-16
MC01H0	0010611-17
MC01H1	0010611-18

		ICP-AES	ICP-MS
Were ICP-AES and ICP-MS interelement corrections applied?	(Yes/No)	<u>YES</u>	<u>YES</u>
Were ICP-AES and ICP-MS background corrections applied?	(Yes/No)	<u>YES</u>	<u>YES</u>
If yes, were raw data generated before application of background corrections?	(Yes/No)	<u>NO</u>	<u>NO</u>

Comments: _____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette (or via an alternate means of electronic transmission, if approved in advance by USEPA) has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Sree Teerupalli

Name: SREE LAKSHMI TEERUPALLI

0000000001

Date: 08/13/08

Title: QA SPECIALIST

USEPA-CLP

COVER PAGE

Lab Name: A4 Scientific, Inc. Contract: EPW08063
Lab Code: A4 Case No: 38801 NRAS No.: _____ SDG No: MC01F1
SOW No.: ILM05.4

EPA Sample No.

Lab Sample ID

MC01H20010611-19MC01H30010611-20

		ICP-AES	ICP-MS
Were ICP-AES and ICP-MS interelement corrections applied?	(Yes/No)	<u>YES</u>	<u>YES</u>
Were ICP-AES and ICP-MS background corrections applied?	(Yes/No)	<u>YES</u>	<u>YES</u>
If yes, were raw data generated before application of background corrections?	(Yes/No)	<u>NO</u>	<u>NO</u>

Comments: _____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette (or via an alternate means of electronic transmission, if approved in advance by USEPA) has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Sree TeerupalliName: SREE LAKSHMI TEERUPALLI

000000002

Date: 08/13/08Title: QA SPECIALIST

A4 SCIENTIFIC, INC.**1544 Sawdust Road, Suite 505 • The Woodlands, TX 77380 • Phone (281) 292-5277****Contract #: EPW08063****Case #: 38801****SDG #: MC01F1****SDG NARRATIVE****SAMPLE RECIEPT & LOGIN**

The following samples were received on the dates listed against them. The samples were logged in for analysis as listed.

<u>Client Sample</u>	<u>Lab Sample</u>	<u>Matrix</u>	<u>#Cont.</u>	<u>Received</u>	<u>Analysis</u>	<u>Comments</u>
MC01F1	0010611-01	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	SDG FIRSTSX-Pb
MC01F4	0010611-02	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01F5	0010611-03	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01F6	0010611-04	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01F7	0010611-05	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01F8	0010611-06	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb MS/DUP
MC01F9	0010611-07	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01G0	0010611-08	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01G1	0010611-09	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01G2	0010611-10	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01G3	0010611-11	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01G5	0010611-12	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01G6	0010611-13	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01G7	0010611-14	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01G8	0010611-15	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01G9	0010611-16	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01H0	0010611-17	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01H1	0010611-18	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01H2	0010611-19	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01H3	0010611-20	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb-SDG FINAL SX

No discrepancies of issues were noted during receipt and login.

000000003

A4 SCIENTIFIC, INC.

1544 Sawdust Road, Suite 505 • The Woodlands, TX 77380 • Phone (281) 292-5277

Contract #: EPW08063	Case #: 38801	SDG #: MC01F1
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SDG NARRATIVE

ICP-AES

Soil Samples were digested by Hot-Block technique (HS2) and analyzed using a Thermo Electron ICAP6500.

MS and DUP were performed on sample "MC01F8" and they were within the QC limits.

Serial Dilution was performed on sample "MC01F8" and they were within the QC limits.

No problems were encountered during sample preparation or analysis.

