



TETRA TECH EM INC.

Kevin Heym
Environmental Scientist

October 23, 2006

Mr. Charlie Fitzsimmons
On-Scene Coordinator
U.S. EPA Environmental Science Center
701 Mapes Road
Fort Meade, MD 20755-5350

Subject: Final Trip Report for the Elkton Farms Firehole Site
EPA Contract No. EP-S3-05-02
Technical Direction Document No. E13-008-06-07-003
Document Tracking No. 0207

Dear Mr. Fitzsimmons:

Tetra Tech EM Inc. is submitting the final trip report for the Elkton Farms Firehole site that summarizes the sampling conducted and the analytical results for the site from February through September 2006. If you have any questions regarding this report, please call me at (610) 364-2146.

Sincerely,

Kevin Heym
Environmental Scientist

Enclosure

cc: TDD File

**TRIP REPORT
FOR THE
ELKTON FARMS FIREHOLE SITE
ELKTON, CECIL COUNTY, MARYLAND**

Prepared for

U.S. Environmental Protection Agency Region 3
1650 Arch Street
Philadelphia, Pennsylvania 19103

Submitted by

Tetra Tech EM Inc.
7 Creek Parkway, Suite 700
Boothwyn, Pennsylvania 19061

EPA Contract No. EP-S3-05-02

Technical Direction Document No. E13-008-06-07-003
Document Tracking No. 0207

October 23, 2006

Prepared by

Approved by

Kevin Heym
Environmental Scientist

Marian Murphy
START Program Manager

CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	1
2.0 BACKGROUND	1
2.1 SITE LOCATION	1
2.2 SITE DESCRIPTION	3
2.3 SITE HISTORY	3
2.4 PREVIOUS SITE ACTIVITIES	5
3.0 SITE ACTIVITIES	7
3.1 SAMPLE COLLECTION	7
3.1.1 SOIL SAMPLING	10
3.1.2 ASBESTOS SAMPLING	12
3.1.3 AMBIENT AIR SAMPLING	13
3.1.4 SURFACE WATER SAMPLING	14
3.2 SAMPLE HANDLING PROCEDURES	14
3.3 ADDITIONAL SITE ACTIVITIES	15
3.4 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN (SAP) AND PROBLEMS ECOUNTERED	16
4.0 ANALYTICAL RESULTS	17
4.1 SOIL ANALYTICAL RESULTS	17
4.2 ASBESTOS ANALYTICAL RESULTS	18
4.3 AMBIENT AIR ANALYTICAL RESULTS	19
4.4 SURFACE WATER ANALYTICAL RESULTS	19
5.0 SUMMARY	19
REFERENCES	21

APPENDIX

- A ELKTON FARMS FIREHOLE SAMPLE LOG
- B ELKTON FARMS FIREHOLE DETONATION LOCATION INFORMATION
- C ELKTON FARMS FIREHOLE PHOTOGRAPHIC DOCUMENTATION
- D ELKTON FARMS FIREHOLE ANALYTICAL DATA SUMMARIES
- E ELKTON FARMS FIREHOLE TETRA TECH VALIDATION DATA PACKAGES

ATTACHMENT

VALIDATED ANALYTICAL DATA PACKAGES

FIGURES

<u>Figure</u>		<u>Page</u>
1	SITE LOCATION MAP	2
2	SITE LAYOUT MAP	4
3	SITE SAMPLE LOCATION MAP	11

TABLES

<u>Table</u>		<u>Page</u>
1	SUMMARY OF LABORATORY ANALYZED SAMPLES.....	9
2	SUMMARY OF LABORATORY INFORMATION	15

1.0 INTRODUCTION

Under Eastern Area Superfund Technical Assessment and Response Team (START) Contract No. EP-S3-05-02, Technical Direction Document (TDD) No. E13-008-06-07-003, the U.S. Environmental Protection Agency (EPA) Region 3 tasked Tetra Tech EM Inc. (Tetra Tech) to prepare a trip report documenting all sampling activities from February through September 2006 at the Elkton Farms Firehole (Elkton) site located in Elkton, Cecil County, Maryland. From February to September 2006, Tetra Tech conducted soil, air, asbestos, and water sampling.

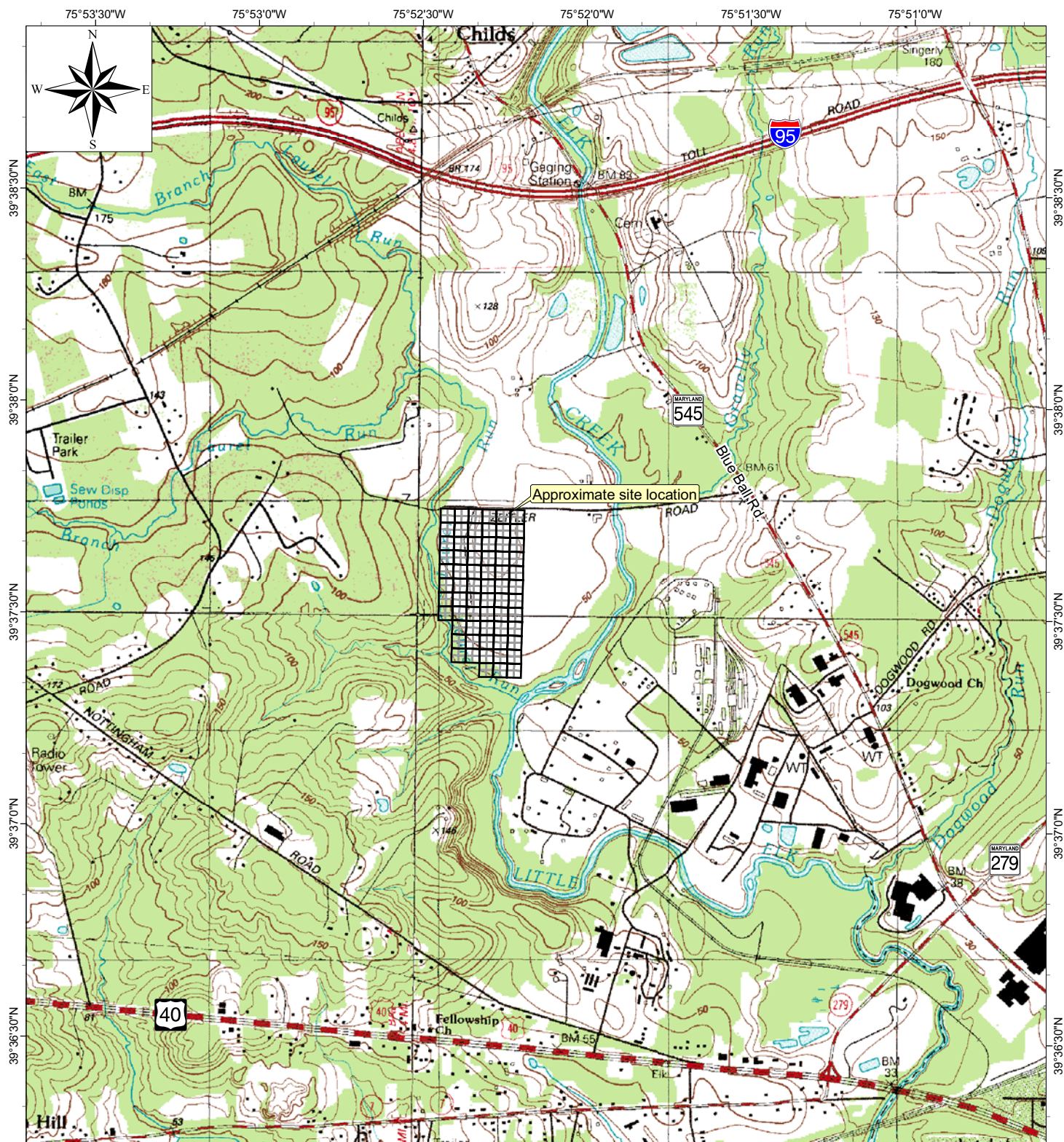
This trip report provides site background in Section 2.0, describes site activities in Section 3.0, summarizes analytical results in Section 4.0, and summarizes the sampling event in Section 5.0. All references cited in this report are listed after the text.

2.0 BACKGROUND

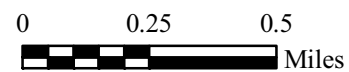
This section describes the site location and summarizes the site history, previous activities, and investigations at the site.

2.1 SITE LOCATION

The Elkton site is located 0.7 mile from the intersection with Blue Ball Road on the left side of Zeitler Road, Elkton, Cecil County, Maryland, as shown on Figure 1 (U.S. Geological Survey [USGS] 1992a,b). The geographic coordinates of the approximate center of the site are 39.62813° north latitude and 75.8477° west longitude. It is situated between Interstate 95, Route 40 (Pulaski Highway), and Route 545 (Blue Ball Road), as shown in Figure 1, Site Location Map.



Source: Modified from USGS 7.5-Minute Series Topographic Quadrangles,
 Elkton, Maryland - Delaware, 1992
 Newark West, Maryland - Delaware - Pennsylvania, 1992



Quadrangle Location = ■



Maryland

Elkton Farms Firehole Site Elkton, Cecil County, Maryland

Figure 1
 Site Location Map

TDD No. E13-008-06-07-003
 EPA Contract No. EP-S3-05-02

Map created on July 23, 2006
 by D. Call, Tetra Tech EMI

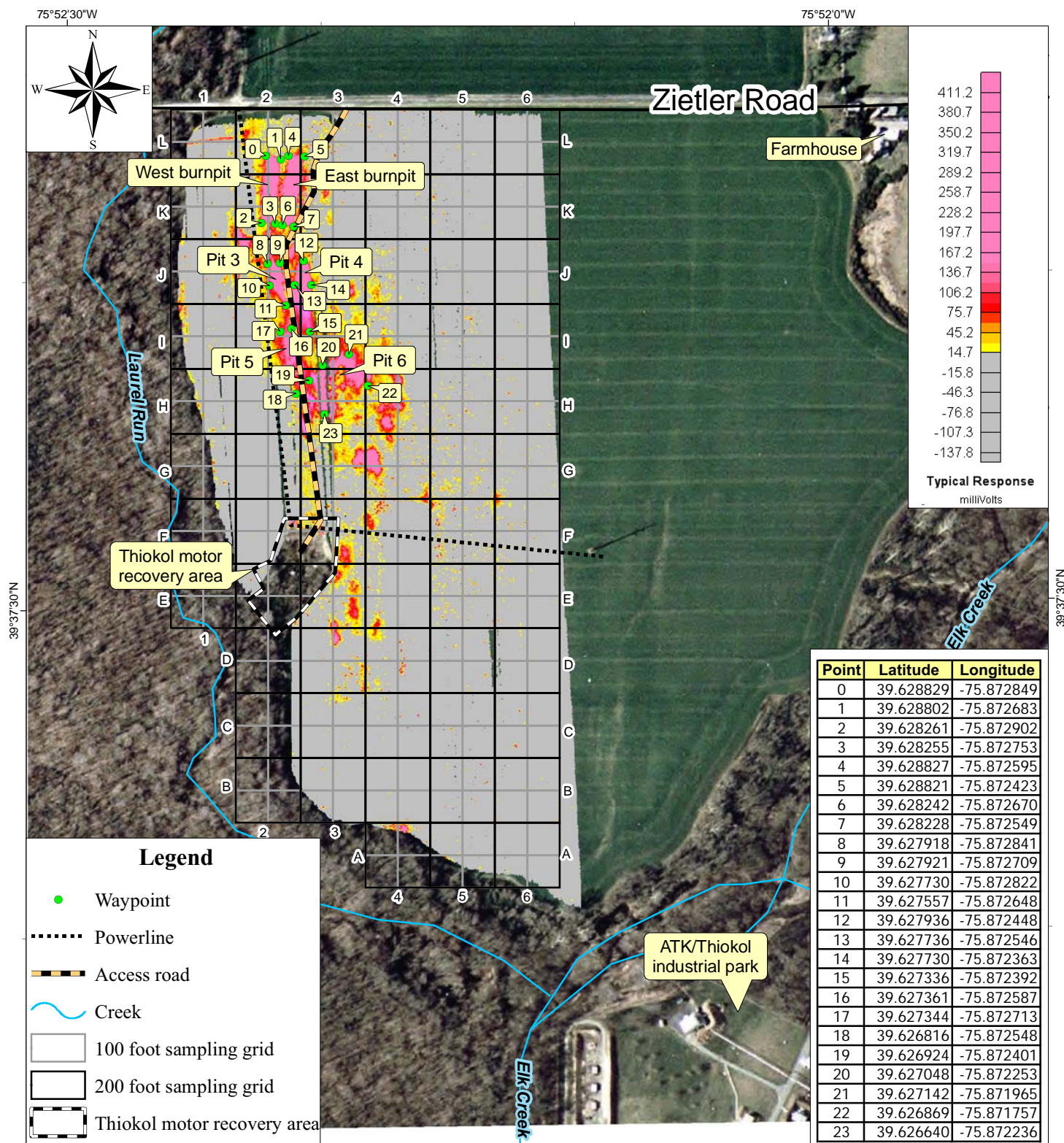


2.2 SITE DESCRIPTION

The Elkton site consists of 55 acres of a 400 acre parcel of land. The land was most recently used for farming. The Elkton site is bordered by agricultural lands to the north and local industrial facilities ATK Inc. (formerly known as Thiokol Inc.) to the south and east. The north, south, and west borders consist of wooded areas and scattered residential properties, as shown in Figure 2 (Maryland Department of Natural Resources [MDNR] 1988). It is divided up into several areas of concern based on historical evidence and recent data gathered in the “Geophysical Surveys to Investigate Surface and Subsurface Conditions at the Elkton Farms Firehole Site” (Tetra Tech 2005b). The geophysical surveys provided information regarding the presence and approximate locations of munitions and explosives of concern (MEC) and possible slag materials throughout the parcel. Based on the geophysical surveys, InfoPro Corporation and U.S. Army Corps of Engineers (USACE) divided the site into two Phases in the site work plan: Phase 1, the low density anomaly area and Phase 2, the high density anomaly area, which included the fireholes (InfoPro 2006). Phase 1 is colored gray on Figure 2 while Phase 2 is shaded pink on Figure 2. The firehole pits were reportedly documented as an area for the disposal of waste explosives material. Waste explosives material was spread in shallow pits and burned. The firehole pits were eventually backfilled before farming activities commenced at the site. Currently, two excavated firehole pits are located in the northeast portion of the site and are known as the west and east burn pits. Both firehole pits were excavated in the high density anomaly area of the site. Additional firehole pits exist in the high density area, but have not been excavated to date. The Thiokol/Trinitrotoluene (TNT) area was identified as an area of the site that may have high concentrations of TNT in the site soils. These areas are depicted in Figure 2, Site Layout Map. The former Thiokol area is located in an area that formerly contained buildings and other structures (MDNR 1988).

2.3 SITE HISTORY

In the 1930s and continuing through World War II, the USACE used the Elkton Farms parcel for the manufacturing of fireworks and munitions. Between 1943 and 1947 the property was also impacted by military operations. After being identified as a potentially responsible party,



the USACE performed an investigation of historical site operations and ownership. The owner at that time was Triumph Explosives, Inc. USACE identified an area on the current Elkton site as the “Firehole” based on the historical document review. The Firehole was documented as an area for the disposal of waste explosives material. This waste was reportedly collected in drums and kept wetted with alcohol or ether. The waste was then carried to a shallow pit off Zeitler Road, spread thinly and allowed to burn. Plant personnel monitored the burn until the waste explosive was ostensibly consumed. The total quantity of hazardous waste disposed of in the Firehole is unknown and there are no records on the estimate of fill thickness at the Firehole. A geophysical survey conducted for the Maryland Department of the Environment (MDE) by NAEVA Geophysics, Inc. (NAEVA) in July 2004 indicated several distinct anomalies on the portion of the property east of Laurel Run and south of Zeitler Road. (NAEVA 2004)

The geophysical survey conducted by Tetra Tech in 2005 shows that the Firehole is not one discrete area but rather a series of burn pits located across the property in an approximate 55-acre area. In recent years, Elkton Farms has been rented out for agricultural use but was reportedly the subject of a cleanup that saw the removal of tens of tons of contaminated soil. According to Mr. Patrick Herron and Mr. Richard Herron, previous owners of the land, soil was removed from an area where crops would not grow, and clean soil was brought in to fill the excavation. The removed soil was said to have contained scraps of brass shell casing and metallic slag.

The Elkton Farms property is currently the site of an active EPA removal action but is also listed for sale.

2.4 PREVIOUS SITE ACTIVITIES

On October 10 to 11, 2002, as part of the Formerly Used Defense Site Inspection, the MDE performed a site reconnaissance and a review of available historic information of the area, as well as sampling activities at the site (MDE 2004). MDE collected 14 surface soil samples, 10 subsurface soil samples, six surface water samples; and six sediment samples. The samples were analyzed for the presence of metals and cyanide, volatile organic compounds (VOC), semivolatile organic compounds (SVOC), pesticides and polychlorinated biphenyls (PCB), perchlorates, and nitroaromatic compounds. Additionally, on May 21, 2003, MDE collected

groundwater samples and analyzed them for the presence of total and dissolved metals, VOCs, SVOCs, pesticides and PCBs, nitroaromatic compounds, and perchlorates. Based on data from MDE investigations, risk estimates exceeded EPA and MDE recommended levels for the child resident population for incidental ingestion of and dermal contact with surface soils for chromium and arsenic. Lead was detected at 1,480 milligrams per kilogram (mg/kg). The groundwater sample results exceeded MDE and EPA recommended levels for all residential populations, with trichloroethene (TCE) as the risk driver.

Samples were then collected by MDE in the area defined by the NAEVA geophysical survey as the most likely area of the Firehole. Analytical results for these samples showed elevated concentrations of lead, mercury, and arsenic, as well as TCE, PCBs (Aroclor 1254), and the nitroaromatic compound TNT. Subsurface soil samples from the Firehole area were not collected because of refusal at less than 18 inches. Results for samples obtained from the vicinity of the former Thiokol Motor Recovery Area (TMRA) and midway between the Firehole and TMRA also exhibited elevated levels of several explosive compounds (Tetra Tech 2005b).

In May 2005, EPA tasked Tetra Tech to conduct a geophysical survey using a Geonics EM61-MK2 Time Domain Metal Detector and Schonstedt Magnetic Locator. The survey findings were reported in the “Geophysical Surveys to Investigate Surface and Subsurface Conditions at the Elkton Farms Firehole Site” (Tetra Tech 2005b).

In early September 2005, EPA met with USACE to discuss the work plan and costs for the project. USACE contracted with InfoPro to perform the unexploded ordnance (UXO) removal work at the site. On September 15, 2005, site security was initiated during daylight hours. On September 28, 2005, the Elkton Farms Firehole site action memorandum was signed. EPA On-Scene Coordinator, Charlie Fitzsimmons, entered into an agreement with USACE to provide management services for the UXO removal activities at the site. EPA would fund the subcontractor costs for the UXO removal action, but USACE would provide management services for the project at no cost to EPA. On February 7, 2006, a site kickoff meeting was held and InfoPro began magnetometer surveying and flagging operations at the site. On February 16, 2006, intrusive magnetometer surveying and digging activities commenced at the site. USACE managed the project in the field and contracted InfoPro to perform UXO clearance of the 55-acre

site. The removal action at Phase 1 consisted of performing magnetometer surveying by hand and hand digging each anomaly to approximately 18 inches below ground surface (bgs). Phase 2 of the site consists of a higher density of anticipated UXO and also contains several burn pits known as the fireholes. During site activities at Phase 2, USACE and InfoPro contracted with Timberline to use specialized heavy equipment for UXO clearance activities including the Range Master and the Taz. The Range Master is a single piece of equipment that is designed to scrape soil, sift the soil on a sifting bed, and retain the MEC and munitions debris for eventual disposal. The Taz is designed to excavate soil from the pits, use a trammel barrel to sift the excavated soil, and retain the MEC and munitions debris for later disposal. To date, the Range Master did not work properly due to soil consistency and maintenance problems. The Taz was used to excavate approximately 10,000 cubic yards of soil, but has yet to successfully process and sift munitions from the soil.

3.0 SITE ACTIVITIES

The Elkton site is currently the site of a time-critical removal action. EPA is providing the majority of the funding for the time-critical removal action work at the site.

This section summarizes sample collection, sample handling procedures, and additional site activities performed in support of the removal action.

3.1 SAMPLE COLLECTION

Tetra Tech collected water samples, soil samples, asbestos samples, air quality samples, and field quality assurance/quality control (QA/QC) samples at the site from February to September 2006. In total, 49 multimedia samples were collected during this time period. In total, 26 multimedia samples were collected on site for delivery to a contracted laboratory including one water sample for target analyte list (TAL) metals, VOCs, and SVOCs, six bulk asbestos samples, two soil samples for asbestos, seven soil samples for nitroaromatics/nitroamines, TAL metals, and toxicity characteristic leaching procedure (TCLP) metals, and 10 air samples for TAL metals and mercury. In total, 23 surface soil samples were collected on site for TNT field analysis. Figure 3 presents the sampling locations at the Elkton site. In general, soil sampling locations were documented using a Trimble Global Positioning System (GPS) unit. The Trimble GPS unit

is capable of recording locations with an accuracy of less than 3 feet from the actual locations in normal field conditions.

The sample identifier, date, time, matrix, type, and comments for each sample that was delivered for laboratory analysis are documented in Table 1, Sampling Summary. Soil sample identifier numbers are not sequential in Table 1 because only 10 percent of all samples collected for field analysis were delivered to a Contract Laboratory Program (CLP) laboratory for analysis. Soil samples collected for field TNT analysis have not been included in Table 1, due to analytical quality, which will be discussed in Section 4.1. The sample identifier, date, time, matrix, depth of sample, type, analysis, location, and comments for each sample are documented in Appendix A, Table A1, Soil and Water Sample Log; Table A2, TNT Field Sample Log; Table A3, Asbestos Sample Log; and Table A4, Ambient Air Sample Log.

Additionally, EPA tasked Tetra Tech to record the locations of USACE on-site detonation of MEC at the site. Tetra Tech coordinated with InfoPro at the site to record the locations of the detonations based on information and field locations identified by InfoPro. The detonation identifier, date, associated sample identifiers, latitude and longitude, location and description, and detonation charge type are documented in Table B1 provided in Appendix B. Figure B1 in Appendix B shows the locations of all detonations at the Elkton site.

QA/QC measures, including logbook documentation, were applied in accordance with Tetra Tech Standard Operating Procedure (SOP) No. 024, "Recording of Notes in Field Logbook" (Tetra Tech 1999a). Photographic documentation for site activities is provided in Appendix C, Elkton Farms Firehole Photographic Documentation.

The following sections describe the soil, asbestos, ambient air sampling, and the sample handling procedures.

TABLE 1
SUMMARY OF LABORATORY ANALYZED SAMPLES

Sample Identifier	Sample Date	Sample Time	Sample Matrix	Sample Type	Comments/Location
003-SS05-A01	2/21/2006	11:45	Soil	Composite	Former Thiokol and TNT area of concern
003-SS15-A01	2/21/2006	15:10	Soil	Composite	Former Thiokol and TNT area of concern
003-SS17-A01	2/21/2006	15:30	Soil	Composite	Former Thiokol and TNT area of concern
003-SS18-A01	2/21/2006	15:40	Soil	Composite	Former Thiokol and TNT area of concern
005-SS01-A01	2/22/2006	12:00	Soil	Composite	Grid C6 - Pre-detonation sample surrounding 81 mm shell
005-SS02-A01	2/24/2006	14:00	Soil	Composite	Grid C6 - Post-detonation sample at former 81 mm shell location
010-PS01-A01	6/12/2006	13:09	Soil	Grab	Pit 1 waste sample - southern end exposed during excavation
009-BA01-A01	6/12/2006	12:37	Bulk Asbestos	Grab	Tile Material - Gray/Dark Gray – Non-friable material
009-BA02-A01	6/12/2006	12:39	Bulk Asbestos	Grab	Tile Material - Gray/White - Non-friable material
009-BA03-A01	6/12/2006	12:41	Bulk Asbestos	Grab	Fiber Material - Green/Gray - Friable material
009-BA04-A01	6/12/2006	12:44	Bulk Asbestos	Grab	Wavy Tile Material - Brown/Gray – Non-friable material
009-BA05-A01	6/12/2006	12:47	Bulk Asbestos	Grab	Wire Mesh and associated material - black – Non-friable material
009-BA06-A01	6/12/2006	14:00	Bulk Asbestos	Grab	Fiber Washers - brown/gray - Potentially friable material
009-SA01-A01	6/12/2006	12:50	Soil	Composite	Soil - brown/black
009-SA02-A01	6/12/2006	12:57	Soil	Composite	Soil - brown/black
007-AA01-A01	5/24/2006	16:42	Air	Grab	Sample on UXO Dig Team 1
007-AA02-A01	5/24/2006	16:43	Air	Grab	Sample on UXO Dig Team 2
007-AA03-A01	5/24/2006	16:44	Air	Grab	Sample located 200 feet downwind of the Range Master operations on a stake
007-AA04-A01	5/24/2006	16:40	Air	Grab	Sample located 200 feet downwind of the Range Master operations on a stake
007-AAFB-A01	5/24/2006	16:45	Air	Grab	Field Blank
007-AA05-A02	6/1/2006	16:37	Air	Grab	Sample on UXO Dig Team 1; working downwind of Range Master operations
007-AA06-A02	6/1/2006	15:04	Air	Grab	Sample located 200 feet downwind of the Range Master operations on a stake
007-AAFB-A02	6/1/2006	16:55	Air	Grab	Field Blank
007-AA08-A02	6/1/2006	16:40	Air	Grab	Sample located in Range Master cab
001-SW01-A02	9/13/2006	10:00	Water	Grab	Phase II excavations (surface water)

Notes:

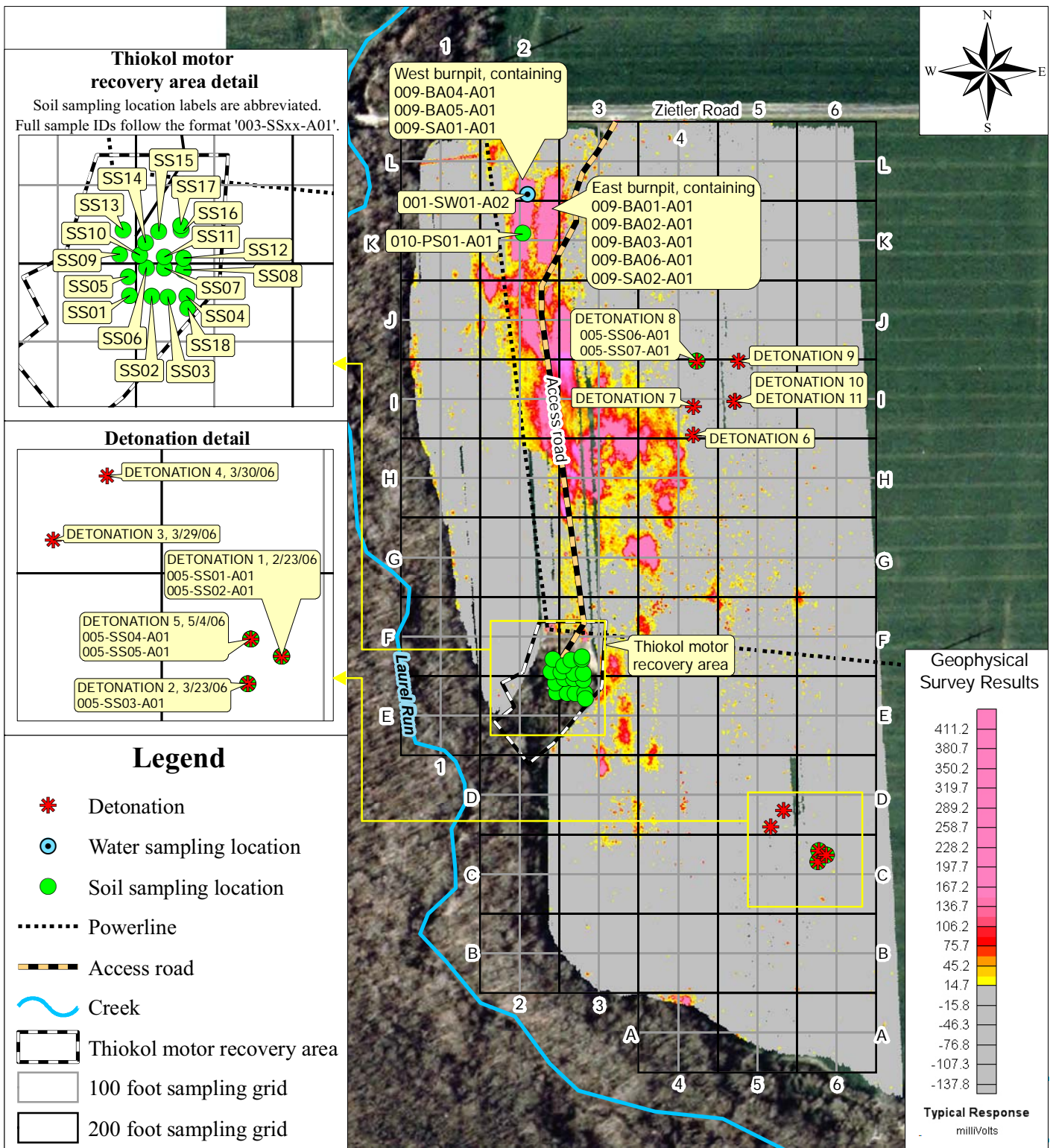
AA = Ambient Air
BA = Bulk Asbestos
FB = Field Blank
SW = Surface Water

PS = Pit Soil
SA = Soil Asbestos
SS = Soil sample

TNT = Trinitrotoluene
UXO = Unexploded Ordnance

3.1.1 SOIL SAMPLING

On February 21, 2006, Tetra Tech collected 18 surface soil samples (003-SS01-A01 to 003-SS18-A01) from the former Thiokol/TNT area of the site located in grids F2, F3, E2, and E3. These samples were collected to determine what concentrations of TNT existed in this area of the site and to conduct field analytical testing with laboratory confirmation of field test results. Surface soil sampling locations were prepared by removing leaves, brush, and grass from the area, exposing the soil for easier sample collection. After each sampling location had been prepared, the team collected approximately 32 ounces of soil from five composite locations in a 200-foot by 200-foot grid from 0 to 3 inches bgs. The soil was homogenized in a clean aluminum pan and approximately 8 ounces of soil was placed into a plastic baggy for field analysis. In total, four of the 18 samples that were collected as confirmation of the field analytical results were shipped to a contract laboratory. Approximately 28 ounces of soil was placed in certified-clean, labeled, clear, wide-mouth glass jars for shipment to the approved laboratories. Tetra Tech recorded the sample identifier, sample date, sample time, sample location, and characteristics of the soil in the site logbook. Non-dedicated soil trowels and nitrile gloves were used for sampling and to transfer the homogenized soil to jars or baggies. The 18 surface soil samples were analyzed by field analytical methods for TNT. The four confirmation surface soil samples were analyzed for nitroaromatics and nitroamines, TAL metals and cyanide, and TCLP metals. The sample identifier, date, time, matrix, depth of sample, type, analysis, location, and comments for each sample are documented in Appendix A, Table A1, Soil and Water Sample Log and Table A2, TNT Field Sample Log. The sampling locations are presented in Figure 3, Sampling Location Map.



Source: Modified from Color Infrared Digital Orthophoto Quarter Quadrangles, Newark Southwest and Elkton Northwest, Maryland Quadrangles, Maryland Department of Natural Resources, 1988 - 1995

0 250 500
Feet

Quadrangle Location = ■



Maryland

Elkton Farms Firehole Site
Elkton, Cecil County, Maryland

Figure 3
Sampling Location Map

TDD No. E13-008-06-07-003
EPA Contract No. EP-S3-05-02

Map created on October 9, 2006
by D. Call, Tetra Tech EMI



On February 22 and 24, 2006, Tetra Tech collected two samples to assist in determining what impact on-site detonations of MEC has on the surrounding soil. One 5-point composite sample was collected from the detonation area before detonation occurred, and one 5-point composite sample was collected after the detonation occurred. The pre-detonation sample (005-SS01-A01) was analyzed by field analysis for TNT and sent to the CLP laboratory with the post-detonation (005-SS02-A01) sample to be analyzed for nitroaromatics and nitroamines, TAL metals and cyanide, and TCLP metals. The sample identifier, date, time, matrix, depth of sample, type, analysis, location, and comments for each sample are documented in Appendix A, Table A1, Soil and Water Sample Log and Table A2, TNT Field Sample Log. The sampling locations are presented in Figure 3, Sampling Location Map.

On June 12, 2006, Tetra Tech collected one soil sample from the recently excavated eastern pit located in the northeast portion of the site. The grab sample was collected from approximately 3 feet bgs of a 6-inch slag layer. The sample was sent to the CLP laboratory to be analyzed for TAL metals and cyanide, and TCLP metals. The sample identifier, date, time, matrix, depth of sample, type, analysis, sample location, and comments for the sample are documented in Appendix A, Table A1, Soil and Water Sample Log. The sample location is presented in Figure 3, Sampling Location Map.

The surface soil samples were collected in accordance with Tetra Tech SOP No. 005, "Soil Sampling" (Tetra Tech 1999c) using non-dedicated metal trowels and dedicated aluminum pans. Non-dedicated sampling equipment, including trowels equipment used for soil sampling, was decontaminated before each use in accordance with Tetra Tech SOP 002 "General Equipment Decontamination" (Tetra Tech 1999b). The equipment was decontaminated using Liquinox and a deionized water rinse. Sample locations were recorded using a Trimble GPS unit unless otherwise noted.

3.1.2 ASBESTOS SAMPLING

On June 12, 2006, Tetra Tech collected six asbestos bulk samples (009-BA01-A01 to 009-BA06-A01) from various materials located in the soil piles excavated from the east and west pits in the high anomaly area located in Phase 2. These samples were collected due to the identification of presumed-asbestos containing materials (PACM). Each bulk asbestos sample collected was of a

different type of PACM. Asbestos bulk samples were double bagged, labeled, and secured in a cooler. The sample identifier, date, time, matrix, depth of sample, type, analysis, location, and comments for each sample are documented in Appendix A, Table A3, Asbestos Sample Log. The sampling locations are presented in Figure 3, Sampling Location Map.

Additionally, two composite soil samples (009-SA01-A01 and 009-SA02-A01) were collected for asbestos analysis. Each sample was a composite of each soil pile at the site. The samples were collected to identify if asbestos may be present at levels of concern in the soil, not to definitively determine whether the soils contain less than one percent asbestos at the site. Soil samples were double bagged, labeled, and secured in a cooler. Dedicated sampling equipment including plastic scoops and disposable aluminum pans were used to collect the soil samples for asbestos analysis. No GPS coordinates were recorded for the asbestos samples because they were collected from soil piles at the site which may be re-located depending on anticipated site work. The sample identifier, date, time, matrix, depth of sample, type, analysis, location, and comments for each sample are documented in Appendix A, Table A3, Asbestos Sample Log. The sampling locations are presented in Figure 3, Sampling Location Map.

3.1.3 AMBIENT AIR SAMPLING

On May 24 and June 1, 2006, Tetra Tech collected nine ambient air samples for worker protection purposes. The samples were required due to the Range Master soil sifting and processing at the site. The Range Master activities produced dust clouds at the site as the soil dried out. In general, the soil remained damp during these activities due to heavy rain storms throughout the Range Master working period. The samples were collected on dry days at least 24 to 48 hours after the site received rainfall. The samples were collected using AirCon personal air pumps set at approximately 2 liters per minute for the TAL metals and at 0.015 liter per minute for the mercury samples. Total dust concentration was also monitored throughout the day using personal dataRams. The pumps and personal dataRams were run for a total of approximately 8 hours per working day. In general, one set of air pumps was placed on team members working in the closest grid to the Range Master activities. The other set of pumps was located in a stationary position approximately 200 feet downwind of the Range Master work area. All air samples were placed in the breathing zone; approximately 5 feet above ground

surface. In total, seven samples were analyzed for TAL metals and two samples were analyzed for mercury. The sample identifier, date, time, matrix, depth of sample, type, analysis, location, and comments for each sample are documented in Appendix A, Table A4, Ambient Air Sample Log.

3.1.4 SURFACE WATER SAMPLING

On September 13, 2006, Tetra Tech collected one surface water sample (001-SW01-A02) from the excavated pits located on the northeast portion of the site. The water sample was collected to determine potential hazardous constituents within the pit water and was analyzed for VOCs, SVOCs, and TAL metals. The sampling location is presented in Figure 3, Sampling Location Map.

3.2 SAMPLE HANDLING PROCEDURES

Samples were handled and packaged in accordance with the Tetra Tech SOP No. 019, “Packaging and Shipping Samples” and with the “Tetra Tech Quality Assurance Project Plan (QAPP) for START” (Tetra Tech 2000, 2005a, respectively). Table 2, Summary of Laboratory Information, lists the laboratory name, number of samples sent to each laboratory, sampling date, sample type, CLP case or delivery of analytical services number, and the analysis. A private laboratory was procured for the asbestos samples due to the short notice and need for a quick turn around time for the development of a site SOP. Appropriate samples were preserved and kept on ice during delivery to the laboratories. All samples were logged on a Forms2Lite chain-of-custody/traffic report record.

TABLE 2
SUMMARY OF LABORATORY INFORMATION

Laboratory	Number of Samples	Sampling Date	Sample Type	CLP DAS/Case Number	Analysis
Ft. Meade ASQAB	5	2/21/2006	Soil	DAS R32433	Nitroaromatics/Nitroamines, TAL Metals, and TCLP Metals
Ft. Meade ASQAB	1	2/24/2006	Soil	DAS R32433	Nitroaromatics/Nitroamines, TAL Metals, and TCLP Metals
Ft. Meade ASQAB	4	5/24/2006	Ambient Air	DAS R32504	Total Metals
Ft. Meade ASQAB	1	5/24/2006	Ambient Air	DAS R32504	Mercury
Ft. Meade ASQAB	3	6/1/2006	Ambient Air	DAS R32504	Total Metals
Ft. Meade ASQAB	1	6/1/2006	Ambient Air	DAS R32504	Mercury
Ft. Meade ASQAB	1	6/12/2006	Soil	Case 35434	Nitroaromatics/Nitroamines
Bonner Analytical	1	6/12/2006	Soil	Case 35434	TAL Metals and TCLP Metals
EMSL	6	6/12/2006	Asbestos Bulk	Not applicable	PCM
EMSL	2	6/12/2006	Asbestos Soil	Not applicable	TEM
Chemtech	1	9/13/06	Surface Water	35742	TAL Metals
Mitkem	1	9/13/06	Surface Water	35742	VOC, SVOC

Notes:

ASQAB = Analytical Services and Quality Assurance Branch
CLP = Contract Laboratory Program
DAS = Delivery of Analytical Services
EMSL = EMSL Analytical Inc.
PCM = Phase Contrast Microscopy

SVOC = semivolatile organic compounds
TAL = Target Analyte List
TCLP = Toxicity Characteristic Leaching Procedure
TEM = Transmission Electron Microscopy
VOC = Volatile organic compounds

3.3 ADDITIONAL SITE ACTIVITIES

From February to June 2006, Tetra Tech attended weekly site or telephone meetings concerning the site operations and progress. Tetra Tech also tracked weekly progress of the site activities to assist in determining the amount of sampling required or possible at the site based on site conditions and work progress. Tetra Tech also performed occasional oversight activities, mostly during the Range Master and Taz operations at the site.

EPA tasked Tetra Tech to provide a UXO Specialist for oversight and documentation of activities in Phase 2, the high density anomaly area at the site. Tetra Tech procured a subcontractor to provide oversight from May 15 to June 30, 2006. The subcontractor provided a final report concerning site activities, type of munitions located at the site, and recommendations for completing activities in Phase 2.

3.4 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN (SAP) AND PROBLEMS ECOUNTERED

In the Elkton SAP, ambient air samples were originally proposed to document releases from on-site detonations of MEC (Tetra Tech 2006). Tetra Tech did not collect ambient air samples from the detonations due to the short time span for sampling (5 to 10 minutes) and the placement of pumps at least 200 feet from the detonation location. However, unanticipated ambient air samples were required to document worker exposure at the site during Range Master soil processing and sifting activities. In total, seven samples were analyzed for TAL metals and two samples were analyzed for mercury. One ambient air sample (007-AA07-A01) was not collected due to sample pump failure at some time during the 8-hour sampling time. The sample was discarded due to the unknown sample termination time and an unknown volume of air for the sample.

Tetra Tech anticipated collecting five to 10 composite samples from the Phase 2 burn pit areas to assist in determination of the extent of contamination. Due to asbestos contamination and equipment failures at the site, the Phase 2 burn pit area work was stopped and the sampling was not required. Additionally, Tetra Tech anticipated collecting a side wall composite sample and bottom composite sample of each burn pit after excavation of the pits was completed. Since excavation of the pits has not been completed to date, no samples have been collected.

4.0 ANALYTICAL RESULTS

The following section presents the analytical results for soil, asbestos, and ambient air samples collected from February through June 30, 2006. The analytical data summaries for soil, asbestos, ambient air, and surface water samples have been included as Appendix D. All CLP laboratory analytical data were validated through the Region 3 Analytical Services and Quality Assurance Branch (ASQAB) using EPA Region 3 validation protocols “Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses,” “Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses,” and “Innovative Approaches to Data Validation” (EPA 1994a, 1993, 1995, respectively). The CLP validated data packages are include as an attachment. The field TNT analytical data and the asbestos analytical data were validated by Ms. Marian Murphy, the START Region 3 Senior Chemist, using EPA Region 3 validation protocols “Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses,” and “Innovative Approaches to Data Validation” (EPA 1993, 1995, respectively). The validated Tetra Tech data packages are included as Appendix E.

4.1 SOIL ANALYTICAL RESULTS

The surface soil results for nitroaromatics, nitroamines, and TAL metals were compared to Region 3 risk-based concentrations (RBC) and Region 3 emergency removal guidelines (ERG) (EPA 2006). The ERGs are derived from the Region 3 RBC values. RBCs were exceeded for the following analytes in soil samples collected at the site: aluminum, antimony, arsenic, barium, cadmium, copper, iron, manganese, silver, thallium, vanadium, and zinc as documented in Appendix D, Table D1. Analytical results for the soil samples collected did not exceed any of the residential soil RBCs or ERGs for nitroaromatics or nitroamines. It should be noted that TNT in the post-detonation sample (005-SS02-A01) had a TNT concentration of 19.6 parts per million (ppm). This value is below the residential soil RBC, but this detonation was conducted on an inert filled munition. Only copper exceeded the ERG for residential soil in one sample (003-SS17-A01) with a concentration of 21,400 mg/kg. Total lead concentrations ranged from 11.9 to 7,770 mg/kg. The TCLP metals data were compared to the maximum concentration of contaminants for the toxicity characteristic values found in Title 40 Code of Federal Regulations

RF 261.24. Only lead exceeded the TCLP toxicity value in one sample (010-PS01-A01) collected from the slag layer located in the Phase 2 pit with a concentration of 9.57 milligrams per liter. The TAL metals, TCLP metals, and nitroaromatics and nitroamine analytical results are summarized in the soil analytical data tables in Appendix D, Tables D1, D2, and D3, respectively.

The TNT field analytical data have been validated and are presented in Appendix E, as a data validation package. Generally, the TNT field analytical data are not useable due to several factors. First, the initial acetone used was contaminated and the results are not valid. Secondly, the concentrations of TNT at the site are generally under 1 ppm, which is the lowest possible detection limit for the TNT field test kits. Tetra Tech recommends that all future nitroaromatic and nitroamine analysis be performed by a CLP laboratory due to the fact that lower detection limits are needed for the site. If required, the field test kits can be used qualitatively to determine whether TNT is present in unknown materials at site.

4.2 ASBESTOS ANALYTICAL RESULTS

The bulk asbestos and soil asbestos samples were collected to determine if asbestos was present in PACMs and if asbestos was present in soils excavated from the Phase 2 pits. A total of five out of six bulk asbestos samples contained chrysotile asbestos. The bulk material contained 35 to 55 percent asbestos in the materials sampled. Two out of the five bulk samples containing asbestos may be friable types of asbestos. The bulk samples were analyzed using phase contrast microscopy analysis.

The soil samples collected from the Phase 2 pit materials were analyzed using transmission electron microscopy (TEM) to provide a lower detection limit. Asbestos was not detected above the detection limit of 0.01 percent. The asbestos soil samples collected at the site were composite samples from each Phase 2 pile of soil. The two composite samples are not representative of the soils in both piles as they were only collected from surface materials and they are not of sufficient quantity to determine the composition of asbestos in the Phase 2 soils. The bulk asbestos and asbestos soil analytical results are summarized in the asbestos analytical data tables in Appendix D, Tables D4 and D5, respectively.

4.3 AMBIENT AIR ANALYTICAL RESULTS

The ambient air samples were analyzed using National Institute of Occupational Safety and Health (NIOSH) Method 7300 for total metals and NIOSH Method 6009 for mercury (NIOSH 1994 and EPA 1994b). The ambient air analytical results for total metals and mercury are all well below the Occupational Safety and Health Administration (OSHA) 8-hour time-weighted average for worker protection. The ambient air analytical results are summarized in the ambient air analytical data table in Appendix D, Table D6. Tetra Tech also performed dust monitoring with particulate data runs at the site. The average dust concentration over all ambient air sampling events was 0.175 milligrams per cubic meter (mg/m^3), which is well below the OSHA nuisance dust level of $5 \text{ mg}/\text{m}^3$.

4.4 SURFACE WATER ANALYTICAL RESULTS

The surface water samples were collected to identify hazardous constituents within the water that has collected in the excavated pits. Surface water analytical results are summarized in data tables in Appendix D, Tables D7, D8, and D9.

5.0 SUMMARY

Tetra Tech has collected samples at this site to determine the nitroaromatic and nitroamine concentrations in the former Thiokol and TNT areas at the site. In general, the results show that nitroaromatics and nitroamines are present in low concentrations under 1 ppm. Detonations performed at the site may increase the TNT levels in the soils surrounding the detonation to levels exceeding the residential soil RBCs depending on the quantity of energetic materials present at the time of detonation. The copper residential soil ERG was exceeded in one sample from the TNT area at the site. Asbestos sampling confirmed the presence of asbestos-containing materials at the site that are generally associated with the burn pit areas in Phase 2. No evidence of asbestos-containing materials has been documented outside of the burn pit areas at the site. Ambient air sampling at the site has not exceeded any OSHA worker protection standard at the site.

Tetra Tech recommends performing additional TAL and TCLP metals sampling in the TNT area of the site to determine the extent of contamination in that area. Additional sampling is also

recommended in the Phase 2 pit area to determine if the soil contains hazardous levels of metals or asbestos in that area and to determine the extent of contamination following the soil processing activities. Tetra Tech also recommends conducting clearance sampling in the Phase 1 areas of the site after all UXO clearance activities are completed to determine if hazardous levels of metals are present in Phase 1.