The following equations are used for calculation of sample results from raw instrument output data:

ICP-AES

SOIL Samples:

$$\text{Concentration (dry Wt.) (mg/kg)} = \frac{C * V}{W * S} * DF$$

Where,

C = Concentration (mg/L)

V = Final sample volume in Liters (L) (0.1L)

W = Wet sample weight (kg) (0.001kg)

S = % solids/100

DF = Dilution Factor

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SAMPLE LOG-IN SHEET
FORM DC-1

Lab Name A4 SCIENTIFIC, INC.				Page <u>1</u> of <u>1</u>	
Received By (Print Name) Jessica Schulze				Log-in Date 7.24.09	
Received By (Signature) <i>Jessica Schulze</i>					
Case Number 38801		Sample Delivery Group No. MC01F1		Mod. Ref. No.	
Remarks:				Corresponding	
				Remarks: Condition of Sample Shipment, etc.	
		EPA Sample #	Sample Tag #	Assigned Lab #	
1. Custody Seal(s) <input checked="" type="checkbox"/> Present/ Absent Intact/ Broken		MC01F1	NA	0010611-01	1-802 JAS Intact
2. Custody Seal Nos. NA +		F4		-02	
		F5		-03	
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists <input checked="" type="checkbox"/> Present/ Absent *		F6		-04	
		F7		-05	
4. Airbill <input checked="" type="checkbox"/> Airbill/ Sticker <input checked="" type="checkbox"/> Present/ Absent *		F8		-06	
5. Airbill No. 857499852 073		F9		-07	
6. Sample Tags <input checked="" type="checkbox"/> Present/ Absent *		G0		-08	
Sample Tag Numbers <input checked="" type="checkbox"/> Listed/ Not Listed on Chain-of-Custody		G1		-09	
7. Sample Condition <input checked="" type="checkbox"/> Intact/ Broken */ Leaking		G2		-10	
8. Cooler Temperature Indicator Bottle <input checked="" type="checkbox"/> Present/ Absent		G3		-11	
9. Cooler Temperature 5°C		G4/5		-12	
10. Does information on TR/COCs and sample tags agree? <input checked="" type="checkbox"/> Yes/ No *		G6		-13	
		G7		-14	
11. Date Received at Laboratory 7.24.09		G8		-15	
12. Time Received 10:01		G9		-16	
Sample Transfer		H0		-17	
Fraction Metals	Fraction	H1		-18	
Area # Cooler A	Area #	H2		-19	
By JS	By JS	H3		-20	
On 7.24.09	On 7.24.09				

* Contact SMO and attach record of resolution.

Reviewed By <i>CSL</i>	Logbook No.
Date 08/13/09	Logbook Page No.

0000000005

A4 Scientific1544 Sawdust Road, Suite 505
The Woodlands, TX 77380
281-292-5277

Percent Solids Logbook

Effective	Area	Type	Number-Version	RCN
15-June-2009	WET CHEM	FORM	5FORM03-A	799-0615

DATE IN: 08-05-09 TIME IN: 16:45 TEMP IN: 104°CDATE OUT (1): 08-06-09 TIME OUT (1): 8:53 TEMP OUT (1): 104°CDATE OUT (2): — TIME OUT (2): — TEMP OUT (2): —DATE OUT (3): — TIME OUT (3): — TEMP OUT (3): —SOP: 550P03-A Method: ASTM D2216-92/SM2540G/ILM05.4/SOM1.2; other.Oven ID: A Thermometer ID: 3ae-1