REFERENCES

- Google. 2006. "Google Earth." Accessed on September 27. On-Line Address:
<http://earth.google.com/>
- InfoPro Corporation. 2006. "Work Plan for Investigation and Removal of Munitions and Explosives of Concern (MEC) and Explosives Contaminated Soil." January.
- Maryland Department of the Environment. 2004. "FUDS Inspection of the Elkton Farms Firehole Site." Waste Management Administrator. Baltimore, Maryland 21230. September 15.
- Maryland Department of Natural Resources. 1988. Modified from Color Infrared Digital Orthophoto Quarter Quadrangles. Newark Southwest and Elkton Northwest, Maryland. Photo revised 1988 - 1995.
- NAEVA Geophysics Inc. 2004. "Results of Geophysical Investigations, Former Triumph Explosives Facility, Zeitler Road, Elkton, Maryland"; Charlottesville, Virginia; July 15-16, 2004.
- National Institute of Occupational Safety and Health. 1994. "Manual of Analytical Methods." Method 6009. 4th Edition.
- Tetra Tech EM Inc. (Tetra Tech). 1999a. "Recording of Notes in Field Logbook." Standard Operating Procedure (SOP) No. 024. November.
- Tetra Tech. 1999b. "General Equipment Decontamination." SOP No. 002. December.
- Tetra Tech. 1999c. "Soil Sampling." SOP No. 005. December.
- Tetra Tech. 1999d. "Surface Water Sampling." SOP No. 009. December
- Tetra Tech. 2000. "Packaging and Shipping Samples." SOP No. 019. January.
- Tetra Tech. 2005a. "Quality Assurance Project Plan (QAPP) for START." August.
- Tetra Tech 2005b. "Geophysical Surveys to Investigate Surface and Subsurface Conditions at the Elkton Farms Firehole Site." November.
- Tetra Tech. 2006. "Sampling and Analysis Plan for the Elkton Farms Firehole Site." January.
- U. S. Environmental Protection Agency (EPA). 1993. "Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses." Region 3 Office of Analytical Services and Quality Assurance (OASQA). Fort Meade, Maryland. April.

REFERENCES CONTINUED

- EPA. 1994a. "Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses," "Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses," and "Innovative Approaches to Data Validation" Region 3 OASQA. Fort Meade, Maryland. September.
- EPA. 1994b. "Air Sampling for Metals [NIOSH Method 7300, Elements]." SOP No. 2119. October.
- EPA. 1995. "Innovative Approaches to Data Validation." Region III OASQA. Fort Meade, Maryland. June.
- EPA. 2006. "Region III RBC Table." Region III. Philadelphia, Pennsylvania. April.
- U.S. Geological Survey. 1992a. 7.5 Minute Series Topographic Quadrangles. Elkton, Maryland Quadrangle.
- U.S. Geological Survey. 1992b. 7.5 Minute Series Topographic Quadrangles Newark West, Maryland, Delaware, Pennsylvania Quadrangle.

APPENDIX A
ELKTON FARMS FIREHOLE SAMPLE LOG

4 pages

Elkton Farms Firehole Site
Table A1
Soil and Water Sample Log

Sample Identifier	Sample Date	Sample Time	Sample Matrix	Depth of Sample	Sample Type	Analysis	Sample Location/Comments
005-SS01-A01	2/21/2006	12:00	Soil	Surface	Composite	TAL Metals/ TCLP Metals/ Nitroaromatics/ Nitroamines	Grid C6 - Pre-detonation sample surrounding 81mm shell
005-SS02-A01	2/24/2006	14:00	Soil	Surface	Composite	TAL Metals/ TCLP Metals/ Nitroaromatics/ Nitroamines	Grid C6 - Post-detonation sample at former 81mm shell location
003-SS05-A01	2/21/2006	11:45	Soil	Surface	Composite	TAL Metals/ TCLP Metals/ Nitroaromatics/ Nitroamines	Former Thiokol and TNT area of concern
003-SS15-A01	2/21/2006	15:10	Soil	Surface	Composite	TAL Metals/ TCLP Metals/ Nitroaromatics/ Nitroamines	Former Thiokol and TNT area of concern
003-SS17-A01	2/21/2006	15:30	Soil	Surface	Grab	TAL Metals/ TCLP Metals/ Nitroaromatics/ Nitroamines	Former Thiokol and TNT area of concern
003-SS18-A01	2/21/2006	15:40	Soil	Surface	Grab	TAL Metals/ TCLP Metals/ Nitroaromatics/ Nitroamines	Former Thiokol and TNT area of concern
010-PS01-A01	6/12/2006	13:09	Pit Slag/ Soil	3 feet	Grab	TAL Metals/ TCLP Metals/ Nitroaromatics/ Nitroamines	West burn pit waste sample - southern end exposed during excavation
005-SS06-A01	8/9/2006	7:00	Soil	Surface	Grab	TAL Metals/ TCLP Metals/ Nitroaromatics/ Nitroamines	Grid I4C - Pre-detonation sample 8
005-SS07-A01	8/9/2006	11:00	Soil	Surface	Grab	TAL Metals/ TCLP Metals/ Nitroaromatics/ Nitroamines	Grid I4C - Post-detonation sample 8
001-SW01-A02	9/13/2006	10:00	Water	Surface	Grab	VOCs/SVOCs/TAL Metals	Excavated pits in the NW portion of the site

Notes:

PS = Pit Slag
SS = Soil Sample
SW = Surface Water
TAL = Total Analyte List
TCLP = Toxic Characteristic Leaching Procedure
TNT = Trinitrotoluene
SVOC = Semivolatile Organic Compound
VOC = Volatile Organic Compound

Elkton Farms Firehole
Table A2

TNT Field Sample Log

Sample Identifier	Sample Date	Sample Time	Sample Matrix	Depth of Sample	Sample Type	Analysis	Sample Location
003-SS01-A01	2/21/2006	10:40	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS02-A01	2/21/2006	11:00	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS03-A01	2/21/2006	14:30	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS04-A01	2/21/2006	14:40	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS05-A01	2/21/2006	11:45	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS06-A01	2/21/2006	13:00	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS07-A01	2/21/2006	11:15	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS08-A01	2/21/2006	11:30	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS09-A01	2/21/2006	14:50	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS10-A01	2/21/2006	14:55	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS11-A01	2/21/2006	13:15	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS12-A01	2/21/2006	13:30	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS13-A01	2/21/2006	15:05	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS14-A01	2/21/2006	15:00	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS15-A01	2/21/2006	15:10	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS16-A01	2/21/2006	15:20	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS17-A01	2/21/2006	15:30	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS18-A01	2/21/2006	15:40	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
005-SS01-A01	2/22/2006	12:00	Soil	0-3 inches	Composite	TNT Field Analysis	Pre-detonation in Grid C6
000-SS01-A02	3/28/2006	7:30	Soil	0-3 inches	Composite	TNT Field Analysis	Post-detonation in Grid C6
005-SS03-A02	3/28/2006	7:00	Soil	0-3 inches	Composite	TNT Field Analysis	Post-detonation in Grid C6
005-SS04-A02	3/28/2006	7:20	Soil	0-3 inches	Composite	TNT Field Analysis	Pre-detonation in Grid D5d
005-SS05-A02	3/30/2006	6:50	Soil	0-3 inches	Composite	TNT Field Analysis	Post-detonation in Grid D5d

Notes:

SS = Soil Sample

TNT = Trinitrotolune

Elkton Farms Firehole
Table A2

TNT Field Sample Log

Sample Identifier	Sample Date	Sample Time	Sample Matrix	Depth of Sample	Sample Type	Analysis	Sample Location
003-SS01-A01	2/21/2006	10:40	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS02-A01	2/21/2006	11:00	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS03-A01	2/21/2006	14:30	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS04-A01	2/21/2006	14:40	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS05-A01	2/21/2006	11:45	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS06-A01	2/21/2006	13:00	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS07-A01	2/21/2006	11:15	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS08-A01	2/21/2006	11:30	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS09-A01	2/21/2006	14:50	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS10-A01	2/21/2006	14:55	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS11-A01	2/21/2006	13:15	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS12-A01	2/21/2006	13:30	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS13-A01	2/21/2006	15:05	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS14-A01	2/21/2006	15:00	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS15-A01	2/21/2006	15:10	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS16-A01	2/21/2006	15:20	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS17-A01	2/21/2006	15:30	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
003-SS18-A01	2/21/2006	15:40	Soil	0-3 inches	Composite	TNT Field Analysis	Former Thiokol/TNT Area - Grids F2, F3, E2, E3
005-SS01-A01	2/22/2006	12:00	Soil	0-3 inches	Composite	TNT Field Analysis	Pre-detonation in Grid C6
000-SS01-A02	3/28/2006	7:30	Soil	0-3 inches	Composite	TNT Field Analysis	Post-detonation in Grid C6
005-SS03-A02	3/28/2006	7:00	Soil	0-3 inches	Composite	TNT Field Analysis	Post-detonation in Grid C6
005-SS04-A02	3/28/2006	7:20	Soil	0-3 inches	Composite	TNT Field Analysis	Pre-detonation in Grid D5d
005-SS05-A02	3/30/2006	6:50	Soil	0-3 inches	Composite	TNT Field Analysis	Post-detonation in Grid D5d

Notes:

SS = Soil Sample

TNT = Trinitrotolune

Elkton Farms Firehole Site
Table A3
Asbestos Sample Log

Sample Identifier	Sample Date	Sample Time	Sample Matrix	Depth of Sample	Sample Type	Analysis	Sample Location	Sample Description/Comments
009-BA01-A01	6/12/2006	12:37	Bulk	Surface	Grab	Asbestos PCM	East burn pit/pile	Tile Material - Gray/Dark Gray - Non-friable material
009-BA02-A01	6/12/2006	12:39	Bulk	Surface	Grab	Asbestos PCM	East burn pit/pile	Tile Material - Gray/White - Non-friable material
009-BA03-A01	6/12/2006	12:41	Bulk	Surface	Grab	Asbestos PCM	East burn pit	Fiber Material - Green/Gray - Friable material
009-BA04-A01	6/12/2006	12:44	Bulk	Surface	Grab	Asbestos PCM	West burn pit/pile	Wavy Tile Material - Brown/Gray - Non-friable material
009-BA05-A01	6/12/2006	12:47	Bulk	Surface	Grab	Asbestos PCM	West burn pit/pile	Wire Mesh and associated material - black - Non-friable material
009-BA06-A01	6/12/2006	14:00	Bulk	Surface	Grab	Asbestos PCM	East burn pit/pile	Fiber Washers - brown/gray - Potentially friable material
009-SA01-A01	6/12/2006	12:50	Soil	Surface	Composite	Asbestos TEM	West burn pit/pile	Soil - brown/black
009-SA02-A01	6/12/2006	12:57	Soil	Surface	Composite	Asbestos TEM	East burn pit /pile	Soil - brown/black

Notes:

BA = Bulk Asbestos
PCM = Phase Contrast Microscopy
SA = Soil Asbestos
TEM = Transmission Electron Microscopy

Elkton Farms Firehole Site
Table A4
Ambient Air Sample Log

Sample Identifier	Sample Date	Start Sample Time	End Sample Time	Liters of Air	Sample Matrix	Sample Type	Analysis	Sample Location/Comments
007-AA01-A01	5/24/2006	6:50	16:42	1240.0	Ambient Air	Grab	TAL Metals	Sample on UXO Dig Team 1
007-AA02-A01	5/24/2006	6:52	16:43	1262.0	Ambient Air	Grab	TAL Metals	Sample on UXO Dig Team 2
007-AA03-A01	5/24/2006	6:53	16:44	1257.0	Ambient Air	Grab	TAL Metals	Sample located 200 feet downwind of the Range Master operations on a stake
007-AA04-A01	5/24/2006	7:30	16:40	84.8	Ambient Air	Grab	Mercury	Sample located 200 feet downwind of the Range Master operations on a stake
007-AAFB-A01	5/24/2006	16:45	NA	0.0	Ambient Air	Grab	TAL Metals	Field Blank
007-AA05-A02	6/1/2006	6:44	16:37	1254.0	Ambient Air	Grab	TAL Metals	Sample on UXO Dig Team 1; working downwind of Range Master operations
007-AA06-A02	6/1/2006	6:47	15:04	1008.0	Ambient Air	Grab	TAL Metals	Sample located 200 feet downwind of the Range Master operations on a stake
007-AAFB-A02	6/1/2006	16:55	NA	0.0	Ambient Air	Grab	TAL Metals	Field Blank
007-AA08-A02	6/1/2006	6:56	16:40	99.9	Ambient Air	Grab	Mercury	Sample located in Range Master cab

Notes:

AA = Ambient Air
 FB = Field Blank
 NA = Not Applicable
 TAL = Total Analyte List
 UXO = Unexploded Ordnance

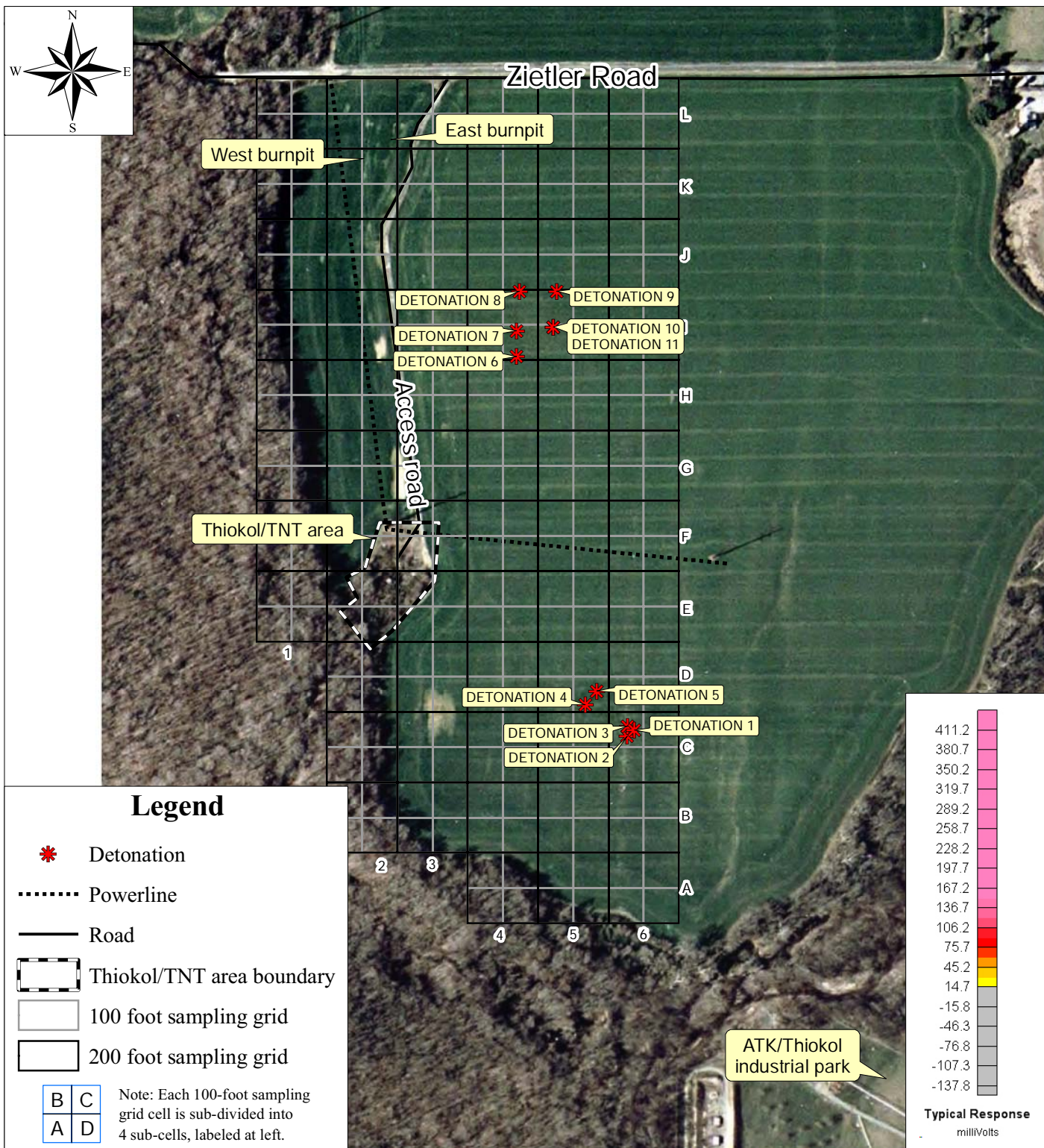
APPENDIX B
ELKTON FARMS FIREHOLE DETONATION LOCATION INFORMATION

2 pages

Elkton Farms Firehole Site
Detonation Log
Table B1

Detonation Identifier	Date	Associated Sample Identifier(s)	Latitude	Longitude	Location and Description	Detonation Charge Type
Detonation 1	2/23/2006	005-SS01-A01; 005-SS02-A01	39.62411289	-75.87014706	Location: Grid C6 Disposal: 81mm inert filled mortar shell. Detonation in Grid C6	19.5 Gram Jet Perforator, Detonation Cord
Detonation 2	3/23/2006	005-SS03-A01	39.62406682	-75.87022198	Location: Grid C6 Disposal: Incendiary bombs and Booster Pellets. Detonation in Grid C6	Orange Cap Boosters, Detonation Cord
Detonation 3	3/29/2006	005-SS04-A01; 005-SS05-A01	39.62414294	-75.87021489	Location: Grid D5d Disposal: 81mm inert filled mortar shell. Detonation in Grid D5d	19.5 Gram Jet Perforator
Detonation 4	3/30/2006	No Samples Collected	39.62431496	-75.87064308	Location: Grid D5d Disposal: Team 3 excavated a fused 81mm mortar in grid D5d. Intrusive activities were stopped. Demolition procedures performed to determine fill type. Mortar was sand filled. Intrusive activities	19.5 Gram Jet Perforator
Detonation 5	5/4/2006	No Samples Collected	39.62442238	-75.87052411	Location: Grid C6 Disposal: 4-each partial unfuzed 4lb incendiary bombs; 1-each 40mm unfuzed projectile with partial filler. Detonation in Grid C6	Orange Cap Boosters, Detonation Cord
Detonation 6	7/18/2006	No Samples Collected	39.62703781	-75.87129093	Location: Grid H4C Disposal: 20 mm/40 mm HE projectiles, incendiary bomb parts and nose, igniter tubes, thermite pieces, rocket venturi, loose magnesium, booster pellets, detonating cord, shock tube	Penolite Boosters (6-14oz), Det Cord
Detonation 7	7/25/2006	No Samples Collected	39.62723545	-75.87128498	Location: Grid I4D Disposal: 20 mm/40 mm HE projectiles, thermite bomb parts, slap flare bases, burster tubes, penolite boosters, detonating cord, shock tube lead in	(30) 14oz Orange Cap Boosters, 500' Shock Tube W/cap, 88' 50oz Det Cord
Detonation 8	8/9/2006	Pre-detonation: 005-SS06-A01 Post detonation: 005-SS07-A01	39.62754649	-75.87125114	Location: Grid I4C Disposal: (557) 6" Burster Tubes,	(30) 14oz Orange Cap Boosters, 500' Shock Tube W/cap, 88' 50oz Det Cord
Detonation 9	8/16/2006	No Samples Collected	39.62754150	-75.87087710	Location: Grid I4C Disposal: (850) 6" Burster Tubes	(30) 14oz Orange Cap Boosters, 500' Shock Tube W/cap, 52' Det Cord
Detonation 10	8/23/2006	No Samples Collected	39.62726320	-75.87091530	Location: Grid I4C Disposal: (79) ea 6" Burster Tubes, (645) ea HE Boosters	(30) 14oz Orange Cap Boosters, 500' Shock Tube W/cap, Det Cord
Detonation 11	8/31/2006	No Samples Collected	39.62726320	-75.87091530	Location: Grid I4C Disposal: (01) Unknown fuze; (01) 6 lb Incendiary Bomb Fuze; (01) 40mm BOFORS cartridge case primer; (01) Unknown primer; (08) pieces of 40mm Flare bases; (01) 40mm BOFORS cartridge case; (25) Unknown fuze pieces; (18) Magnesium firebomb pieces; (01) Unknown igniter tube; (09) Slap Flare components	(30) 14oz Orange Cap Boosters, 500' Shock Tube W/cap, Det Cord

Notes:
lb = pound
mm = millimeter
SS = surface soil



Source: Modified from Color Infrared Digital Orthophoto Quarter Quadrangles, Newark Southwest and Elkton Northwest, Maryland Quadrangles, Maryland Department of Natural Resources, 1988 - 1995

0 200 400 600
Feet

Quadrangle Location =



Elkton Farms Firehole Site
Elkton, Cecil County, Maryland

Detonation Location Map

TDD No. E13-008-06-07-003
EPA Contract No. EP-S3-05-02

Map created on August 15, 2006
by D. Call, Tetra Tech EMI



APPENDIX C

ELKTON FARMS FIREHOLE PHOTOGRAPHIC DOCUMENTATION

9 pages



Client: U.S. EPA Region 3
Site Name: Elkton Farms Firehole
Location: Elkton, Maryland
Date: October 23, 2006

Photographic Documentation

Prepared by: Tetra Tech EM Inc.
Photographed by: Tetra Tech EM Inc.
TDD Number: E13-008-06-07-003

Photograph No. 1

Photograph Date: 2/21/2006

Photographer: Tetra Tech EM, Inc.

Orientation: North

Description: Soil sampling location in Thiokol/TNT area. USACE contractor performed magnetometer screening before samples were collected.



Photograph No. 2

Photograph Date: 2/21/2006

Photographer: Tetra Tech EM, Inc.

Orientation: North

Description: START using Trimble GPS unit to record sampling locations.





Client: U.S. EPA Region 3
Site Name: Elkton Farms Firehole
Location: Elkton, Maryland
Date: October 23, 2006

Photographic Documentation

Prepared by: Tetra Tech EM Inc.
Photographed by: Tetra Tech EM Inc.
TDD Number: E13-008-06-07-003

Photograph No. 3

Photograph Date: 2/21/2006

Photographer: Tetra Tech EM, Inc.

Orientation: East

Description: Biased soil sampling location in the TNT area in an area of limited grass and vegetation growth.



Photograph No. 4

Photograph Date: 2/22/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Not Applicable

Description: Sampling around the 81mm mortar before detonation and destruction of the munitions.





Client: U.S. EPA Region 3
Site Name: Elkton Farms Firehole
Location: Elkton, Maryland
Date: October 23, 2006

Photographic Documentation

Prepared by: Tetra Tech EM Inc.
Photographed by: Tetra Tech EM Inc.
TDD Number: E13-008-06-07-003

Photograph No. 5

Photograph Date: 2/22/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Not Applicable

Description: The 81mm mortar located in Grid C6 at the site.



Photograph No. 6

Photograph Date: 2/22/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Not applicable

Description: TNT field test kit equipment setup for onsite analysis of soil samples. DR2400 photospectrometer visible in yellow circle.





Photographic Documentation

Client: U.S. EPA Region 3
Site Name: Elkton Farms Firehole
Location: Elkton, Maryland
Date: October 23, 2006

Prepared by: Tetra Tech EM Inc.
Photographed by: Tetra Tech EM Inc.
TDD Number: E13-008-06-07-003

Photograph No. 7

Photograph Date: 2/22/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Not applicable

Description: START extracting TNT from soil with acetone and a filter syringe.



Photograph No. 8

Photograph Date: 5/24/2006

Photographer: Tetra Tech EM, Inc.

Orientation: West

Description: Air sampling setup station and equipment.





Photographic Documentation

Client: U.S. EPA Region 3
Site Name: Elkton Farms Firehole
Location: Elkton, Maryland
Date: October 23, 2006

Prepared by: Tetra Tech EM Inc.
Photographed by: Tetra Tech EM Inc.
TDD Number: E13-008-06-07-003

Photograph No. 9

Photograph Date: 5/24/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Northeast

Description: UXO personnel wearing personal sampling pump during work day.



Photograph No. 10

Photograph Date: 5/24/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Southwest

Description: Air sampling station located approximately 200 feet from the Range Master sifting operation.





Photographic Documentation

Client: U.S. EPA Region 3
Site Name: Elkton Farms Firehole
Location: Elkton, Maryland
Date: October 23, 2006

Prepared by: Tetra Tech EM Inc.
Photographed by: Tetra Tech EM Inc.
TDD Number: E13-008-06-07-003

Photograph No. 11

Photograph Date: 6/12/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Not Applicable

Description: Phase 2 debris pile with presumed asbestos containing materials present.



Photograph No. 12

Photograph Date: 6/12/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Southwest

Description: Asbestos sample baggies located on Phase 2 soil pile.





Client: U.S. EPA Region 3
Site Name: Elkton Farms Firehole
Location: Elkton, Maryland
Date: October 23, 2006

Photographic Documentation

Prepared by: Tetra Tech EM Inc.
Photographed by: Tetra Tech EM Inc.
TDD Number: E13-008-06-07-003

Photograph No. 13

Photograph Date: 6/12/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Not applicable

Description: Gray asbestos containing material located in Phase 2 pit.



Photograph No. 14

Photograph Date: 6/12/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Southwest

Description: UXO Specialist uses a magnetometer in western pit slag layer before sample collection commences.





Client: U.S. EPA Region 3
Site Name: Elkton Farms Firehole
Location: Elkton, Maryland
Date: October 23, 2006

Photographic Documentation

Prepared by: Tetra Tech EM Inc.
Photographed by: Tetra Tech EM Inc.
TDD Number: E13-008-06-07-003

Photograph No. 15

Photograph Date: 3/22/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Southwest

Description: Detonation of munitions of explosive concern (MEC).



Photograph No. 16

Photograph Date: 8/9/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Southwest

Description: Detonation of MEC.





Client: U.S. EPA Region 3
Site Name: Elkton Farms Firehole
Location: Elkton, Maryland
Date: October 23, 2006

Photographic Documentation

Prepared by: Tetra Tech EM Inc.
Photographed by: Tetra Tech EM Inc.
TDD Number: E13-008-06-07-003

Photograph No. 17

Photograph Date: 9/7/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Not applicable

Description: Disposal of MEC and munitions debris (MD) by contractor Clean Harbors Inc. A total of three drums were shipped offsite this date.



Photograph No. 18

Photograph Date: 9/7/2006

Photographer: Tetra Tech EM, Inc.

Orientation: Not applicable

Description: Disposal of MEC and MD by contractor Clean Harbors Inc. The MEC was packaged in diesel fuel prior to transportation.



APPENDIX D

ELKTON FARMS FIREHOLE ANALYTICAL DATA SUMMARIES

15 pages

Table D1
TAL Metals Analytical Data Summary
Elkton Farms Firehole Site

Tetra Tech Sample Identifier				005-SS01-A01	005-SS02-A01	003-SS05-A01	003-SS15-A01	003-SS17-A01
CLP Sample Identifier				6022479	6022815	6022475	6022476	6022477
Sample Date				2/21/2006	2/24/2006	2/21/2006	2/21/2006	2/21/2006
Sample Time				12:00	14:00	11:45	15:10	15:30
Percent Solids				77.9	80.3	80.1	69.8	71.4
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	Residential Soil RBC	Residential Soil ERG						
Analyte	CRDL†	mg/kg		Q	Q	Q	Q	Q
Aluminum	20 7821.4	N 782142.9	N	9,720.0	7,300.0	10,600.0	9,340.0	11,000.0
Antimony	6 3.1	N 312.9	N	<6	<6	<6	<6	55.6
Arsenic	20 0.4	C 42.6	C	<20.0	<20.0	<20.0	<20.0	<20.0
Barium	20 547.5	N 54750.0	N	69.3	48.6	339.0	268.0	1,460.0
Beryllium	0.5 15.6	N 1564.3	N	<0.5	<0.5	0.7	0.7	<0.5
Cadmium	0.5 3.9	N 391.1	N	<0.5	<0.5	2.5	10.2	110.0
Calcium	500 NL	NL	N	1,010.0	586.0	1,890.0	J 1,310.0	3,880.0
Chromium*	1 11732.1	N 1173214.3	N	17.1	J 125.0	21.0	19.4	24.8
Cobalt	0.5 156.4	N 15642.9	N	5.1	<0.5	6.1	7.3	9.9
Copper	2.5 312.9	N 31285.7	N	38.6	708.0	49.3	92.2	21,400.0
Iron	10 2346.4	N 234642.9	N	13,400.0	12,100.0	15,400.0	15,400.0	31,600.0
Lead	1 NL	NL	N	12.0	134.0	42.2	101.0	1,560.0
Magnesium	500 NL	NL	N	943.0	722.0	3,550.0	J 2,460.0	8,960.0
Manganese	1.5 156.4	N 15642.9	N	203.0	J 103.0	321.0	J 372.0	488.0
Mercury	0.1 NL	NL	N	<0.1	<0.1	0.1	0.2	1.7
Nickel	4 156.4	N 15642.9	N	5.4	J 37.0	31.3	24.5	136.0
Potassium	200 NL	NL	N	374.0	256.0	480.0	446.0	300.0
Selenium	20 39.1	N 3910.7	N	<20.0	<20.0	<20.0	<20.0	<20.0
Silver	0.1 39.1	N 3910.7	N	<0.1	<0.1	<0.1	127.0	2.0
Sodium	200 NL	NL	N	<200.0	<200.0	<200.0	<200.0	<200.0
Thallium	20 0.5	N 54.8	N	<20.0	<20.0	<20.0	<20.0	<20.0
Vanadium	5 7.8	N 782.1	N	26.0	28.4	76.1	23.2	15.6
Zinc	6 2346.4	N 234642.9	N	28.5	22.7	1,420.0	1,420.0	33,800.0
Cyanide	1 156.4	N 15642.9	N	<1.0	1.7	<1.0	<1.0	1.0
								J

Table D1
TAL Metals Analytical Data Summary
Elkton Farms Firehole Site

Tetra Tech Sample Identifier				003-SS18-A01	010-PS01-A01	005-SS06-A01†	005-SS07-A01†
CLP Sample Identifier				6022478			
Sample Date				2/21/2006	6/12/2006	8/9/2006	8/9/2006
Sample Time				15:40	13:09	7:00	11:00
Percent Solids				71.4		85.8	85.8
Units				mg/kg	mg/kg	mg/kg	mg/kg
	Residential Soil RBC	Residential Soil ERG					
Analyte	CRDL†	mg/kg	Q	Q	Q	Q	Q
Aluminum	20	7821.4	N	10,100.0	18,100.0	18,800.0	12,400.0
Antimony	6	3.1	N	<6	27.1	<6	<6
Arsenic	20	0.4	C	<20.0	8.8	5.0	4.0
Barium	20	547.5	N	147.0	672.0	72.6	59.5
Beryllium	0.5	15.6	N	0.7	1.1	0.7	0.6
Cadmium	0.5	3.9	N	3.0	21.2	<0.5	<0.5
Calcium	500	NL	NL	1,050.0	8,590.0	932.0	720.0
Chromium*	1	11732.1	N	19.5	106.0	25.0	21.6
Cobalt	0.5	156.4	N	7.4	14.7	5.9	5.6
Copper	2.5	312.9	N	90.1	2,150.0	13.8	10.5
Iron	10	2346.4	N	15,400.0	33,800.0	24,300.0	20,800.0
Lead	1	NL	NL	45.0	7,770.0	11.9	292.0
Magnesium	500	NL	NL	2,560.0	3,750.0	2,360.0	1,790.0
Manganese	1.5	156.4	N	357.0	1,190.0	135.0	228.0
Mercury	0.1	NL	NL	0.3	0.2	0.1	0.1
Nickel	4	156.4	N	26.8	33.4	12.2	9.6
Potassium	200	NL	NL	690.0	1,110.0	696.0	539.0
Selenium	20	39.1	N	<20.0	5.2	<3.5	<3.5
Silver	0.1	39.1	N	<0.1	2.6	<1	<1
Sodium	200	NL	NL	<200.0	417.0	78.2	74.8
Thallium	20	0.5	N	<20.0	3.7	<2.5	<2.5
Vanadium	5	7.8	N	257	318.0	39.6	30.6
Zinc	6	2346.4	N	300.0	5,470.0	30.7	25.7
Cyanide	1	156.4	N	<1.0			

Notes:

† = CRDLs for Arsenic, Cobalt, Potassium, Selenium, Sodium, and Thallium are 1, 5, 500, 3.5, 500, 2.5, respectively
 * Chromium III RBC used for comparison
 B = Not detected substantially above the level reported in the laboratory or field blanks.
 Bolded values indicate result is above ERG.
 C = Carcinogen
 CLP = Contract Laboratory Program
 CRDL = Contract-Required Detection Limit
 ERG = Emergency Removal Guideline
 J = Analyte present, reported value may not be accurate or precise.
 mg/kg = Milligram per kilogram
 K = Analyte present. Report value may be biased high
 N = Non-carcinogen
 NL = Not Listed
 PS = Pit Slag
 Q = Qualifier
 R = Unreliable results. Analyte may or may not be present in the sample
 RBC = Risk-based concentration
 Shaded cells indicate result is above RBC.
 SS = Soil Sample
 TAL = Target Analyte List

Table D2
TCLP Analytical Data Summary
Elkton Farm Firehole Site

Tetra Tech Sample Identifier		005-SS01-A01	005-SS02-A01	003-SS05-A01	003-SS15-A01	003-SS17-A01
CLP Sample Identifier		6022479	6022815	6022475	6022476	6022477
Sample Date		2/21/2006	2/24/2006	2/21/2006	2/21/2006	2/21/2006
Sample Time		12:00	14:00	11:45	15:10	15:30
Percent Solids		77.9	80.3	80.1	69.8	71.4
Units		mg/L	mg/L	mg/L	mg/L	mg/L
	CRDL†	TCLP Value	Q	Q	Q	Q
Metals						
Arsenic	0.8	5.0	<0.8	<0.8	<0.8	<0.8
Barium	0.8	100.0	1.83	4.26	1.83	4.26
Cadmium	0.02	1.0	<0.02	<0.02	0.074	<0.02
Chromium	0.04	5.0	<0.04	<0.04	<0.04	<0.04
Lead	0.2	5.0	<0.2	<0.2	<0.2	<0.2
Mercury	0.0002	0.2	<0.0002	<0.0002	<0.0002	<0.0002
Selenium	0.8	1.0	<0.8	<0.8	<0.8	<0.8
Silver	0.04	5.0	<0.04	<0.04	0.044	<0.04

Table D2
TCLP Analytical Data Summary
Elkton Farm Firehole Site

Tetra Tech Sample Identifier	003-SS18-A01	010-PS01-A01	005-SS06-A01†	005-SS07-A01†
CLP Sample Identifier	6022478		MCT144	MCT145
Sample Date	2/21/2006	6/12/2006	8/9/2006	8/9/2006
Sample Time	15:40	13:09	7:00	11:00
Percent Solids	71.4			
Units	mg/L	mg/L	mg/L	mg/L
	CRDL†	TCLP Value		
	mg/L	mg/L		
Metals				
Arsenic	0.8	5.0		
Barium	0.8	100.0		
Cadmium	0.02	1.0		
Chromium	0.04	5.0		
Lead	0.2	5.0		
Mercury	0.0002	0.2		
Selenium	0.8	1.0		
Silver	0.04	5.0		

Notes:

Bolded values indicate result above TCLP Toxicity Value.

† = CRDL values for Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, and Silver are 0.01, 0.2, 0.005, 0.010, 0.010, 0.035, and 0.010, respectively

B = Not detected in quantities above laboratory or field blanks

CLP = Contract Laboratory Program

CRDL = Contract-Required Detection Limit

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

mg/L = Milligram per liter

NA = Not applicable

ND = Analyte not detected

Q = Qualifier

PS = Pit Slag

SS = Surface Soil

TCLP = Toxicity Characteristic Leaching Procedure

UL = Not detected, quantitation limit is probably higher

Table D3
Nitroaromatic/Nitroamine Analytical Data Summary
Elkton Farms Firehole Site

Tetra Tech Sample Identifier					005-SS01-A01	005-SS02-A01	003-SS05-A01	003-SS15-A01
CLP Sample Identifier					6022479	6022815	6022475	6022476
Sample Date					2/21/2006	2/24/2006	2/21/2006	2/21/2006
Sample Time					12:00	14:00	11:45	15:10
Percent Solids					77.9	80.3	80.1	69.8
Units					mg/kg	mg/kg	mg/kg	mg/kg
		Residential Soil RBC	Residential Soil ERG					
Analyte	CRDL mg/kg	mg/kg	mg/kg		Q	Q	Q	Q
4-Amino-2,6-dinitrotoluene	0.05	15.6	N 1564.3	N	<0.05	0.2320	0.7310	0.4140
2-Amino-4,6-dinitrotoluene	0.05	15.6	N 93.9	N	<0.05	0.1680	0.5240	0.4020
Dinitrotoluene isomers (2,4- and 2,6-)	0.05	0.9	C 23464.3	C	<0.05	0.2900	0.0660	J 0.0673
1,3,5-Trinitrobenzene	0.05	234.6	N 2129.1	N	<0.05	<0.05	<0.05	0.0770
2,4,6-Trinitrotoluene	0.05	21.3	C 100.0	C	<0.05	19.6000	0.5310	0.7830

Table D3
Nitroaromatic/Nitroamine Analytical Data Summary
Elkton Farms Firehole Site

Tetra Tech Sample Identifier				003-SS17-A01	003-SS18-A01	010-PS01-A01	005-SS06-A01	005-SS07-A01
CLP Sample Identifier				6022477	6022478			
Sample Date				2/21/2006	2/21/2006	6/12/2006	8/9/2006	8/9/2006
Sample Time				15:30	15:40	13:09	7:00	11:00
Percent Solids				71.4	71.4			
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analyte	CRDL	Residential Soil RBC	Residential Soil ERG					
	mg/kg	mg/kg	mg/kg	Q	Q	Q		
4-Amino-2,6-dinitrotoluene	0.05	15.6	1564.3	N	0.9150	0.2440	<0.05	<0.05
2-Amino-4,6-dinitrotoluene	0.05	15.6	93.9	N	0.4410	0.2000	<0.05	<0.05
Dinitrotoluene isomers (2,4- and 2,6-)	0.05	0.9	23464.3	C	0.0694	J	<0.05	<0.05
1,3,5-Trinitrobenzene	0.05	234.6	2129.1	N	0.2140		0.0210	<0.05
2,4,6-Trinitrotoluene	0.05	21.3	100.0	C	1.0800	0.3000	0.3470	<0.05

Notes:

C = Carcinogen
CLP = Contract Laboratory Program
CRDL = Contract-Required Detection Limit
ERG = Emergency Removal Guideline
J = Analyte present, reported value may not be accurate or precise.
mg/kg = Milligram per kilogram
N = Non-carcinogen
PS = Pit Slag
Q = Qualifier
RBC = Risk-based concentration
SS = Soil Sample
UL = Not detected, quantitation limit is probably higher.

Table D4
Bulk Asbestos Analytical Data Summary
Elkton Farms Firehole Site

Sample Identifier	Sample Date	Sample Time	Sample Matrix	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type	Appearance
009-BA01-A01	6/12/2006	12:37	Bulk	None Detected	65% Non-fibrous (other)	35% Chrysotile	Brown/White - Fibrous Heterogeneous
009-BA02-A01	6/12/2006	12:39	Bulk	None Detected	55% Non-fibrous (other)	45% Chrysotile	White/Gray - Fibrous Heterogeneous
009-BA03-A01	6/12/2006	12:41	Bulk	5% Cellulose	50% Non-fibrous (other)	45% Chrysotile	Gray - Fibrous Heterogeneous
009-BA04-A01	6/12/2006	12:44	Bulk	None Detected	55% Non-fibrous (other)	45% Chrysotile	Gray - Fibrous Heterogeneous
009-BA05-A01	6/12/2006	12:47	Bulk	None Detected	100% Non-fibrous (other)	None Detected	Black - Non-Fibrous Homogeneous
009-BA06-A01	6/12/2006	14:00	Bulk	5% Cellulose	40% Non-fibrous (other)	55% Chrysotile	Gray - Fibrous Heterogeneous

Notes:

% = Percent

BA = Bulk Asbestos

Table D5
Asbestos Soil Analytical Data Summary
Elkton Farms Firehole Site

Sample Identifier	Sample Date	Sample Time	Sample Matrix	Analytical Sensitivity %	Asbestos % Type	# of Asbestos Structures Detected	Asbestos Weight %	Appearance
009-SA01-A01	6/12/2006	12:50	Soil	0.01	Chrysotile	1	<0.01	Soil - brown/black
009-SA02-A01	6/12/2006	12:57	Soil	0.01	None Detected	0	<0.01	Soil - brown/black

Notes:

= Number

% = Percent

SA = Soil Asbestos

Table D6
Ambient Air Analytical Data Summary
Elkton Farms Firehole Site

Sample Identifier:	007-AA01-A01	007-AA02-A01	007-AA03-A01	007-AA04-A01	007-AAFB-A01	007-AA05-A02
Date:	5/24/2006	5/24/2006	5/24/2006	5/24/2006	5/24/2006	6/1/2006
Comments:				Mercury Only	Field Blank	
	OSHA PEL					
Units:	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/filter	µg/m ³
Analytes						
Aluminum	500	29.9	0.5	NA	0.09	4.42
Barium	50	0.44	<0.08	NA	0.04	0.15
Chromium	100	<0.08	0.32	NA	2.15	0.13
Copper	100	<0.08	<0.08	NA	0.13	<0.10
Lead	5	0.1	<0.08	NA	0.01	<0.10
Manganese	500	1.56	<0.08	NA	0.01	0.18
Mercury	100	NA	NA	<0.2	NA	NA
Zinc	500	0.22	<0.08	NA	0.19	0.12

Table D6
Ambient Air Analytical Data Summary
Elkton Farms Firehole Site

Sample Identifier:	007-AA06-A02	007-AA08-A02	007-AAFB-A02
Date:	6/1/2006	6/1/2006	6/1/2006
Comments:		Mercury Only	Field Blank
	OSHA PEL		
Units:	µg/m ³	µg/m ³	µg/filter
Analytes			
Aluminum	500	2.74	NA
Barium	50	0.15	NA
Chromium	100	<0.10	NA
Copper	100	0.19	NA
Lead	5	<0.10	NA
Manganese	500	0.19	NA
Mercury	100	NA	<0.2
Zinc	500	0.94	NA

Notes:

µg/m³ = Microgram per cubic meter of air

µg/filter = Microgram per filter

AA = Ambient Air

FB = Field Blank

NA = Not analyzed

OSHA = Occupational Safety and Health Administration

PEL = Permissible Exposure Limit

Table D7
Surface Water VOC Analytical Data Summary
Elkton Farms Firehole Site

Tetra Tech Sample Identifier		001-SW01-A02	
CLP Sample Identifier		MCT157	
Matrix		Water	
Sample Date		9/13/2006	
Sample Time		10:00	
Percent Solids		0.0	
Units		µg/L	
Dilution Factor		1.0	
Volatile Compound	CRQL	Result	Q
Dichlorodifluoromethane	5.0	< 5.0	
Chloromethane	5.0	<5.0	
*Vinyl chloride	5.0	<5.0	
Bromomethane	5.0	<5.0	
Chloroethane	5.0	<5.0	
Trichlorofluoromethane	5.0	<5.0	
*1,1-Dichloroethene	5.0	<5.0	
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	<5.0	
Acetone	10	<10	
Carbon disulfide	5.0	<5.0	
Methyl acetate	5.0	<5.0	
*Methylene chloride	5.0	<5.0	
trans-1,2-Dichloroethene	5.0	<5.0	
Methyl tert-butyl ether	5.0	<5.0	
1,1-Dichloroethane	5.0	<5.0	
cis-1,2-Dichloroethene	5.0	<5.0	
*2-Butanone	10	<10	
Bromochloromethane	5.0	<5.0	
Chloroform	5.0	<5.0	
*1,1,1-Trichloroethane	5.0	<5.0	
Cyclohexane	5.0	<5.0	
*Carbon tetrachloride	5.0	<5.0	
*Benzene	5.0	<5.0	
*1,2-Dichloroethane	5.0	<5.0	
1,4-Dioxane	100	<100	
Trichloroethene	5.0	<5.0	
Methylcyclohexane	5.0	<5.0	
*1,2-Dichloropropane	5.0	<5.0	
Bromodichloromethane	5.0	<5.0	
cis-1,3-Dichloropropene	5.0	<5.0	
4-Methyl-2-pentanone	10	<10	
*Toluene	5.0	<5.0	
trans-1,3-Dichloropropene	5.0	<5.0	
1,1,2-Trichloroethane	5.0	<5.0	
*Tetrachloroethene	5.0	<5.0	
2-Hexanone	10	<10	
Dibromochloromethane	5.0	<5.0	
1,2-Dibromoethane	5.0	<5.0	

Table D7
Surface Water VOC Analytical Data Summary
Elkton Farms Firehole Site

Tetra Tech Sample Identifier		001-SW01-A02	
CLP Sample Identifier		MCT157	
Matrix		Water	
Sample Date		9/13/2006	
Sample Time		10:00	
Percent Solids		0.0	
Units		µg/L	
Dilution Factor		1.0	
Volatile Compound	CRQL	Result	Q
*Chlorobenzene	5.0	<5.0	
*Ethylbenzene	5.0	<5.0	
o-Xylene	5.0	<5.0	
m,p-Xylene	5.0	<5.0	
*Styrene	5.0	<5.0	
Bromoform	5.0	<5.0	
Isopropylbenzene	5.0	<5.0	
1,1,2,2-Tetrachloroethane	5.0	<5.0	
*1,3-Dichlorobenzene	5.0	<5.0	
*1,4-Dichlorobenzene	5.0	<5.0	
1,2-Dichlorobenzene	5.0	<5.0	
1,2-Dibromo-3-chloropropane	5.0	<5.0	
1,2,4-Trichlorobenzene	5.0	<5.0	
1,2,3-Trichlorobenzene	5.0	<5.0	

Notes:

µg/L = Microgram per liter

CLP = Contract Laboratory Program

CRQL = Contract-Required Quantitation Limit

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

*Action Level Exists

SW = Surface water

VOC = Volatile organic compound

Table D8
Surface Water SVOC Analytical Data Summary
Elkton Farms Firehole Site

Tetra Tech Sample Identifier		001-SW01-A02	
CLP Sample Identifier		MCT157	
Matrix		Water	
Sample Date		9/13/2006	
Sample Time		10:00	
Percent Solids		0.0	
Units		µg/L	
Dilution Factor		1.0	
Semivolatile Compound	CRQL	Result	Q
Benzaldehyde	5.0	<5.0	
Phenol	5.0	<5.0	
Bis(2-chloroethyl)ether	5.0	<5.0	
2-Chlorophenol	5.0	<5.0	
2-Methylphenol	5.0	<5.0	
2,2'-Oxybis(1-chloropropane)	5.0	<5.0	
Acetophenone	5.0	<5.0	
4-Methylphenol	5.0	<5.0	
N-Nitroso-di-n-propylamine	5.0	<5.0	
Hexachloroethane	5.0	<5.0	
Nitrobenzene	5.0	<5.0	
Isophorone	5.0	<5.0	
2-Nitrophenol	5.0	<5.0	
2,4-Dimethylphenol	5.0	<5.0	
Bis(2-chloroethoxy)methane	5.0	<5.0	
2,4-Dichlorophenol	5.0	<5.0	
Naphthalene	5.0	<5.0	
4-Chloroaniline	5.0	<5.0	
Hexachlorobutadiene	5.0	<5.0	
Caprolactam	5.0	<5.0	
4-Chloro-3-methylphenol	5.0	<5.0	
2-Methylnaphthalene	5.0	<5.0	
Hexachlorocyclopentadiene	5.0	<5.0	
2,4,6-Trichlorophenol	5.0	<5.0	
2,4,5-Trichlorophenol	5.0	<5.0	
1,1'-Biphenyl	5.0	<5.0	
2-Chloronaphthalene	5.0	<5.0	
2-Nitroaniline	5.0	<5.0	
Dimethylphthalate	5.0	<5.0	
2,6-Dinitrotoluene	5.0	<5.0	
Acenaphthylene	5.0	<5.0	
3-Nitroaniline	10.0	<10.0	
Acenaphthene	5.0	<5.0	
2,4-Dinitrophenol	10.0	<10.0	
4-Nitrophenol	10.0	<10.0	
Dibenzofuran	5.0	<5.0	
2,4-Dinitrotoluene	5.0	<5.0	
Diethylphthalate	5.0	<5.0	
Fluorene	5.0	<5.0	
4-Chlorophenyl-phenylether	5.0	<5.0	
4-Nitroaniline	10.0	<10.0	