Pan # A	Lab Sample ID B	Client Sample ID C	Pan Weight (g) D	Pan + Wet Sample (g) E	Pan + Dry Sample #1 (g) F	Pan + Dry Sample #2 (g) F	Pan + Dry Sample #3 (g) F	Percent solids ** I
41	41	PMALK16	1.822	1.822	1.822	NA	NA	NA
97	001011-01	MC01F4	1.825	8.174	6.644			75.9
29	-02	F5	1.787	9.043	8.044			86.2
14	-03	F6	1.784	9.205	8.342			88.4
15	-04	F7	1.789	7.665	6.119			73.7
4	-05	F8	1.804	7.346	6.844			90.9
48	-06	✓ F9	1.806	8.485	7.773			89.3
16	-07	MC01F5	1.789	8.748	6.374			65.9
1	-08	GT	1.863	8.555	6.818			74.0
2	-09	G2	1.914	8.224	5.949			63.9
7	-10	G3	1.838	7.539	6.721			85.7
11	-11	G4	1.793	8.809	7.085			75.4
100	-12	G5	1.816	7.579	6.443			89.0
38	-13	G6	1.800	7.271	6.050			77.7
75	-14	G7	1.781	8.172	8.069			98.4
40	-15	G8	1.804	7.301	6.373			83.1
3	-16	✓ G9	1.831	7.371	7.045			94.1
49	-17	MC01H0	1.855	7.771	7.163			94.8
31	-18	H1	1.827	7.365	6.254			79.9
45	-19	H2	1.771	8.244	8.130			98.2
35	✓ -20	✓ H3	1.800	8.383	8.297			98.7
03	001011-060	MC01F9	1.828	7.723	7.027	✓	✓	88.2

Notes:

Analyst/Date: AB 08/11/09Reviewer/Date: See 08/13/09

Final Dry Weight (F) is used when monitored final weights are consistent.

**Percent solids(G) = {(F-D)/(E-D)} * 100

DV
8/10/09

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SDG MC01H4

USEPA-CLP

COVER PAGE

Lab Name: A4 Scientific, Inc. Contract: EPW08063
Lab Code: A4 Case No: 38801 NRAS No.: _____ SDG No: MC01H4
SOW No.: ILM05.4

EPA Sample No.	Lab Sample ID
<u>MC01H4</u>	<u>0010614-01</u>
<u>MC01H4D</u>	<u>0010614-01D</u>
<u>MC01H4S</u>	<u>0010614-01S</u>
<u>MC01H5</u>	<u>0010614-02</u>
<u>MC01H6</u>	<u>0010614-03</u>
<u>MC01H7</u>	<u>0010614-04</u>
<u>MC01H8</u>	<u>0010614-05</u>

		ICP-AES	ICP-MS
Were ICP-AES and ICP-MS interelement corrections applied?	(Yes/No)	<u>YES</u>	<u>YES</u>
Were ICP-AES and ICP-MS background corrections applied?	(Yes/No)	<u>YES</u>	<u>YES</u>
If yes, were raw data generated before application of background corrections?	(Yes/No)	<u>NO</u>	<u>NO</u>

Comments: _____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette (or via an alternate means of electronic transmission, if approved in advance by USEPA) has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Sra. Teerupalli Name: SREE LAKSHMI TEERUPALLI
Date: 08/13/09 Title: QA SPECIALIST 000000001

A4 SCIENTIFIC, INC.

1544 Sawdust Road, Suite 505 • The Woodlands, TX 77380 • Phone (281) 292-5277

Contract #: EPW08063	Case #: 38801	SDG #: MC01H4
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SDG NARRATIVE

SAMPLE RECIEPT & LOGIN

The following samples were received on the dates listed against them. The samples were logged in for analysis as listed.

<u>Client Sample</u>	<u>Lab Sample</u>	<u>Matrix</u>	<u>#Cont.</u>	<u>Received</u>	<u>Analysis</u>	<u>Comments</u>
MC01H4	0010614-01	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	SDG FIRST SX-Pb - MS/DUP
MC01H5	0010614-02	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01H6	0010614-03	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01H7	0010614-04	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb
MC01H8	0010614-05	Soil	1	07/24/09 10:01	ILM05.4-ICPAES	Pb

Issue: The laboratory received soil sample for Case 38801, SDG MC01H4. Per scheduling laboratory QC is required; however there was no sample designated on the TR/COC for QC. The laboratory would like to select sample MC01H4.

Resolution: In accordance with previous direction from Region 3, the laboratory will select a sample for laboratory QC as long as the sample is not a PE, blank, or rinsate sample. The laboratory will note the issue in the Case/SDG Narrative, notify the SMO coordinator of the sample selected for laboratory QC, and proceed with the analysis of the samples.

No other discrepancies or issues were noted during receipt and login.