Table D8
Surface Water SVOC Analytical Data Summary
Elkton Farms Firehole Site

Tetra Tech Sample Identifier		001-SW01-A02	
CLP Sample Identifier		MCT157	
Matrix		Water	
Sample Date		9/13/2006	
Sample Time		10:00	
Percent Solids		0.0	
Units		µg/L	
Dilution Factor		1.0	
Semivolatile Compound	CRQL	Result	Q
4,6-Dinitro-2-methylphenol	10.0	<10.0	
N-Nitrosodiphenylamine	5.0	<5.0	
1,2,4,5-Tetrachlorobenzene	5.0	<5.0	
4-Bromophenyl-phenylether	5.0	<5.0	
*Hexachlorobenzene	5.0	<5.0	
Atrazine	5.0	<5.0	
*Pentachlorophenol	10.0	<10.0	
Phenanthrene	5.0	<5.0	
Anthracene	5.0	<5.0	
Carbazole	5.0	<5.0	
Di-n-butylphthalate	5.0	<5.0	
Fluoranthene	5.0	<5.0	
Pyrene	5.0	<5.0	
Butylbenzylphthalate	5.0	<5.0	
3,3'-Dichlorobenzidine	5.0	<5.0	
Benzo(a)anthracene	5.0	<5.0	
Chrysene	5.0	<5.0	
Bis(2-ethylhexyl)phthalate	5.0	<5.0	
Di-n-octylphthalate	5.0	<5.0	
Benzo(b)fluoranthene	5.0	<5.0	
Benzo(k)fluoranthene	5.0	<5.0	
Benzo(a)pyrene	5.0	<5.0	
Indeno(1,2,3-cd)pyrene	5.0	<5.0	
Dibenzo(a,h)anthracene	5.0	<5.0	
Benzo(g,h,i)perylene	5.0	<5.0	
2,3,4,6-Tetrachlorophenol	5.0	<5.0	

Notes:

µg/L = Microgram per liter

CRQL = Contract-Required Quantitation Limit

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

*Action Level Exists

SW = Surface water

SVOC = Semivolatile organic compound

Table D9
Surface Water TAL Metals Analytical Data Summary
Elkton Farms Firehole Site

Tetra Tech Sample Identifier		001-SW01-A02	
CLP Sample Identifier		MCT157	
Matrix		Water	
Sample Date		9/13/2006	
Sample Time		10:00	
Percent Solids		0.0	
Units		µg/L	
Dilution Factor		1.0	
ANALYTE	CRQL	Result	Q
ALUMINUM	200	1010	
ANTIMONY	60	7.3	B
ARSENIC*	10	<10	
BARIUM	200	97.6	J
BERYLLIUM	5	0.070	B
CADMIUM*	5	<5	
CALCIUM	5000	7120	
CHROMIUM*	10	6.2	J
COBALT	50	<50	
COPPER	25	7.5	B
IRON	100	1310	K
LEAD*	10	7.6	J
MAGNESIUM	5000	1810	J
MANGANESE	15	13.0	J
MERCURY	0.2	<.2	
NICKEL *	40	1.7	J
POTASSIUM	5000	1610	J
SELENIUM	35	<35	
SILVER	10	<10	
SODIUM	5000	1170	J
THALLIUM	25	10.7	B
VANADIUM	50	3.4	J
ZINC	60	47.9	J
CYANIDE*	10	<10	
LITHIUM	5	<5	
BORON	100	<100	
SILICON	5000	<5000	
TITANIUM	10	<10	

Notes:

µg/L = Microgram per liter

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

CRQL = Contract-Required Quantitation Limit

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

*Action Level Exists

CLP = Contract Laboratory Program

CRQL = Contract-Required Quantitation Limit

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

K = Analyte present. Reported value may be biased high

NL = Not Listed

Q = Qualifier

TAL = Target Analyte List

APPENDIX E

ELKTON FARMS FIREHOLE TETRA TECH DATA VALIDATION PACKAGES

29 pages



TETRA TECH EM INC.

June 29, 2006

Mr. Charles Fitzsimmons (3HS31)
On Scene Coordinator (OSC)
U.S. Environmental Protection Agency
701 Mapes Road
Fourt George Meade, MD 20755-5350

Subject: Elkton Farms Firehole Site - Data Quality Report
EPA Contract No. S3-05-02
Technical Direction Document No. E03-001-05-10-003
Document Tracking No. 0168

Dear Mr. Fitzsimmons:

This report provides a general review of analytical data gathered at the Elkton Farms site using field screening methods for nitroaromatics. Tetra Tech analyzed 24 soil samples using immunoassay kits for trinitrotoluene and nitroaromatics. The kits were made by Strategic Diagnostics, Inc.

Six of the samples were sent to a fixed laboratory to be analyzed for nitroaromatics as a quality control measure. There was a problem analyzing the first 20 samples. The acetone used to extract the samples was contaminated and all test results were deemed useless. New acetone was obtained and the remaining five samples were extracted and analyzed. However none of the last samples were sent for confirmation analysis to the laboratory.

The manufacturer suggested detection limit for the kits is 1 part per million (ppm). Due to uncertain field conditions a conservative quantitation limit for the field test kits is 5 ppm. The laboratory quantitation limit is 1 ppm. All but two of the samples sent for laboratory confirmation were below 1 ppm. One sample was just above 1ppm and the other sample was a post detonation sample. It appears that the soils in the areas of concern are below the limit the field test kits can reliably measure. The test kits are useful for a screening tool but not for primary field analysis in this situation.

Please feel free to contact me at (610) 364-2129 regarding any aspect of this report

Sincerely,

Marian Murphy
Senior Chemist

cc: START TDD File

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



**National Voluntary
Laboratory Accreditation Program**



SCOPE OF ACCREDITATION TO ISO/IEC 17025:1999

EMSL Analytical, Inc.
107 Haddon Avenue
Westmont, NJ 08108-2799
Mr. Stephen Siegel, CIH
Phone: 856-858-4800 Fax: 856-858-4960
E-Mail: ssiegel@emsl.com
URL: <http://www.emsl.com>

BULK ASBESTOS FIBER ANALYSIS (PLM)

NVLAP LAB CODE 101048-0

NVLAP Code Designation / Description

18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples
--------	--

2006-07-01 through 2007-06-30

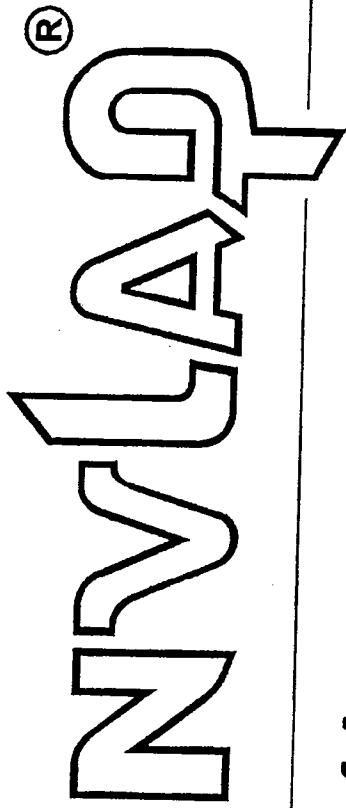
Effective dates

Dolly S. Bruce
For the National Institute of Standards and Technology

**Elkton Farms Firehole
TNT Analytical Data Comparison**

Sample Identifier	Sample Technician	Date of Analysis	TNT Conc. (mg/kg)	Dilution	TNT Conc. (ppm) After Dilution	TNT Lab Confirmation Result (mg/kg)	% D	Comments
003-SS01-A01	MLK	2/22/2006	-0.28	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS02-A01	MLK	2/22/2006	-4.95	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS03-A01	MLK	2/22/2006	-17.09	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS04-A01	MLK	2/22/2006	-1.55	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS05-A01	MLK	2/22/2006	-1.24	N/A	N/A	0.531	200	Acetone was potentially contaminated
REFERENCE	MLK	2/22/2006	Not Analyzed	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS06-A01	MLK	2/22/2006	Not Analyzed	N/A	N/A	Not Analyzed	N/A	Test kit failure
003-SS07-A01	MLK	2/22/2006	-5.94	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS08-A01	MLK	2/22/2006	-3.25	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS09-A01	MLK	2/22/2006	-3.56	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS10-A01	MLK	2/22/2006	-1.86	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS11-A01	MLK	2/22/2006	2.26	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS12-A01	MLK	2/22/2006	-9.50	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
REFERENCE	MLK	2/22/2006	Not Analyzed	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS13-A01	MLK	2/22/2006	Not Analyzed	N/A	N/A	Not Analyzed	N/A	Test kit failure
003-SS14-A01	MLK	2/22/2006	-2.72	N/A	N/A	0.3	200	Acetone was potentially contaminated
003-SS15-A01	MLK	2/22/2006	-2.69	N/A	N/A	0.783	200	Acetone was potentially contaminated
003-SS16-A01	MLK	2/22/2006	-12.66	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:1999

NVLAP LAB CODE: 101048-0

EMSL Analytical, Inc.
Westmont, NJ

is recognized by the National Voluntary Laboratory Accreditation Program for conformance with criteria set forth in
NIST Handbook 150:2001 and all requirements of ISO/IEC 17025:1999.
Accreditation is granted for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

2006-07-01 through 2007-06-30

Effective dates



Dolly S. Bruce
For the National Institute of Standards and Technology

**Elkton Farms Firehole
TNT Analytical Data Comparison**

Sample Identifier	Sample Technician	Date of Analysis	TNT Conc. (mg/kg)	Dilution	TNT Conc. (ppm) After Dilution	TNT Lab Confirmation Result (mg/kg)	% D	Comments
003-SS17-A01	MLK	2/22/2006	-18.11	N/A	N/A	1.08	200	Acetone was potentially contaminated
003-SS18-A01	MLK	2/22/2006	-0.99	N/A	N/A	0.3	200	Acetone was potentially contaminated
REFERENCE	MLK	2/22/2006	Not Analyzed	N/A	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS01-A01	MLK	2/22/2006	-0.28	5:25	0.31	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS01-A01	MLK	2/22/2006	-0.28	1:50	32.51	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS07-A01	MLK	2/22/2006	-5.94	5:25	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
003-SS07-A01	MLK	2/22/2006	-5.94	1:50	N/A	Not Analyzed	N/A	Acetone was potentially contaminated
REFERENCE	MLK	2/22/2006	N/A	N/A	N/A	Not Analyzed	N/A	Acetone was tested and found to be contaminated
003-SS13-A01	MLK	2/22/2006	Not Analyzed	5:25	3.70	Not Analyzed	N/A	Acetone was tested and found to be contaminated
003-SS17-A01	MLK	2/22/2006	-18.11	5:25	N/A	Not Analyzed	N/A	Acetone was tested and found to be contaminated
003-SS10-A01	MLK	2/22/2006	-1.86	5:25	2.00	Not Analyzed	N/A	Acetone was tested and found to be contaminated
003-SS16-A01	MLK	2/22/2006	-12.66	1:50	176.47	Not Analyzed	N/A	Acetone was tested and found to be contaminated
003-SS17-A01	MLK	2/22/2006	-18.11	1:50	185.76	Not Analyzed	N/A	Acetone was tested and found to be contaminated
003-SS05-A01	MLK	2/22/2006	-1.24	1:50	201.24	Not Analyzed	N/A	Acetone was tested and found to be contaminated
003-SS15-A01	MLK	2/22/2006	-2.69	1:50	221.36	Not Analyzed	N/A	Acetone was tested and found to be contaminated
REFERENCE	MLK	2/22/2006	Not Analyzed	N/A	N/A	Not Analyzed	N/A	Acetone was tested and found to be contaminated
003-SS18-A01	MLK	2/22/2006	-0.99	1:50	176.47	Not Analyzed	N/A	Acetone was tested and found to be contaminated



**National Voluntary
Laboratory Accreditation Program**



SCOPE OF ACCREDITATION TO ISO/IEC 17025:1999

EMSL Analytical, Inc.
107 Haddon Avenue
Westmont, NJ 08108-2799
Mr. Stephen Siegel, CIH
Phone: 856-858-4800 Fax: 856-858-4960
E-Mail: ssiegel@emsl.com
URL: <http://www.emsl.com>

AIRBORNE ASBESTOS FIBER ANALYSIS (TEM)

NVLAP LAB CODE 101048-0

NVLAP Code Designation / Description

18/A02 U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

2006-07-01 through 2007-06-30

Effective dates

Sally S. Bruce
For the National Institute of Standards and Technology

**Elkton Farms Firehole
TNT Analytical Data Comparison**

Sample Identifier	Sample Technician	Date of Analysis	TNT Conc. (mg/kg)	Dilution	TNT Conc. (ppm) After Dilution	TNT Lab Confirmation Result (mg/kg)	% D	Comments
003-SS11-A01	MLK	2/22/2006	2.66	1:50	199.69	Not Analyzed	N/A	Acetone was tested and found to be contaminated
005-SS01-A01	MLK	2/22/2006	-0.22	N/A	N/A	Not Detected	N/A	Acetone was tested and found to be contaminated
000-SS01-A02	MLK	4/18/2006	0.062	N/A	N/A	Not Analyzed	N/A	Acetone was tested and found to be contaminated
005-SS02-A02	Not Analyzed	Not Analyzed	Not Analyzed	N/A	N/A	19.6	N/A	New Acetone
005-SS03-A02	MLK	4/18/2006	1.27	N/A	N/A	Not Analyzed	N/A	New Acetone
005-SS04-A02	MLK	4/18/2006	-0.619	N/A	N/A	Not Analyzed	N/A	New Acetone
005-SS05-A02	MLK	4/18/2006	1.146	N/A	N/A	Not Analyzed	N/A	New Acetone

Notes:

Conc. = Concentration

ENSYS TNT field test kit's published lowest possible detection limit is 0.7ppm

mg/kg = milligrams per kilogram

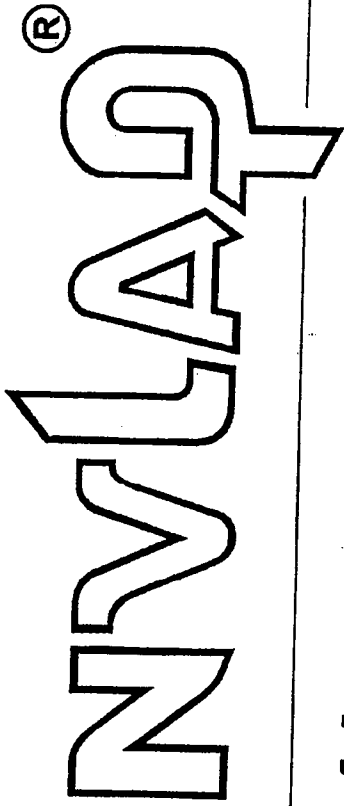
N/A = Not Applicable

ppm = parts per million

TNT = Trinitrotolune

% D = Percent deviation

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:1999

NVLAP LAB CODE: 101048-0

EMSL Analytical, Inc.
Westmont, NJ

is recognized by the National Voluntary Laboratory Accreditation Program for conformance with criteria set forth in
NIST Handbook 150:2001 and all requirements of ISO/IEC 17025:1999.
Accreditation is granted for specific services, listed on the Scope of Accreditation, for:

AIRBORNE ASBESTOS FIBER ANALYSIS



2006-07-01 through 2007-06-30

Effective dates

Dolly S. Bruce
For the National Institute of Standards and Technology



TETRA TECH EM INC.

June 23, 2006

Mr. Charles Fitzsimmons (3HS31)
On Scene Coordinator (OSC)
U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

Subject: Elkton Farms Firehole Site - Data Quality Report
EPA Contract No. S3-05-02
Technical Direction Document No. E03-001-05-10-003
Document Tracking No. 0162

Dear Mr. Fitzsimmons:

This report provides a general review of analytical data package numbers 040611984 and 040611987 submitted by EMSL Analytical, Inc. (EMSL) in Westmont, New Jersey for six bulk samples and two soil samples collected at the Elkton Farms Firehole site in Elkton, Maryland on June 12, 2006. EMSL received the samples on June 14, 2006. The U.S. Environmental Protection Agency (EPA) requested that the samples be analyzed for asbestos.

The bulk samples were analyzed for asbestos using polarized light microscopy by EPA "Asbestos in Bulk Building Materials," method EPA/600/R-93/116, July 1993. The soil samples were analyzed for asbestos using EMLS Transmission Electron Microscope Carb Level C Standard Operating Procedure.

This data package was reviewed in accordance with the EPA Quality Assurance/Quality Control Guidance for Removal Activities, EPA/540/4-90/004, April 1990. There were no major or minor problems associated with the data package that would cause data validation qualifires to be applied. Tetra Tech EM Inc. recommends that EPA accept the data as presented.

Please feel free to contact me at (610) 364-2129 regarding any aspect of this report

Sincerely,

Marian Murphy
Senior Chemist

cc: START TDD File

Monthly Report for TEM Calibrations

Laboratory: Westmont

Scope: 13

Calibration of On Screen 0.5 and 5 micron
Measuring Aids at AHERA Magnification

(Monthly)

Date	Small Circle microns	Large Circle microns
10/22/04	0.54	0.54
11/30/04	0.52	4.86
12/21/04	0.52	4.86
01/25/05	0.52	4.86
02/22/05	0.54	5.09
03/22/05	0.54	5.09
04/25/05	0.54	5.09
05/18/05	0.55	5.14
06/28/05	0.54	5.09
07/20/05	0.54	5.09
08/24/05	0.54	5.09
09/28/05	0.54	5.09
10/26/05	0.55	5.19
11/22/05	0.53	4.95
12/28/05	0.54	5.09
01/20/06	0.54	5.09
02/21/06	0.54	5.09
03/28/06	0.52	4.86
04/25/06	0.55	5.19
05/25/06	0.52	4.86

Spot Size Measurements
(Quarterly)

Date	Actual Spot Size	Target Spot Size	>250nm = FAIL ≤250nm=PASS	Is 2 SD <5% of Mean?
2/17/2001	236.74	< 250 nm	PASS	PASS
5/14/2001	231.48	< 250 nm	PASS	PASS
10/1/2001	183.09	< 250 nm	PASS	PASS
12/13/2001	180.04	< 250 nm	PASS	PASS
3/19/2002	223.59	< 250 nm	PASS	PASS
12/3/2002	180.04	< 250 nm	PASS	PASS
3/6/2003	208.21	< 250 nm	PASS	PASS
6/9/2003	209.25	< 250 nm	PASS	PASS
9/4/2003	208.07	< 250 nm	PASS	PASS
12/3/2003	231.48	< 250 nm	PASS	PASS
2/2/2004	202.94	< 250 nm	PASS	PASS
5/4/2004	194.93	< 250 nm	PASS	PASS
7/20/2004	191.76	< 250 nm	PASS	PASS
10/22/2004	156.05	< 250 nm	PASS	PASS
1/25/2005	203.25	< 250 nm	PASS	PASS
4/25/2005	182.06	< 250 nm	PASS	PASS
7/20/2005	220.46	< 250 nm	PASS	PASS
11/2/2005	204.25	< 250 nm	PASS	PASS
1/20/2006	218.62	< 250 nm	PASS	PASS
4/25/2006	205.76	< 250 nm	PASS	PASS

Resolvable Mg-Si and Na Peaks (QUARTERLY)

Significant Na, Mg & Si Peak Conclusions

Date	Na	Mg	Si
9/4/2003	Pass	Yes	Yes
12/3/2003	Pass	Yes	Yes
2/2/2004	Pass	Yes	Yes
5/4/2004	Pass	Yes	Yes
7/20/2004	Pass	Yes	Yes
10/22/2004	Pass	Yes	Yes
1/25/2005	Pass	Yes	Yes
4/25/2005	Pass	Yes	Yes
7/20/2005	Pass	Yes	Yes
10/26/2005	Pass	Yes	Yes
1/20/2006	Pass	Yes	Yes
4/25/2006	Pass	Yes	Yes

Plasma Asher Calibration-Airvax (QUARTERLY)

Time To Ash 5% of
Collapsed MCE Filter

Date	Min	Sec
1/9/2004	6	31
4/19/2004	6	09
7/14/2004	5	47
10/7/2004	6	15
1/10/2005	3	23
4/12/2005	6	11
7/12/2005	5	53
10/27/2005	7	33
1/9/2006	5	07
4/20/2006	3	10

Detector Resolution (SEMI-ANNUALLY)

@Mn Kα Peak

Date	Resolution	<175?	Resolution + 2(s) <180?
8/17/2000	149.9	Pass	PASS
11/17/2000	131.0	Pass	PASS
2/12/2001	124.2	Pass	PASS
5/14/2001	128.2	Pass	PASS
12/3/2002	124.1	Pass	PASS
6/3/2003	119.3	Pass	PASS
12/4/2003	140.9	Pass	PASS
5/4/2004	146.2	Pass	PASS
10/25/2004	151.9	Pass	PASS
4/25/2005	151.2	Pass	PASS
10/26/2005	144.9	Pass	PASS
4/25/2006	148.1	Pass	PASS

EMSL ASBESTOS DATA PACKAGE
(NVLAP 101048-0)

EMSL ORDER IDS
040611984 and 040611987

Marian Murphy
Tetra Tech EMI
Boothwyn, PA

Analytical Project
E03-001-05-10-003

PREPARED BY: STEPHEN SIEGEL, CIH
DATE: June 20, 2006

Monthly Report for TEM Calibrations

Laboratory: Westmont

Scope: 13

K Factors (SEMI-ANNUALLY)

Test Dates	Mean K Factor	Pass Criteria	Actual	PASS FAIL	Acceptance Criteria	PASS/FAIL
3/29/2006	Mg:Si	1.0 - 2.0	1.77	PASS	2SD < 10% Mean	PASS
3/29/2006	Ca:Si	1.0 - 1.75	1.17	PASS	2SD < 10% Mean	PASS
3/29/2006	Fe:Si	1.0 - 2.0	1.35	PASS	2SD < 10% Mean	PASS
3/29/2006	Mg:Fe	1.5 or less	1.21	PASS	N / A	N / A
3/30/2006	Na:Si	1.0 - 4.0	3.67	PASS	2SD < 20% Mean	PASS
3/30/2006	Al:Si	1.0 - 1.75	1.17	PASS	2SD < 10% Mean	PASS

Magnification Calibrations (Monthly)

20,000x - Negative

Date	Target Magnification	Actual Magnification	Is 2 Std. Deviations < 5% of Mean?
10/22/2004	19113	19224	PASS
11/30/2004	19113	19116	PASS
12/21/2004	19113	18630	PASS
1/25/2005	19113	19680	PASS
2/22/2005	19113	18655	PASS
3/22/2005	19113	19080	PASS
4/25/2005	19113	19224	PASS
5/18/2005	19113	19800	PASS
6/28/2005	19113	19008	PASS
7/20/2005	19113	18144	PASS
8/24/2005	19113	19594	PASS
9/28/2005	19113	19224	PASS
10/26/2005	19113	19224	PASS
11/22/2005	19113	18792	PASS
12/28/2005	19113	19224	PASS
1/20/2006	19113	19440	PASS
2/21/2006	19113	19170	PASS
3/28/2006	19113	18360	PASS
4/25/2006	19113	19440	PASS
5/25/2006	19113	19224	PASS

20,000x - Screen

Date	Target Magnification	Actual Magnification	Is 2 Std. Deviations < 5% of Mean?
9/2/2004	14620	14460	PASS
9/28/2004	14620	15149	PASS
10/22/2004	14620	15149	PASS
11/30/2004	14620	15149	PASS
12/21/2004	14620	14460	PASS
1/25/2005	14620	14460	PASS
2/25/2005	14620	14460	PASS
3/22/2005	14620	14330	PASS
4/25/2005	14620	14460	PASS
7/20/2005	14620	14460	PASS
8/24/2005	14620	14460	PASS
9/28/2005	14620	14460	PASS
10/26/2005	14620	14202	PASS
11/22/2005	14620	14866	PASS
12/28/2005	14620	14460	PASS
1/20/2006	14620	14460	PASS
2/21/2006	14620	14460	PASS
3/28/2006	14620	15149	PASS
4/25/2006	14620	14202	PASS
5/25/2006	14620	15149	PASS