ICP-AES

Soil Samples were digested by Hot-Block technique (HS2) and analyzed using a Thermo Electron ICAP6500.

MS and DUP were performed on sample "MC01F8" and they were within the QC limits.

Serial Dilution was performed on sample "MC01F8" and they were within the QC limits.

No problems were encountered during sample preparation or analysis.

000000002

A4 SCIENTIFIC, INC.

1544 Sawdust Road, Suite 505 • The Woodlands, TX 77380 • Phone (281) 292-5277

Contract #: EPW08063	Case #: 38801	SDG #: MC01H4
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SDG NARRATIVE

The following equations are used for calculation of sample results from raw instrument output data:

ICP-AES

SOIL Samples:

$$\text{Concentration (dry Wt.) (mg/kg)} = \frac{C * V}{W * S} * DF$$

Where,

C = Concentration (mg/L)

V = Final sample volume in Liters (L) (0.1L)

W = Wet sample weight (kg) (0.001kg)

S = % solids/100

DF = Dilution Factor

000000003

laxmi@a4scientific.com

From: "Kramer, Caroline" <ckramer5@fedcsc.com>
To: "Jessica Schulze" <jschulze@a4scientific.com>; "Laxmi Teerupalli" <laxmi@a4scientific.com>; "Rabina Shreshta" <rabina@a4scientific.com>; "Reddy Pakanati" <Pakanati@a4scientific.com>
Cc: "Carroll Harris" <harris.carroll@epa.gov>; "Dan Slizys" <slizys.dan@epa.gov>; "John Kwedar" <kwedar.john@epa.gov>
Sent: Monday, July 27, 2009 12:45 PM
Subject: Region 03 | Case 38801 | Lab A4 | SDG MC01H4 | Issue Insufficient/inappropriate designation of laboratory QC | FINAL

Laxmi,

Summary Start

Issue: The laboratory received soil sample for Case 38801, SDG MC01H4. Per scheduling laboratory QC is required; however there was no sample designated on the TR/COC for QC. The laboratory would like to select sample MC01H4.

Resolution: In accordance with previous direction from Region 3, the laboratory will select a sample for laboratory QC as long as the sample is not a PE, blank, or rinsate sample. The laboratory will note the issue in the Case/SDG Narrative, notify the SMO coordinator of the sample selected for laboratory QC, and proceed with the analysis of the samples.

SMO will note QC sample MC01H4 for SDG MC01H4.

Summary End

Please let me know if you have any questions or problems.

Thank you,

Caroline L. Kramer
 Environmental Coordinator - Regions 3 and 9
 CSC

15000 Conference Center Drive, Chantilly VA 20151
 Civil Division | (p) 703-818-4248 | (f) 703-818-4602 | ckramer5@fedcsc.com | www.csc.com

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From: jschulze@a4scientific.com [mailto:jschulze@a4scientific.com]
Sent: Monday, July 27, 2009 3:27 PM
To: Kramer, Caroline
Cc: RABINA; Laxmi; pakanati; sri
Subject: CASE/SDG 38801/MC01H4

Caroline,

Lab received soil samples for above referenced case/sdg on 7/24/2009.

Issue 1: Per Scheduling Lab QC is required. Per TR/COC no sample was designated. Lab suggest sample MC01H4.

Please let me know if you have any questions.
 Thanks.

Jessica Schulze
 A4 Scientific Inc.
 1544 Sawdust Rd. Suite 505
 The Woodlands, Texas 77380
 (281) 292-5277

000000124

8/13/2009

SAMPLE LOG-IN SHEET
FORM DC-1

Lab Name A4 SCIENTIFIC, INC.		Page 1 of 1				
Received By (Print Name) Jessica Schulze		Log-in Date 7.22.09				
Received By (Signature) <i>Jessica Schulze</i>						
Case Number 38801	Sample Delivery Group No. MCD1H4	Mod. Ref. No.				
Remarks:	Corresponding		Remarks: Condition of Sample Shipment, etc.			
	EPA Sample #	Sample Tag #		Assigned Lab #		
1. Custody Seal(s)	<input checked="" type="checkbox"/> Present/ <input type="checkbox"/> Absent* Intact/Broken	MCD1H4	NA	0010614-01	1-12 Inert 802 Jar	
2. Custody Seal Nos.	NA	H5		-02		
		H6		-03		
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	<input checked="" type="checkbox"/> Present/ <input type="checkbox"/> Absent*	H7		-04		
		H8		-05		
4. Airbill	<input checked="" type="checkbox"/> Airbill/ <input type="checkbox"/> Sticker Present/Absent*					
5. Airbill No.	85749985 2084					
6. Sample Tags	<input checked="" type="checkbox"/> Present/ <input type="checkbox"/> Absent*					
Sample Tag Numbers	<input checked="" type="checkbox"/> Listed/ <input type="checkbox"/> Not Listed on Chain-of- Custody					
7. Sample Condition	<input checked="" type="checkbox"/> Intact/ <input type="checkbox"/> Broken*/ Leaking					
8. Cooler Temperature Indicator Bottle	<input checked="" type="checkbox"/> Present/ <input type="checkbox"/> Absent					
9. Cooler Temperature	5°C					
10. Does information on TR/COCs and sample tags agree?	<input checked="" type="checkbox"/> Yes/ <input type="checkbox"/> No*					
11. Date Received at Laboratory	7.22.09					
12. Time Received	10:01					
Sample Transfer						
Fraction Metals	Fraction					
Area # Cooler A	Area #					
By JB	By JB					
On 7.22.09	On 7.22.09	7.22.09				

* Contact SMO and attach record of resolution.

Reviewed By	<u>See</u>	Logbook No.
Date	<u>22/12/08</u>	Logbook Page No.

[illegible]

A4 Scientific1544 Sawdust Road, Suite 505
The Woodlands, TX 77380
281-292-5277

Percent Solids Logbook

Effective	Area	Type	Number-Version	RCN
15-June-2009	WET CHEM	FORM	5FORM03-A	799-0615

DATE IN: 08-05-09 TIME IN: 16:45 TEMP IN: 104°C
 DATE OUT (1): 08-06-09 TIME OUT (1): 8:53 TEMP OUT (1): 104°C
 DATE OUT (2): — TIME OUT (2): — TEMP OUT (2): —
 DATE OUT (3): — TIME OUT (3): — TEMP OUT (3): —
 SOP: 550P03-A Method: ASTMD2216-92/SM2540G/ALM05.4/SOM1.2;other.
 Oven ID: A Thermometer ID: Spec-1

Pan # A	Lab Sample ID B	Client Sample ID C	Pan Weight (g) D	Pan + Wet Sample (g) E	Pan + Dry Sample #1 (g) F	Pan + Dry Sample #2 (g) F	Pan + Dry Sample #3 (g) F	Percent solids ** I
13	93-001014-01	PM3LK67	1.770	1.770	1.770	NA	NA	NA
11	93-001014-02	MC01H4	1.804	8.735	7.142			77.0
12	93-001014-03	H5	1.797	7.867	5.683			64.0
2	93-001014-04	H6	1.800	8.038	6.416			74.0
5	93-001014-05	H7	1.926	8.924	6.905			71.1
6	93-001014-06	H8	1.819	7.539	6.098			74.8
8	93-001014-07	MC01H4	1.969	8.707	7.647			84.3
<div style="position: relative;"> <div style="position: absolute; top: 0; left: 0; width: 100%; height: 100%; border: 1px solid black; transform: rotate(45deg);"></div> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); font-size: 2em;"> 2/3 08/11/09 </div> </div>								

Notes: _____

Analyst/Date: 7/2 08/11/09Reviewer/Date: See 08/13/09

Final Dry Weight (F) is used when monitored final weights are consistent.

**Percent solids(G) = {(F-D)/(E-D)} * 100

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