10,000x - Negative

Date	Target Magnification	Actual Magnification	Is 2 Std. Deviations < 5% of Mean?
10/22/2004	10280	10368	PASS
11/30/2004	10280	10368	PASS
12/21/2004	10280	10080	PASS
1/25/2005	10280	10380	PASS
2/22/2005	10280	10573	PASS
3/22/2005	10280	10260	PASS
4/25/2005	10280	10152	PASS
5/18/2005	10280	10368	PASS
6/28/2005	10280	9792	PASS
7/20/2005	10280	10800	PASS
8/24/2005	10280	10260	PASS
9/28/2005	10280	10584	PASS
10/26/2005	10280	10368	PASS
11/22/2005	10280	10044	PASS
12/28/2005	10280	10260	PASS
1/20/2006	10280	10044	PASS
2/21/2006	10280	10368	PASS
3/28/2006	10280	9936	PASS
4/25/2006	10280	10368	PASS
5/25/2006	10280	10224	PASS

10,000x - Screen

Date	Target Magnification	Actual Magnification	Is 2 Std. Deviations < 5% of Mean?
1/25/2005	7682	7914	PASS
2/22/2005	7682	7953	PASS
3/22/2005	7682	7914	PASS
4/25/2005	7682	7953	PASS
5/18/2005	7682	7574	PASS
6/28/2005	7682	7574	PASS
7/20/2005	7682	7574	PASS
8/24/2005	7682	7666	PASS
9/28/2005	7682	7574	PASS
10/26/2005	7682	7503	PASS
11/22/2005	7682	7574	PASS
12/28/2005	7682	7574	PASS
1/20/2006	7682	7574	PASS
2/21/2006	7682	7503	PASS
3/28/2006	7682	7759	PASS
4/25/2006	7682	7539	PASS
5/25/2006	7682	7874	PASS

1. Case Narrative

Monthly Report for TEM Calibrations

Laboratory: Westmont

Scope: 13

Chrysotile Beam Dose Sensitivity (QUARTERLY)

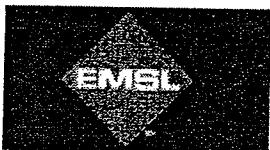
Date	Negative Numbers		At least 90% of patterns >15 seconds ?
	SAED	Morphology	
12/4/2003	38172	38173	PASS
2/2/2004	38356	38358	PASS
5/4/2004	88818	88819	PASS
7/20/2004	88125	88126	PASS
10/22/2004	88312	88313	PASS
1/25/2005	88115	88116	PASS
4/25/2005	80301	80302	PASS
7/20/2005	88386	88387	PASS
10/26/2005	88518	88519	PASS
1/20/2006	779	780	PASS
4/25/2006	13057	13058	PASS

Camera Constant Calibrations (Monthly)

Negative (Camera)				
Date	Negative Number	Camera Length	Camera Constant	Is 2 Standard Dev. < 5% Mean?
6/30/2004	88112	55	22.62	PASS
7/20/2004	88119	55	22.22	PASS
9/2/2004	88150	55	22.37	PASS
9/28/2004	88080	55	22.65	PASS
10/22/2004	99200	55	22.96	PASS
11/30/2004	88090	55	23.83	PASS
12/21/2004	88100	55	23.44	PASS
1/25/2005	88114	55	22.73	PASS
3/28/2005	88193	55	22.69	PASS
4/25/2005	88300	55	22.79	PASS
8/24/2005	88425	55	22.62	PASS
9/28/2005	88489	55	22.09	PASS
10/26/2005	88522	55	22.50	PASS
11/22/2005	88575	55	22.35	PASS
12/28/2005	99719	55	23.10	PASS
1/20/2006	11778	55	22.28	PASS
2/21/2006	11940	55	22.86	PASS
3/28/2006	12992	55	22.62	PASS
4/25/2006	13057	55	22.45	PASS
5/25/2006	13123	55	22.62	PASS

On Screen				
Date	Camera Length	Aperture #	Aperture Diameter	Is 2 Standard Dev. < 5% Mean?
9/2/2004	22	1	1.06	PASS
9/28/2004	22	1	1.06	PASS
10/22/2004	22	1	1.06	PASS
11/30/2004	22	1	1.06	PASS
12/21/2004	22	1	1.06	PASS
1/25/2005	22	1	1.06	PASS
4/25/2005	22	1	1.06	PASS
5/18/2005	22	1	1.06	PASS
6/28/2005	22	1	1.06	PASS
7/20/2005	22	1	1.06	PASS
8/24/2005	22	1	1.06	PASS
9/28/2005	22	1	1.06	PASS
10/26/2005	22	1	1.06	PASS
11/22/2005	22	1	1.06	PASS
12/28/2005	22	1	1.06	PASS
1/20/2006	22	1	1.06	PASS
2/21/2006	22	1	1.06	PASS
3/28/2006	22	1	1.06	PASS
4/25/2006	22	1	1.06	PASS
5/25/2006	22	1	1.06	PASS

The above aperture diameter represents the on screen diameter in reciprocal space. Multiply this number times the number of layer lines seen to get layer line spacing.



Sample Narrative-
EMSL Order IDs# 040611984 and 040611987

On June 14, 2006 EMSL Analytical (Westmont, NJ) received six bulk and two soil samples for Asbestos content analysis. These samples were from Tetra Tech EMI (Boothwyn, PA) for Analytical Project E03-001-05-10-003. The samples were logged in following normal lab procedures.

PLM - Analysis

The six bulk samples were analyzed via polarized light microscopy (PLM) using EPA 600/R-93/116. All data was reported on a % asbestos basis. One sample was reanalyzed by a different analyst and one lab blank was read for QC purposes with acceptable results.

TEM CARB 435- Level C

The two soil samples were initially dried in a drying oven and then freezer milling of each sample was performed. The samples were then prepared for TEM analysis by weighing a small fraction of the sample (approx. 0.01 g) and sonicating in 100 ml of deionized water. Aliquot filtration was performed for each sample with subsequent preparation of the filter for TEM analysis per EMSL TEM Carb Level C SOP.

These samples were then analyzed by Transmission Electron Microscopy (TEM) via EMSL Method TEM Carb Level C. All data was reported on as percent asbestos with fiber sizing and asbestos type identification. The reporting limit for this method is 0.01%.

One lab preparation blank was performed for QC purposes with acceptable data.

Stephen Siegel

Stephen Siegel, CIH
Asbestos Lab Manager, EMSL-Westmont, NJ

6/20/06
Date

INTERNAL CHAIN OF CUSTODY

6/15/2006 8:33:25 AM

Order ID: 040611987

Attn: Marian Murphy
Tetra Tech EMI
7 Creek Parkway
Suite 700
Boothwyn, PA 19061

Fax: (610) 485-8587
Project: E03-001-05-10-003

Phone: (610) 485-6410

Customer ID: TTEC50
Customer PO:
Received: 06/14/06 9:40 AM

EMSL Order: 040611987
EMSL Project ID:

Test: TEM CARB 435 Level C **Matrix:** Soils **TAT:** 144+ Hours **Qty:** 2

Acct Sts: **Sisprsn:** Ploh

Logged: dpullman **Date:**

Sample Condition: ☒ Acceptable
☐ Unacceptable

Comments

- ☐ Exempt from prep charge
☐ Exempt from lab opening fee
☐ Exempt from layer/aliquot charges

Prepped: *DS/LS* **Date:** 6/19/06
Analyzed: *A. Little* **Date:** 6/19/06
Data Entry: *[Signature]* **Date:** 8/1/06
Screened: *[Signature]* **Date:**
Mailed: *[Signature]* **Date:**

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
040611987	040611987-0001	009-SA01-A01	009-SA01-A01 .1000g	6/21/2006 8:40:00 AM
040611987	040611987-0002	009-SA02-A01	009-SA02-A01 .1000g	6/21/2006 8:40:00 AM

2. PLM/TEM Tabulated Sample Results

INTERNAL CHAIN OF CUSTODY

6/15/2006 8:28:13 AM

Order ID: 040611984

Attn: Marian Murphy
Tetra Tech EMI
7 Creek Parkway
Suite 700
Boothwyn, PA 19061
Fax: (610) 485-8587
Project: E03-001-05-10-003

Phone: (610) 485-6410

Customer ID: TTEC50
Customer PO:
Received: 06/14/06 9:40 AM
EMSL Order: 040611984
EMSL Project ID:

est: PLM Matrix Bulk TAT: 144+ Hours Qty: 6

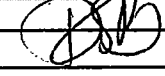
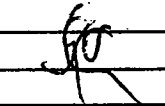
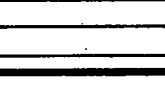
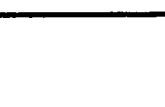

Acct Sts: Sisprsn: Ploh

Logged: dpullman
Sample ☒ Acceptable
Condition: ☐ Unacceptable

Date:

Comments

- ☐ Exempt from prep charge
☐ Exempt from lab opening fee
☐ Exempt from layer/aliquot charges

Prepped:  Date: 6/20/06
Analyzed:  Date: 6/20/06
Data Entry:  Date: 6/20/06
Screened:  Date: 6/20/06
Mailed:  Date: 6/20/06

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
040611984	040611984-0001	009-BA01-A01	009-BA01-A01	6/21/2006 8:40:00 AM
040611984	040611984-0002	009-BA02-A01	009-BA02-A01	6/21/2006 8:40:00 AM
040611984	040611984-0003	009-BA03-A01	009-BA03-A01	6/21/2006 8:40:00 AM
040611984	040611984-0004	009-BA04-A01	009-BA04-A01	6/21/2006 8:40:00 AM
040611984	040611984-0005	009-BA05-A01	009-BA05-A01	6/21/2006 8:40:00 AM
040611984	040611984-0006	009-BA06-A01	009-BA06-A01	6/21/2006 8:40:00 AM



EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08107

Phone: (908) 485-4000 Fax: (908) 485-4000 Email: westmont@emsl.com

Attn: **Marian Murphy**
Tetra Tech EMI
7 Creek Parkway
Suite 700
Boothwyn, PA 19061

Fax: (610) 485-8587 Phone: (610) 485-6410
Project: **E03-001-05-10-003**

Customer ID: TTEC50
Customer PO:
Received: 06/14/06 9:40 AM
EMSL Order: 040611984

EMSL Proj:
Analysis Date: 6/20/2006
Report Date: 6/20/2006

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
009-BA01-A01 040611984-0001	009-BA01-A01	Brown/White Fibrous Heterogeneous		65% Non-fibrous (other)	35% Chrysotile
009-BA02-A01 040611984-0002	009-BA02-A01	White/Gray Fibrous Heterogeneous		55% Non-fibrous (other)	45% Chrysotile
009-BA03-A01 040611984-0003	009-BA03-A01	Gray Fibrous Heterogeneous	5% Cellulose	50% Non-fibrous (other)	45% Chrysotile
009-BA04-A01 040611984-0004	009-BA04-A01	Gray Fibrous Heterogeneous		55% Non-fibrous (other)	45% Chrysotile
009-BA05-A01 040611984-0005	009-BA05-A01	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
009-BA06-A01 040611984-0006	009-BA06-A01	Gray Fibrous Heterogeneous	5% Cellulose	40% Non-fibrous (other)	55% Chrysotile

Analyst(s)

Delores Beard (6)

Stephen Siegel, CIH
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.

Analysis performed by EMSL Westmont (NVLAP #101048-0), NY ELAP 10872

**REGION 3 DELIVERY OF ANALYTICAL SERVICES (DAS)
SAMPLE DELIVERY GROUP (SDG)
COVER SHEET**

Laboratory Name: EMSL

Laboratory Code: _____

Case or DAS No.: _____

SDG No./First Sample in SDG: 009-BA01-A01 Sample Receipt Date: 06/14/2006
(Lowest EPA Sample Number in first shipment received under SDG.) MM/DD/YYYY

Last Sample in SDG: 009-SA02-A01
(Highest EPA Sample Number in last shipment of samples received under SDG.)

Sample Receipt Date: 06/14/2006
MM/DD/YYYY

EPA Sample Numbers in the SDG (List in alphanumeric order):

1. 009-BA01-A01
2. 009-BA02-A01
3. 009-BA03-A01
4. 009-BA04-A01
5. 009-BA05-A01
6. 009-BA06-A01
7. 009-SA01-A01
8. 009-SA02-A01
9. _____
10. _____

11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

Note: There are a maximum of 20 field samples in an SDG.

Comments: _____

Daniel Pullman
Signature
Daniel Pullman
Print Name

Login
Title
6-15-2006
Date

Please make copies of this form and complete one form per SDG. FAX the completed form within 3 days of receipt of the last sample received for the DAS case to:

Annette Lage
USEPA
Environmental Science Center
701 Mapes Road
Fort Meade, MD 20755-5350
Phone: (410) 305-2620
FAX: (410) 305-3095

EMSL Analytical, Inc.

107 Haddon Avenue, Westmont, NJ 08108 Phone: 800-220-3675 Fax: 856-858-4960

Client: Tetra Tech EMI
7 Creek Parkway
Suite 700
Boothwyn, PA 19061

Attention: Marian Murphy

Fax: 610-485-8587

Project: E03-001-05-10-003

Phone: 610-485-8587

EMSL Reference: 040611987

Date Received: 06/14/06

Date Analyzed: 06/19/06

Date Reported: 06/20/06

**Asbestos Analysis of Soil via EPA 600/R-93/116 Method Utilizing
Analytical Electron Microscopy (Section 2.5) with CARB 435 Prep (Milling)
Level C for 0.01% Target Analytical Sensitivity**

Client Sample ID	Sample Location	Asbestos Type(s)	# of Asbestos Structures Detected	Analytical Sensitivity %	Asbestos Weight %	Comments
009-SA01-A01 040611987-0001	009-SA01-A01	Chrysotile	1	0.01	<0.01	
009-SA02-A01 040611987-0002	009-SA02-A01	None Detected	0	0.01	<0.01	

Debbie Little
Analyst



Stephen Siegel, CIH or Approved EMSL Signatory

EMSL maintains liability limited to cost of analysis. This method requires the laboratory to analyze the sample until the first fiber found compromises 5% of the total mass. Due to the size and mass of different asbestos fibers, the analytical sensitivity will vary between samples and may prevent the laboratory from achieving the target sensitivity on all samples. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL is not responsible for sample collection activities or analytical method limitations. Interpretation and use of results are the responsibility of the client.



USEPA Contract Laboratory Program Generic Chain of Custody

Reference Case
Client No: 35434
SDG No:

For Lab Use Only
Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

Date Shipped: 6/13/2006
Carrier Name: FedEx
Airbill: 640799426808
Shipped to: EMSL
3 Cooper Street
Westmont NJ 08108
(856) 585-4800

Chain of Custody Record

Relinquished By	(Date / Time)	Sampler Signature	Received By	(Date / Time)
1 Matt Kandefer	6/13/06 1446			
2				
3				
4				

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	PRESERVATIVE/ BOTTLES	TAG No./	STATION LOCATION	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
009-BA01-A01	Waste/ Matthew Kandefer	M/G	ASBEST (7)	154 (None) (1)		009-BA01-A01	S: 6/12/2006 12:37	
009-BA02-A01	Waste/ Matthew Kandefer	M/G	ASBEST (7)	155 (None) (1)		009-BA02-A01	S: 6/12/2006 12:39	
009-BA03-A01	Waste/ Matthew Kandefer	M/G	ASBEST (7)	156 (None) (1)		009-BA03-A01	S: 6/12/2006 12:41	
009-BA04-A01	Waste/ Matthew Kandefer	M/G	ASBEST (7)	157 (None) (1)		009-BA04-A01	S: 6/12/2006 12:44	
009-BA05-A01	Waste/ Matthew Kandefer	M/G	ASBEST (7)	158 (None) (1)		009-BA05-A01	S: 6/12/2006 12:47	
009-BA06-A01	Waste/ Matthew Kandefer	M/G	ASBEST (7)	159 (None) (1)		009-BA06-A01	S: 6/12/2006 14:00	
009-SA01-A01	Soil (0"-12")/ Matthew Kandefer	M/C	ASBEST (7)	160 (None) (1)		009-SA01-A01	S: 6/12/2006 12:50	
009-SA04-A01	Soil (0"-12")/ Matthew Kandefer	M/C	ASBEST (7)	161 (None) (1)		009-SA06-A01	S: 6/12/2006 12:57	

SAMPLES ACCEPTED
FOR ANALYSIS BY
EMSL ANALYTICAL INC.

06 JUN 14 AM 10:47

RECEIVED
EMSL
WESTMONT, NJ

Shipment for Case Complete?	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <input checked="" type="checkbox"/>	Shipment Iced? <input checked="" type="checkbox"/>
Analysis Key: ASBEST = Asbestos				

TR Number: 3-073938891-061306-0001

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

LABORATORY COPY

Blank Analysis Summary

Month/Year:

Jun-06

Westmont, New Jersey

Type of Analysis	Total	Pass	Failure	Pass %	Failure%
TEM 040611987	1	1	0	100	0
PLM 040611984	1	1	0	100	0

*Prep 1 lab blank/AHERA set, Analyze 1/25 or when any sample is $> 70 \text{ s/mm}^2$ **Pass/Fail Criteria:** Single prep $< 53 \text{ s/mm}^2$. Cumulative average $< 18 \text{ s/mm}^2$

** Prep 1 blank for every 20 samples analyzed

Pass/Fail Criteria: Failure occurs if any ACM is found in non-ACM material.

Average PLM Accuracy Results

Groups	% Recovery
1-3%	91.7
4-10%	111.6
11-50%	0.0
51-100%	99.9
Average =	101.1

Delores Beard

Monthly PLM Friable QC Summary

Laboratory: Westmont
Duplicates 1
Replicates 0

Report#: DB-1

Month/Year: Jun-06

	Reference #	Sample #	Original		QC		Variance		Conclusion
			Analyst	Result	Analyst	Result	Original	QC	
1	11984	009-BA06-A01	DB	55	WD	45	0.20	-0.20	Pass

EMSL PLM ANALYST ACCURACY

Analyst: Delores Beard

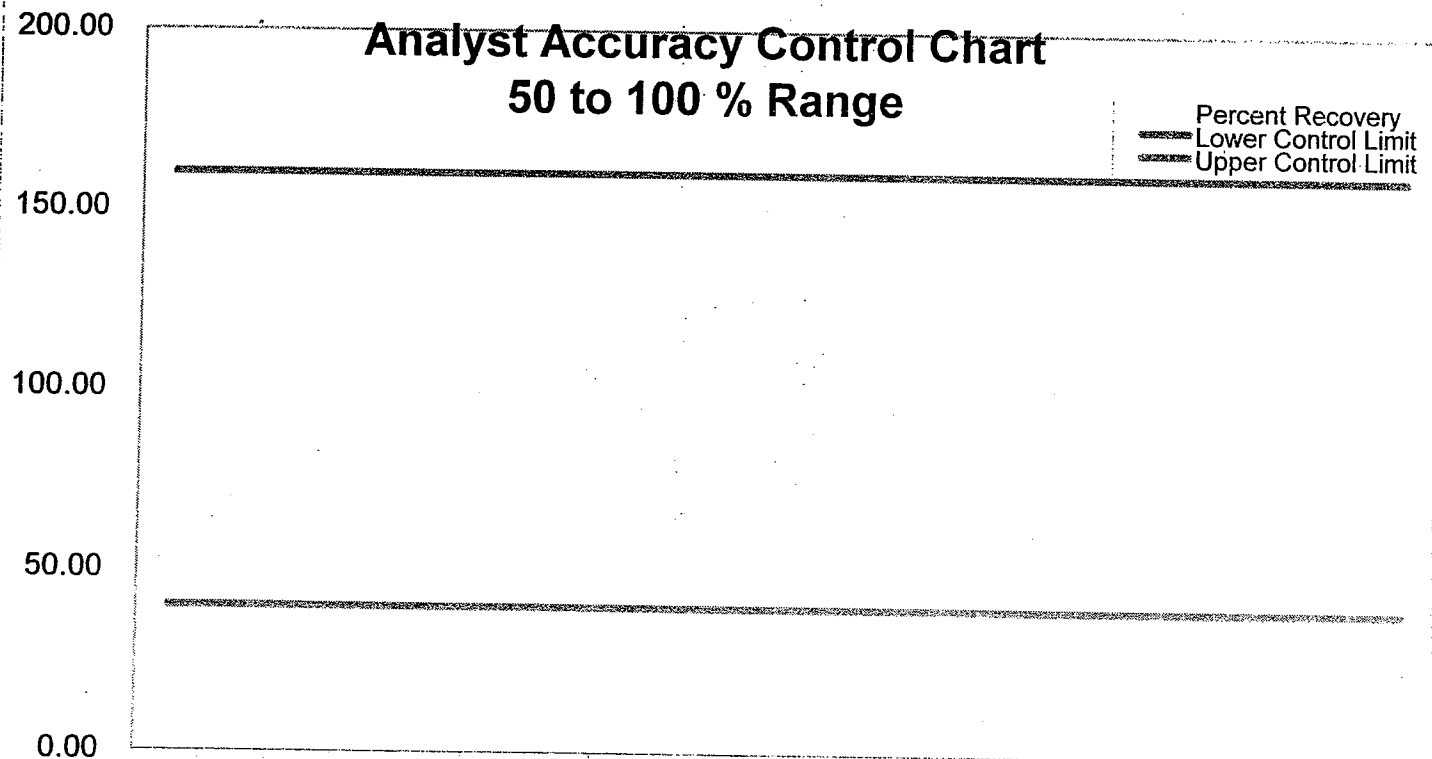
Samples: 52,54

Range: 51 - 100 %

55,95

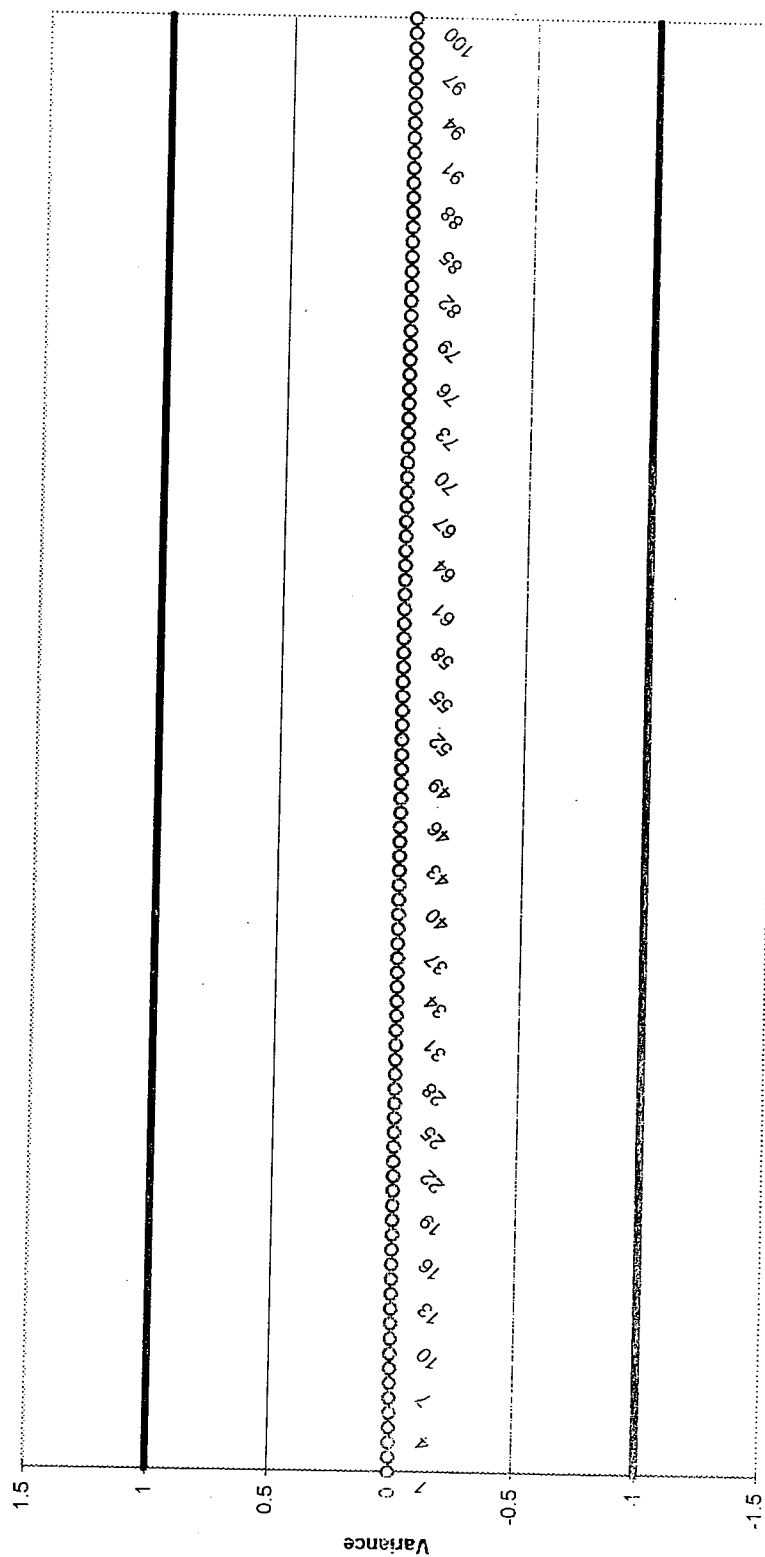
Date	NVLAP Sample ID	Reference Values		Analysis Results		Qualitative In Control?	Percent Recovery	Quantitative In Control?
		Asbestos Type	%	Asbestos Type	%			
5/28/2006	54	Chrysotile	95	Chrysotile	90	IN	94.74	IN
6/4/2006	52	Chrysotile	55	Chrysotile	60	IN	109.09	IN
6/6/2006	54	Chrysotile	95	Chrysotile	90	IN	94.74	IN
6/12/2006	52	Chrysotile	55	Chrysotile	60	IN	109.09	IN
6/14/2006	54	Chrysotile	95	Chrysotile	95	IN	100.00	IN
6/20/2006	52	Chrysotile	55	Chrysotile	55	IN	100.00	IN
4/5/2006	52	Chrysotile	55	Chrysotile	60	IN	109.09	IN
4/7/2006	54	Chrysotile	95	Chrysotile	90	IN	94.74	IN
4/13/2006	52	Chrysotile	55	Chrysotile	55	IN	100.00	IN
4/17/2006	54	Chrysotile	95	Chrysotile	85	IN	89.47	IN
4/23/2006	52	Chrysotile	55	Chrysotile	60	IN	109.09	IN
4/25/2006	54	Chrysotile	95	Chrysotile	90	IN	94.74	IN
4/30/2006	52	Chrysotile	55	Chrysotile	55	IN	100.00	IN
5/2/2006	52	Chrysotile	55	Chrysotile	60	IN	109.09	IN
5/4/2006	54	Chrysotile	95	Chrysotile	90	IN	94.74	IN
5/10/2006	52	Chrysotile	55	Chrysotile	50	IN	90.91	IN
5/12/2006	54	Chrysotile	95	Chrysotile	95	IN	100.00	IN
5/18/2006	52	Chrysotile	55	Chrysotile	55	IN	100.00	IN
5/20/2006	54	Chrysotile	95	Chrysotile	85	IN	89.47	IN
5/25/2006	52	Chrysotile	55	Chrysotile	60	IN	109.09	IN

Average Percent Recovery = 99.9



Inter-Analyst Control Limits for Analyst 2

—○— DP — Control Limit



QC Analysis Number

EMSL PLM ANALYST ACCURACY

Analyst: Delores Beard

Samples: 53,55

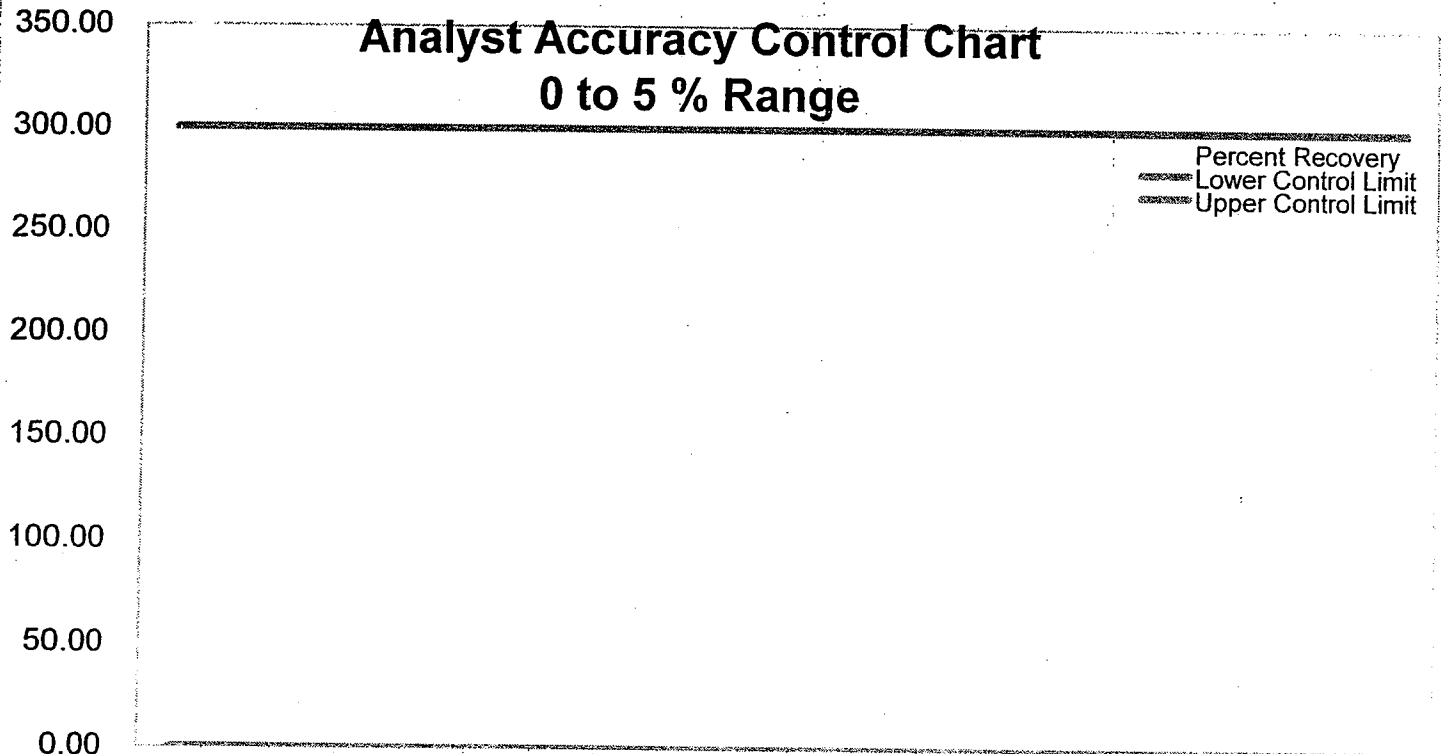
Range: 4-10%

8,7

Date	NVLAP Sample ID	Reference Values		Analysis Results		Qualitative In Control?	Percent Recovery	Quantitative In Control?
		Asbestos Type	%	Asbestos Type	%			
5/30/2006	55	Amosite	7	Amosite	10.00	IN	142.86	IN
6/5/2006	53	Chrysotile	8	Chrysotile	10.00	IN	125.00	IN
6/8/2006	55	Amosite	7	Amosite	5.00	IN	71.43	IN
6/13/2006	53	Chrysotile	8	Chrysotile	5.00	IN	62.50	IN
6/15/2006	55	Amosite	7	Amosite	10.00	IN	142.86	IN
3/3/2006	53	Chrysotile	8	Chrysotile	10.00	IN	125.00	IN
3/6/2006	55	Amosite	7	Amosite	5.00	IN	71.43	IN
3/10/2006	53	Chrysotile	8	Chrysotile	5.00	IN	62.50	IN
3/13/2006	55	Amosite	7	Amosite	10.00	IN	142.86	IN
3/17/2006	53	Chrysotile	8	Chrysotile	5.00	IN	62.50	IN
3/21/2006	55	Amosite	7	Amosite	10.00	IN	142.86	IN
3/25/2006	53	Chrysotile	8	Chrysotile	10.00	IN	125.00	IN
3/29/2006	55	Amosite	7	Amosite	10.00	IN	142.86	IN
5/3/2006	53	Chrysotile	8	Chrysotile	10.00	IN	125.00	IN
5/5/2006	55	Amosite	7	Amosite	10.00	IN	142.86	IN
5/11/2006	53	Amosite	7	Amosite	5.00	IN	71.43	IN
5/15/2006	55	Chrysotile	8	Chrysotile	5.00	IN	62.50	IN
5/19/2006	53	Amosite	7	Amosite	10.00	IN	142.86	IN
5/21/2006	55	Chrysotile	7	Chrysotile	10.00	IN	142.86	IN
5/26/2006	53	Amosite	8	Amosite	10.00	IN	125.00	IN

Average Percent Recovery = 111.6

Analyst Accuracy Control Chart 0 to 5 % Range



EMSL PLM ANALYST ACCURACY

Analyst: Delores Beard

Samples: 50,57

Range: 1 - 3%

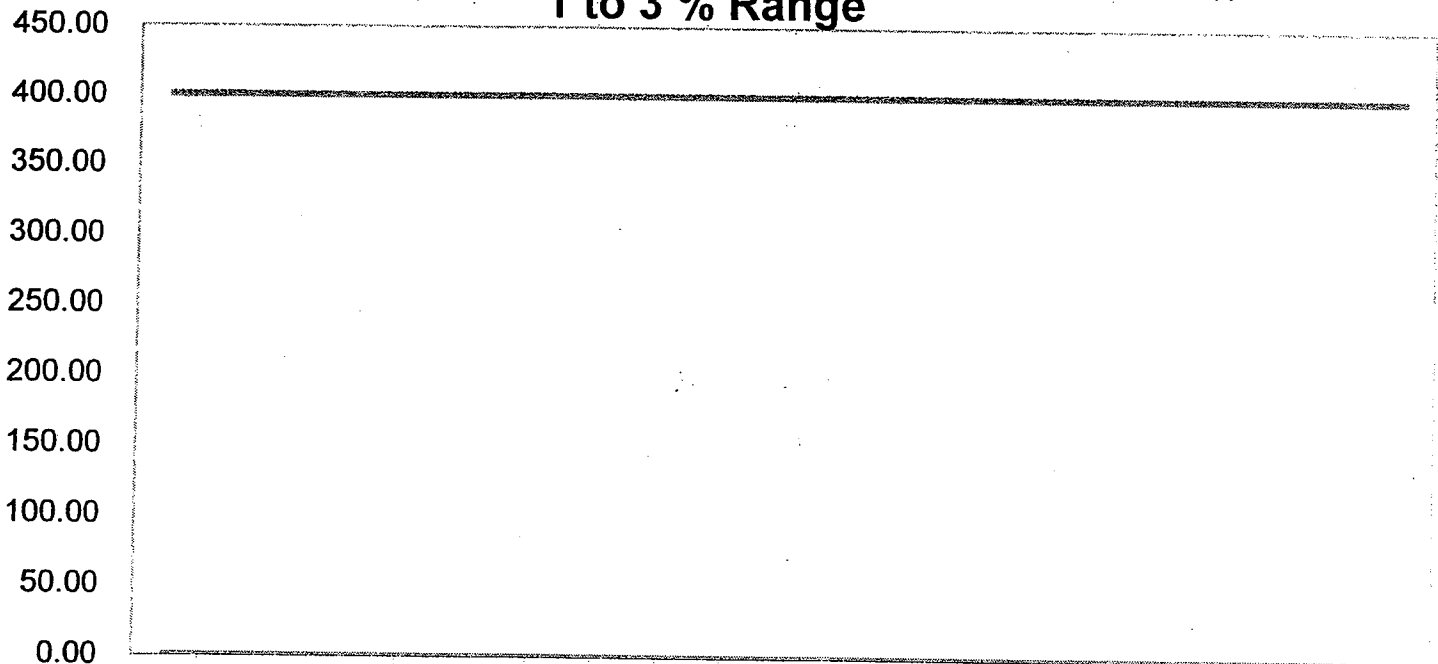
1,3

Date	NVLAP Sample ID	Reference Values		Analysis Results		Qualitative In Control?	Percent Recovery	Quantitative In Control?
		Asbestos Type	%	Asbestos Type	%			
3/30/2006	57	Chrysotile	3	Chrysotile	3.00	IN	100.00	IN
4/3/2006	50	Anthophyllite	1	Anthophyllite	1.00	IN	100.00	IN
4/11/2006	57	Chrysotile	3	Chrysotile	2.00	IN	66.67	IN
4/12/2006	50	Anthophyllite	1	Anthophyllite	1.00	IN	100.00	IN
4/20/2006	57	Chrysotile	3	Chrysotile	3.00	IN	100.00	IN
4/27/2006	50	Anthophyllite	1	Anthophyllite	1.00	IN	100.00	IN
4/28/2006	57	Chrysotile	3	Chrysotile	2.00	IN	66.67	IN
5/1/2006	50	Anthophyllite	1	Anthophyllite	1.00	IN	100.00	IN
5/7/2006	57	Chrysotile	3	Chrysotile	2.00	IN	66.67	IN
5/9/2006	50	Anthophyllite	1	Anthophyllite	1.00	IN	100.00	IN
5/16/2006	57	Chrysotile	3	Chrysotile	3.00	IN	100.00	IN
5/17/2006	50	Anthophyllite	1	Anthophyllite	1.00	IN	100.00	IN
5/23/2006	57	Chrysotile	3	Chrysotile	2.00	IN	66.67	IN
5/24/2006	50	Anthophyllite	1	Anthophyllite	1.00	IN	100.00	IN
5/31/2006	57	Chrysotile	3	Chrysotile	3.00	IN	100.00	IN
6/2/2006	50	Anthophyllite	1	Anthophyllite	1.00	IN	100.00	IN
6/9/2006	57	Chrysotile	3	Chrysotile	2.00	IN	66.67	IN
6/11/2006	50	Anthophyllite	1	Anthophyllite	1.00	IN	100.00	IN
6/16/2006	57	Chrysotile	3	Chrysotile	3.00	IN	100.00	IN
6/19/2006	50	Anthophyllite	1	Anthophyllite	1.00	IN	100.00	IN

Average Percent Recovery = 91.7

Analyst Accuracy Control Chart 1 to 3 % Range

Percent Recovery
Lower Control Limit
Upper Control Limit



ATTACHMENT

VALIDATED ANALYTICAL DATA PACKAGES

164 pages



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

DATE : October 5, 2006
SUBJECT: Region III Data QA Review
FROM : Khin-Cho Thaung *FF for KLT*
Region III ESAT RPO (3EA20)
TO : Charles Fitzsimmons (Ft. Meade)
Regional Project Manager (3EA20)

Attached is the inorganic data validation report for the Elkton Farms Firehole site (Case #: 35742, SDG#: MCT157) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2743.

Attachments

cc: Marian Murphy (TTEMI)

TO File #: 0001

TDF#: 0935

ANALYTICAL SERVICES AND QUALITY ASSURANCE BRANCH



*Printed on 100% recycled/recyclable paper with 100% post-consumer fiber and process chlorine free.
Customer Service Hotline: 1-800-438-2474*

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: September 29, 2006

SUBJECT: Inorganic Data Validation (IM2 Level)
Case: 35742
SDG: MCT157
Site: Elkton Farm Firehole

FROM: Donald M. Brown^{Dmb}
Inorganic Data Reviewer

Mahboobeh Mecanic^{mm}
Senior Oversight Chemist

TO: Khin-Cho Thaug
ESAT Region 3 Project Officer

OVERVIEW

Case 35742, Sample Delivery Group (SDG) MCT157, consisted of one (1) aqueous sample analyzed for total metals by Chemtech Consulting Group (CHEM). The sample set contained no field Quality Control (QC) samples. The sample was analyzed in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.3 through Routine Analytical Services (RAS) program.

SUMMARY

Data were validated according to Region III Modifications to the National Functional Guidelines for Inorganic Data Review, Level IM2. Areas of concern with respect to data usability are listed below.

Data in this case have been impacted by outliers present in the laboratory blanks as well as the matrix spike and ICP serial dilution analyses. Details of these outliers are discussed under "Minor Problems", the specific sample affected is outlined in "Table 1A" and qualified analytical results for the sample are summarized on a single Data Summary Form (DSF).

MINOR PROBLEMS

Continuing calibration blanks (CCB) had reported results greater than the Method Detection Limits (MDLs) for antimony (Sb), beryllium (Be), copper (Cu) and thallium (Tl). Positive results for these analytes in the affected sample which are less than or equal to five times ($\leq 5X$) the blank concentrations may be biased high and has been qualified "B" on the DSF.

CCBs and/or the Preparation Blank (PB) had negative results greater than the absolute values of the MDLs regarding the analytes listed below. Positive results in the affected sample which are less than two times ($< 2X$) the absolute values of the blank concentrations may be biased low. The "L" qualifier for these outliers has been superseded by "B" or "J" on the DSF. Quantitation limits in the affected sample may be biased low and have been qualified "UL" on the DSF.

<u>Blank</u>	<u>Affected Analytes</u>
CCB	Cu, selenium (Se)
PB	arsenic (As), mercury (Hg), nickel (Ni)

The matrix spike recovery was high ($>125\%$) for iron (Fe). The positive result for this analyte in the affected sample may be biased high and has been qualified "K" on the DSF.

Percent differences (%Ds) for the ICP serial dilution analysis were outside control limits ($>10\%$) for potassium (K) and zinc (Zn). Positive results for these analytes in the affected sample are estimated due to possible matrix interferences and have been qualified "J" on the DSF.

NOTES

Reported results between MDLs and Contract Required Quantitation Limits (CRQLs) were qualified "J" on the DSF unless superseded by "B".

Data for Case 35742, SDG MCT157, were reviewed in accordance with National Functional Guidelines for Evaluating Inorganic Analyses with Modification for use within Region III.

ATTACHMENTS

INFORMATION REGARDING REPORT CONTENT

Table 1A is a summary of qualifiers applied to the laboratory-generated results during data validation.

TABLE 1A	SUMMARY OF QUALIFIERS ON DATA SUMMARY FORMS AFTER DATA VALIDATION
TABLE 1B	CODES USED IN COMMENTS COLUMN OF TABLE 1A
APPENDIX A	GLOSSARY OF DATA QUALIFIER CODES
APPENDIX B	DATA SUMMARY FORMS
APPENDIX C	CHAIN OF CUSTODY RECORDS
APPENDIX D	LABORATORY CASE NARRATIVE

DCN: 35742.MCT157IM2.doc

TABLE 1A
SUMMARY OF QUALIFIERS ON DATA SUMMARY
FORM AFTER DATA VALIDATION

Case 35742, SDG MCT157

<u>ANALYTE</u>	<u>SAMPLES AFFECTED</u>	<u>POSITIVE VALUES</u>	<u>NON- DETECTED VALUES</u>	<u>BIAS</u>	<u>COMMENTS*</u>
Sb	MCT157	B		High	CCB (7.910 J µg/L)
As	MCT157		UL	Low	PBN (-4.980 J µg/L)
Be	MCT157	B		High	CCB (0.060 J µg/L)
Cu	MCT157	B		High	CCB (16.255 J µg/L) CBN (-4.390 J µg/L)
Fe	MCT157	K		High	MSH (140%)
Hg	MCT157		UL	Low	PBN (-0.098 J µg/L)
Ni	MCT157	J			>MDL<CRQL PBN (-2.155 J µg/L)
K	MCT157	J			ISD (14%)
Se	MCT157		UL	Low	CBN (-5.545 J µg/L)
Tl	MCT157	B		High	CCB (5.800 J µg/L)
Zn	MCT157	J			ISD (11%)

* See explanation of comments in Table 1B

TABLE 1B
CODES USED IN COMMENTS COLUMN

CCB	=	Continuing calibration blanks had results >MDLs [results are in parenthesis]. Positive results which are $\leq 5X$ the blank concentrations may be biased high.
PBN	=	The preparation blank had negative results with absolute values >MDLs [results are in parenthesis]. Reported results which are <2X the absolute values of the blank concentrations and quantitation limits may be biased low.
CBN	=	Continuing calibration blanks had negative results with absolute values >MDLs [results are in parenthesis]. Reported results which are <2X the absolute values of the blank concentrations and quantitation limits may be biased low.
MSH	=	The matrix spike recovery was high (>125%) [% recovery is in parenthesis]. The positive result may be biased high.
>MDL <CRQL	=	Reported results are greater than MDLs but less than CRQLs and are considered estimated.
ISD	=	Percent differences (%Ds) in the ICP serial dilution analysis were outside control limits (>10%) [%Ds are in parenthesis]. Positive results are estimated.

Appendix A

Glossary of Data Qualifier Codes

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of analytes):

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 = Unreliable 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 1

Case #: 35742

SDG: MCT157

Number of Soil Samples: 0

Site:

ELKTON FARM FIREHOLE

Number of Water Samples: 1

Lab.:

CHEM

Sample Number:		MCT157									
Sampling Location:		001-SW01-A02									
Matrix:		Water									
Units:		ug/L									
Date Sampled:		9/13/2006									
Time Sampled:		10:00									
Dilution Factor:		1.0									
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	200	1010									
ANTIMONY	60	7.3	B								
*ARSENIC	10		UL								
BARIUM	200	97.6	J								
BERYLLIUM	5	0.070	B								
*CADMIUM	5										
CALCIUM	5000	7120									
*CHROMIUM	10	6.2	J								
COBALT	50										
COPPER	25	7.5	B								
IRON	100	1310	K								
*LEAD	10	7.6	J								
MAGNESIUM	5000	1810	J								
MANGANESE	15	13.0	J								
MERCURY	0.2		UL								
*NICKEL	40	1.7	J								
POTASSIUM	5000	1610	J								
SELENIUM	35		UL								
SILVER	10										
SODIUM	5000	1170	J								
THALLIUM	25	10.7	B								
VANADIUM	50	3.4	J								
ZINC	60	47.9	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

Appendix C

Chain-of-Custody Records

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

Case No: 35742

DAS No:

R

Region: 3 Project Code: E13-008-06-07-003 Account Code: CERCLIS ID: A3DH Site Name/State: Elkton Farms/MD Project Leader: Kevin Heym Action: Removal Action Sampling Co: Tetra Tech EM Inc.		Date Shipped: 9/13/2006 Carrier Name: FedEx Airbill: 6407 9942 9380 Shipped to: ChemTech Consulting Group (CHEMED) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900		Chain of Custody Record <table border="1"> <tr> <th>Relinquished By</th> <th>(Date / Time)</th> <th>Sampler Signature</th> <th>Received By</th> <th>(Date / Time)</th> </tr> <tr> <td>1. <i>[Signature]</i></td> <td>9/13/06 1500</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Relinquished By	(Date / Time)	Sampler Signature	Received By	(Date / Time)	1. <i>[Signature]</i>	9/13/06 1500				2					3					4				
Relinquished By	(Date / Time)	Sampler Signature	Received By	(Date / Time)																										
1. <i>[Signature]</i>	9/13/06 1500																													
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
MCT157	Surface Water/ Kevin Heym	L/G	Metals (7)	16 (HNO3), 17 (HNO3) (2)	001-SW01-A02	S: 9/13/2006 10:00	CT157	-

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: MCT157	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: Metals = Water-Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced?

TR Number: 3-071261521-091106-0001

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

35742

ASQAB USE ONLY	
RAS#	CT3758
DAS#	Analytical T/
NSF#	14
	7

Date: 8/30/2006		Site Activity: Fund Lead Removal	
Site Name: Elkton Farm Firehole		Street Address: : End of Zietler Road	
City: Elkton	State: MD	Latitude: : 39.62813 N	Longitude: 75.8477 W
Program: Superfund		CERCLIS #: MDN000306146	
Site ID:	Operable Unit:		
Site Specific QA Plan Submitted: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		Title: Elkton Farms SAP	
EPA Project Leader: CHARLES FITZSIMMONS		Phone#: 410-305-3027	Cell Phone #: 443-223-9774
Request Preparer: MARIAN MURPHY		Phone#: 610-364-2129	Cell Phone #: 267-446-2839
Site Leader: KEVIN HEYM		Phone#: 610-364-2146	Cell Phone #: 215-651-4022
Contractor: Tetra Tech EM Inc		EPA CO/PO: Lorrie Murray/Karen Wodarczyk	
#Samples 1	Matrix: water non potable	Parameter: TCL VOC & SVOC	Method: OLM04.3 25485, 25486
#Samples 1	Matrix: water non potable	Parameter: TAL Metals	Method: ILM05.3 ICPAES & Hg 25487
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
Ship Date From: 9/5/2006		Ship Date To: 9/6/2006	Inorg. Validation Level IM2
Unvalidated Data Requested: <input type="checkbox"/> No <input type="checkbox"/> Yes		If Yes, TAT Needed: <input type="checkbox"/> 24hrs <input type="checkbox"/> 48hrs <input type="checkbox"/> 72hrs <input type="checkbox"/> 7days	Other (Specify) 14 days 15/16
Validated Data Package Due: <input type="checkbox"/> 14 days <input type="checkbox"/> 21 days <input checked="" type="checkbox"/> 30days <input type="checkbox"/> 42 days <input type="checkbox"/> Other (Specify)		14/16-973 7/23	
Electronic Data Deliverables Required: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (EDDs will be provided in Region 3 EDD Format)			
Special Instructions : See Attached DLs needed			

CLP SOW ILM05.3 ICPAES Metals & Hg Units in ug/L

ANALYTE	CAS Number	CRDL
ALUMINUM	7429905	200
ANTIMONY	7440360	60
ARSENIC	7440382	10
BARIUM	7440393	200
BERYLLIUM	7440417	5
CADMIUM	7440439	5
CALCIUM	7440702	5000
CHROMIUM	7440473	10
COBALT	7440484	50
COPPER	7440508	25
IRON	7439896	100
LEAD	7439921	10
MAGNESIUM	7439954	5000
MANGANESE	7439965	15
MERCURY	7439976	0.2
NICKEL	7440020	40
POTASSIUM	7440097	5000
SELENIUM	7782492	35
SILVER	7440224	10
SODIUM	7440235	5000
THALLIUM	7440280	25
VANADIUM	7440622	50
ZINC	7440666	60

Appendix D

Laboratory Case Narrative

USEPA - CLP

COVER PAGE

Lab Name CHEMTECH CONSULTING GROUP Contract: 68-W0-2068Lab Code: CHEM Case No.: 35742 NRAS No.: _____ SDG No.: MCT157SOW No.: ILM05.3

EPA Sample No.

MCT157MCT157DMCT157S

Lab Sample ID

X4384-01X4384-02X4384-03

* ICP-AES ICP-MS

Were ICP-AES and ICP-MS interelement corrections applied? (Yes/No) YES _____Were ICP-AES and ICP-MS background corrections applied? (Yes/No) YES _____If yes, were raw data generated before application of background corrections? (Yes/No) NO _____

Comments:

THE "E" QUALIFIERS ON FORM I AND VIII FOR POTASSIUM AND ZINC INDICATE CHEMICAL OR PHYSICAL INTERFERENCE EFFECTS, WHICH WERE SUSPECTED DURING THOSE ELEMENTS' ANALYSES ONLY.

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: _____

Date: _____

Name: PARVEEN HASANTitle: EPA PROJECT MANAGER

CHEMTECH

**284 Sheffield Street
Mountainside, NJ 07092**

SDG NARRATIVE

USEPA

SDG # MCT157

CASE # 35742

CONTRACT # 68-W0-2068

LAB NAME: CHEMTECH CONSULTING GROUP

LAB CODE: CHEM

CHEMTECH PROJECT #X4384

A. Number of Samples and Date of Receipt

01 Water sample was delivered to the laboratory intact at 09/14/06.

B. Parameters

Test requested for Total Metals only.

C. Cooler Temp

Indicator Bottle: Presence/Absence

Cooler: 4°C

D. Detail Documentation (related to Sample Handling Shipping, Analytical Problem, Temp of Cooler etc):

E. Corrective Action taken for above:

F. Analytical Techniques:

All analyses were based on CLP Methodology by method ILM05.3

G. Calculation:

Conversion of results from mg/L to mg/kg (Dry Weight Basis):

$\text{Mg/Kg} = (\text{Result in mg/L}) \times 1000 \times 100 / \% \text{ Solid} \times \text{Fraction of Sample Amount Taken in Prep.}$

2

CHEMTECH


**284 Sheffield Street
Mountainside, NJ 07092**

G. QA/ QC

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. Spike sample did meet requirements except for Iron. Duplicate sample did meet requirements. Serial Dilution did meet requirements except for Potassium and Zinc.

I certify that the 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 data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Signature _____


9/20/08

Name: Parveen Hasan

Date _____

Title: EPA QA/QC OFFICER



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

DATE : September 29, 2006
SUBJECT: Region III Data QA Review
FROM : Khin-Cho Thaung *KCT*
Region III ESAT RPO (3EA21)
TO : Charles Fitzsimmons
Regional Project Manager (3HS31)

Attached is the organic data validation report for the Elkton Farms Firehole Site (Case #: 35742; SDG#: CT157) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2743.

Attachments

cc: Marian Murphy (Tetra Tech EMI)

TO File #: 0001 TDF#: 0934

ANALYTICAL SERVICES AND QUALITY ASSURANCE BRANCH



*Printed on 100% recycled/recyclable paper with 100% post-consumer fiber and process chlorine free.
Customer Service Hotline: 1-800-438-2474*

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: September 28, 2006

SUBJECT: Organic Data Validation (Level M2)
Site: Elkton Farm Firehole
Case: 35742 SDG: CT157

FROM: Kenneth W. Curry
Senior Data Reviewer

Mahboobeh Mecanic ^{an}
Senior Oversight Chemist

TO: Khin-Cho Thaung
ESAT Region 3 Project Officer

OVERVIEW

Case 35742, Sample Delivery Group (SDG) CT157, from the Elkton Farm Firehole site consisted of one (1) aqueous sample analyzed for volatile and semivolatile compounds by Mitkem Corporation (MITKEM). The samples were analyzed in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) SOM01.1 through the Routine Analytical Services (RAS) program.

SUMMARY

Validation of data was performed according to Innovative Approaches to Data Validation, 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 spectra and raw data.

MAJOR PROBLEM

- Response Factors (RFs) were less than 0.005 for 1,4-dioxane in the volatile initial and continuing calibrations associated with this sample. No positive results were reported for this compound. The quantitation limit for this compound was rejected and qualified "R" on the Data Summary Form (DSF).

NOTES

- No target compounds were detected in the analysis of this sample.
- Several compounds failed precision criteria [Percent Relative Standard Deviation (%RSD) and/or Percent Difference (%D)] in the initial and/or continuing calibrations. No positive results were reported for these compounds. No imprecisions exceeded the fifty percent criteria (%RSDs or %Ds >50%), therefore, no quantitation limits were qualified based on calibration outliers.

- Tentatively Identified Compounds (TICs) in the semivolatile fraction of this sample were reviewed and accepted during data validation. The TIC Form I for this sample is included in Appendix C.
- No target compounds were found in the analyses of storage and method blanks associated with this sample.

All data for Case 35742, SDG CT157, were reviewed in accordance with the National Functional Guidelines for Evaluating Organic Analyses with Modification for use within Region III.

ATTACHMENTS

- 1) Appendix A - Glossary of Data Qualifiers
- 2) Appendix B - Data Summary Forms
- 3) Appendix C - Tentatively Identified Compound (TIC) Form Is
- 3) Appendix D - Chain of Custody (COC) Records
- 4) Appendix E - Laboratory Case Narrative

DCN: 35742M2

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 4

Number of Soil Samples : 0

Number of Water Samples : 1

MITKEM

[illegible]

DATA SUMMARY FORM: Volatiles

Page 2 of 4

Case #: 35742

SDG : CT157

Site :

ELKTON FARM FIREHOLE

Lab. :

MITKEM

Sample Number :		CT157									
Sampling Location :		001-SW01-A02									
Field QC:											
Matrix :		Water									
Units :		ug/L									
Date Sampled :		9/13/2006									
Time Sampled :		10:00									
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										
Tetrachloroethane	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 4

Number of Soil Samples : 0

Number of Water Samples : 1

MITKEM

[illegible]

Page 4 of 4

MITKEM

[illegible]

Appendix C

TIC Form Is

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

EPA SAMPLE NO.

CT157

Lab Name: MITKEM CORPORATION Contract: EP-W-05-030
Lab Code: MITKEM Case No.: 35742 Mod. Ref No.: SDG No.: CT157
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1395-01B
Sample wt/vol: 1000 (g/mL) ML Lab File ID: S4B4210.D
Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT
% Moisture: Decanted: (Y/N) N Date Received: 09/14/2006
Concentrated Extract Volume: 1000 (uL) Date Extracted: 09/14/2006
Injection Volume: 2.0 (uL) GPC Factor: 1.00 Date Analyzed: 09/16/2006
GPC Cleanup: (Y/N) N pH: 6.3 Dilution Factor: 1.0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	526-73-8	Benzene, 1,2,3-trimethyl-	5.031	2.1	NJ
02	1599-67-3	1-Docosene	15.505	13	NJ
03	14811-95-1	1,19-Eicosadiene	16.261	2.4	NJ
04	27519-02-4	9-Tricosene, (Z)-	16.354	18	NJ
05	7683-64-9	Squalene	17.596	16	NJ
06	10191-41-0	Vitamin E	19.097	2.6	NJ
	E966796 ²	Total Alkanes	N/A	8.5	J

²EPA-designated Registry Number.

DO
9/29/06

Appendix D

Chain of Custody (COC) Records



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

Case No:

35742

DAS No:

R

Region: Project Code: Account Code: CERCLIS ID: Spill ID: Site Name/State: Project Leader: Action: Sampling Co:	3 E13-008-06-07-003 A3DH Elkton Farms/MID Kevin Heym Removal Action Tetra Tech EM Inc.	Date Shipped: Carrier Name: Airbill: Shipped to:	9/13/2006 FedEx 6407 9942 9391 Mitek Corporation 175 Metro Center Blvd. Warwick RI 02886 (401) 732-3400
Chain of Custody Record		Sampler Signature:	<i>[Signature]</i>
Relinquished By:		(Date / Time)	9/13/06 1509
2			
3			
4			

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	PRESERVATIVE/ BOTTLES	TAG No./	STATION LOCATION	SAMPLE COLLECT DATE/TIME	INORGANIC SAMPLE No.	QC Type
CT157	Surface Water/ Kevin Heym	L/G	W-VOA (7), WSV (7)	1 (HCL), 10 (Ice Only), 11 (Ice Only), 12 (Ice Only), 13 (Ice Only), 14 (Ice Only), 15 (Ice Only), 2 (HCL), 3 (HCL), 4 (HCL), 5 (HCL), 6 (HCL), 7 (HCL), 8 (HCL), 9 (HCL) (15)		001-SW01-A02	S: 9/13/2006 10:00	MCT157	-

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: CT157	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: W-VOA = Water-VOA, WSV = Water-TCL Semivolatile	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TR Number: 3-071261521-091106-0002

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

35742

ASQAB USE ONLY	
RAS#	CT3758
DAS#	Analytical T/
NSF#	44
	7

Date: 8/30/2006		Site Activity: Fund Lead Removal	
Site Name: Elkton Farm Firehole		Street Address: End of Zietler Road	
City: Elkton	State: MD	Latitude: 39.62813 N	Longitude: 75.8477 W
Program: Superfund		CERCLIS #: MDN000306146	
Site ID:		Operable Unit:	
Site Specific QA Plan Submitted: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		Title: Elkton Farms SAP	
EPA Project Leader: CHARLES FITZSIMMONS		Phone#: 410-305-3027	Cell Phone #: 443-223-9774
Request Preparer: MARIAN MURPHY		Phone#: 610-364-2129	Cell Phone #: 267-446-2839
Site Leader: KEVIN HEYM		Phone#: 610-364-2146	Cell Phone #: 215-651-4022
Contractor: Tetra Tech EM Inc		EPA CO/PO: Lorrie Murray/Karen Wodarczyk	
#Samples 1	Matrix: water non potable	Parameter: TCL VOC & SVOC	Method: OLM04.3 25485, 25486
#Samples 1	Matrix: water non potable	Parameter: TAL Metals	Method: ILM05.3 ICPAES & Hg 25487
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
Ship Date From: 9/5/2006		Ship Date To: 9/6/2006	Org. Validation Level M2
Unvalidated Data Requested: <input type="checkbox"/> No <input type="checkbox"/> Yes		If Yes, TAT Needed: <input type="checkbox"/> 24hrs <input type="checkbox"/> 48hrs <input type="checkbox"/> 72hrs <input type="checkbox"/> 7days	Inorg. Validation Level IM2
Validated Data Package Due: <input type="checkbox"/> 14 days <input type="checkbox"/> 21 days <input checked="" type="checkbox"/> 30days <input type="checkbox"/> 42 days <input type="checkbox"/> Other (Specify)		14/16-973 7/23	
Electronic Data Deliverables Required: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (EDDs will be provided in Region 3 EDD Format)			
Special Instructions : See Attached DLs needed			

CLP SOW OLM04.3 TCL VOC Compounds Needed, Units ug/L

Volatle Compound	CAS Number	DL	Volatle Compound	CAS Number	DL
Dichlorodifluoromethane	75718	10	Toluene	108883	10
Chloromethane	74873	10	trans-1,3-Dichloropropene	10061026	10
Vinyl Chloride	75014	10	1,1,2-Trichloroethane	79005	10
Bromomethane	74839	10	Tetrachloroethene	127184	10
Chloroethane	75003	10	2-Hexanone	591786	10
Trichlorofluoromethane	75694	10	Dibromochloromethane	124481	10
1,1-Dichloroethene	75354	10	1,2-Dibromoethane	106934	10
1,1,2-Trichloro-1,2,2-trifluoroethane	76131	10	Chlorobenzene	108907	10
Acetone	67641	10	Ethylbenzene	100414	10
Carbon Disulfide	75150	10	Xylenes (total)	1330207	10
Methyl Acetate	79209	10	Styrene	100425	10
Methylene Chloride	75092	10	Bromoform	75252	10
trans-1,2-Dichloroethene	156605	10	Isopropylbenzene	98828	10
tert-Butyl Methyl Ether	1634044	10	1,1,2,2-Tetrachloroethane	79345	10
1,1-Dichloroethane	75343	10	1,3-Dichlorobenzene	541731	10
cis-1,2-Dichloroethene	107062	10	1,4-Dichlorobenzene	106467	10
2-Butanone	78933	10	1,2-Dichlorobenzene	95501	10
Chloroform	67663	10	1,2-Dibromo-3-chloropropane	96128	10
1,1,1-Trichloroethane	71556	10	1,2,4-Trichlorobenzene	120821	10
Cyclohexane	110827	10			
Carbon Tetrachloride	56235	10			
Benzene	71432	10			
1,2-Dichloroethane	75343	10			
Trichloroethene	79016	10			
Methylcyclohexane	108872	10			
1,2-Dichloropropane	78875	10			
Bromodichloromethane	74975	10			
cis-1,3-Dichloropropene	10061015	10			
4-Methyl-2-pentanone	108101	10			

CLP SOW OLM04.3 TARGET COMPOUND LIST SEMIVOLATILE ORGANIC COMPOUNDS FOR WATER SAMPLES

Unit: in ug/L

Semivolatile Compound	CAS Number	CRQL
Benzaldehyde	100527	10
Phenol	108952	10
bis-(2-Chloroethyl) ether	111444	10
2-Chlorophenol	95578	10
2-Methylphenol	95487	10
2,2'-Oxybis(1-Chloropropane)	108601	10
Acetophenone	98862	10
4-Methylphenol	106445	10
N-Nitroso-di-n-propylamine	621647	10
Hexachloroethane	67721	10
Nitrobenzene	98953	10
Isophorone	78591	10
2-Nitrophenol	88755	10
2,4-Dimethylphenol	105679	10
bis(2-Chloroethoxy)methane	111911	10
2,4-Dichlorophenol	120832	10
Naphthalene	91203	10
4-Chloroaniline	106478	10
Hexachlorobutadiene	87683	10
Caprolactam	105602	10
4-Chloro-3-methylphenol	59507	10
2-Methylnaphthalene	91576	10
Hexachlorocyclopentadiene	77474	10
2,4,5-Trichlorophenol	95954	25
2,4,6-Trichlorophenol	88062	10
1,1'-Biphenyl	92524	10
2-Chloronaphthalene	91587	10
2-Nitroaniline	88744	25
Dimethylphthalate	131113	10
2,6-Dinitrotoluene	606202	10
Acenaphthylene	208968	10
3-Nitroaniline	99092	25
Acenaphthene	83329	10
2,4-Dinitrophenol	51285	25
4-Nitrophenol	100027	25
Dibenzofuran	132649	10

2,4-Dinitrotoluene	121142	10
Diethylphthalate	84662	10
Fluorene	86737	10
4-Chlorophenyl-phenyl ether	7005723	10
4-Nitroaniline	100016	25
4,6-Dinitro-2-methylphenol	534521	25
N-Nitrosodiphenylamine	86306	10
4-Bromophenyl-phenylether	101553	10
*Hexachlorobenzene	118741	10
Atrazine	1912249	10
*Pentachlorophenol	87865	25
Phenanthrene	85018	10
Anthracene	120127	10
Carbazole	86748	10
Di-n-butylphthalate	84742	10
Fluoranthene	206440	10
Pyrene	129000	10
Butylbenzylphthalate	85687	10
3,3'-Dichlorobenzidine	91941	10
Benzo(a)anthracene	56553	10
Chrysene	218019	10
bis(2-Ethylhexyl)phthalate	117817	10
Di-n-octylphthalate	117840	10
Benzo(b)fluoranthene	205992	10
Benzo(k)fluoranthene	207089	10
Benzo(a)pyrene	50328	10
Indeno(1,2,3-cd)pyrene	193395	10
Dibenzo(a,h)anthracene	53703	10
Benzo(g,h,i)perylene	191242	10

Appendix E

Laboratory Case Narrative



"Environmental Testing For The New Millennium"

September 20, 2006

Computer Sciences Corporation
2000 Edmund Halley Drive
Reston, VA 20191-3436

RE: EPA Case # 35742
SDG# CT157
Mitkem Lab Project # E1395

To Document Control Officer:

Enclosed is the data report for the samples associated with the above referenced project.
The analyses were performed under USEPA Contract # EP-W-05-030.

Please call if you have any questions regarding the submittal.

Sincerely,

A handwritten signature in cursive script that reads "Kin Chiu for ARN".

Agnes R. Ng
CLP Project Manager

SDG Narrative

Mitkem Corporation submits the enclosed data package in response to USEPA Case # 35742 and SDG# CT157. Analyses were performed for one aqueous sample that was received on September 14, 2006. The analyses were performed under USEPA Contract # EP-W-05-030. Please note that the sample-shipping cooler received was measured at 3°C.

The following samples are submitted in this data package:

<u>Client ID</u>	<u>Lab ID</u>	<u>Analysis</u>	<u>VOA pH</u>
CT157	E1351-01A	LV	<2
CT157	E1351-01B	S	

LV = Low level Volatiles

S = Semivolatiles

The analyses were performed using USEPA CLP Multi-Media, Multi-Concentration (SOM01.1) protocols. The analyses were performed with strict adherence to the SOW with the following exceptions and observations:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual integrations are coded to provide the data reviewer justification for such action. The codes are labeled on the ion chromatogram signal (GC/MS signal) and chromatogram for GC based analysis as follows:

- M1 peak tailing or fronting.
- M2 peak co-elution.
- M3 rising or falling baseline.
- M4 retention time shift.
- M5 miscellaneous – under this category, the justification is explained.

2. Trace Volatile Analysis:

Trap used for instrument V5: OI Analytical #10 trap containing 8 cm each of Tenax, silica gel and carbon molecular sieve.

GC column used: 30 m x 0.25 mm id (1.4 um film thickness) DB-624 capillary column.

cis-1,3-Dichloropropene-d4 was detected in method blanks and in samples at approximately 7.2 min. The volatile organic deuterated monitoring compound spike solution contains both the cis- and trans-1,3-dichloropropene isomers. cis-1,3-Dichloropropene-d4 is not a deuterated monitoring compound for SOM01.1, while the trans isomer is. The cis isomer is considered a laboratory artifact, and is not reported as a tentatively identified compound.

The following equation was used to calculate the concentration of target analytes for aqueous samples:

$$\text{Concentration } (\mu\text{g/L}) = \frac{(\text{Amt})(\text{DF})(\text{UF})(25)}{V_o}$$

where: Amt = CAL – AMT on raw data

DF = Dilution factor

UF = ng unit correction factor

V_o = Sample volume purged (mL)

DMC recoveries were within the QC limits.

Matrix spike and matrix spike duplicate were not performed as a sample was not designated for laboratory QC.

No manual integrations were performed.

For 1,4-dioxane and 1,4-dioxane-d8, the laboratory was unable to consistently meet the minimum average RRF of 0.0050 in both the initial calibration and calibration verifications. In our experience, this compound will not reliably achieve the SOM method performance criteria due to its high water solubility. This compound is able to be reliably analyzed as an extractable semivolatile organic compound.

No unusual observation was made for the analysis.

3. Semivolatile Analysis:

GC column: 30 m x 0.25 mm id (0.5 um film thickness) DB-5MS capillary column

The concentration of target analytes were determined for aqueous samples using the following equation:

$$\text{Concentration } (\mu\text{g/L}) = (\text{Amt})(\text{DF})(\text{Uf})\left(\frac{V_t}{V_i}\right)\left(\frac{1}{V_o}\right)$$

where: Amt = On- column amount

DF = Dilution Factor

Uf = GPC correction factor

V_t = final extract volume (μL)

V_i = volume injected (μL)

V_o = initial volume of sample extracted (mL)

Matrix spike and matrix spike duplicate were not performed for this SDG as laboratory QC was not designated.

No manual integrations were performed on any sample or QC sample.

No unusual observation was made for the analysis.

All of the submittals to the region are originals other than logbook pages. Photocopies of logbook pages are included, with the originals maintained on file at the laboratory.

Tunes, calibration verifications and initial calibrations that are shared among several cases are photocopies indicating the location of the originals.

I certify that this Sample Data Package is in compliance with the terms and condition of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy 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.

Kin Chin for ARN

Agnes Ng

CLP Project Manager

09/20/06

ALKANE NARRATIVE REPORT

Report Date: 09/20/2006

SDG: CT157

Client Sample ID: CT157

Lab Sample ID: E1395-01B

File ID: S4B4210.D

Compound	RT	Est. Conc.	Q
Cyclic Alkane	17.927	8.5	NJ



U.S. EPA REGION III
Analytical Services & Quality Assurance Branch
Environmental Science Center
701 Mapes Road
Fort Meade, Maryland 20755-5350



LABORATORY FINAL RESULTS

ELKTON FARM FIREHOLE

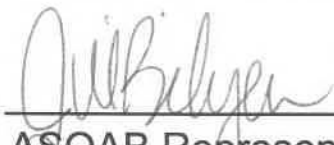
Lab Request # : REQ06261

Request Form : DAS R32568

Report prepared on: 09/05/2006

Site contact(s) : Charles Fitzsimmons (3HS31)
Kevin Heym

Approved for release:



ASQAB Representative

ASQAB Contact: Jill Bilyeu, Quality Assurance Officer
Phone: 410-305-2638
E-mail: Bilyeu.Jill@epa.gov

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE
 LAB REQUEST # REQ06261

SAMPLE DESCRIPTIONS

Sample #	Station	Description	Matrix	Type	End Collection	
					Date	Time
06081101	005SS06A01	005-SS06-A01	Soil	GRAB	08/09/2006	07:00
06081102	005SS07A01	005-SS07-A01	Soil	GRAB	08/09/2006	11:00

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06261

TESTS REQUESTED

ORGANICS

060811

01	02
X	X

Nitroaromatics and Nitramines by HPLC

(X = Test Requested)

USEPA Region III Analytical Services & Quality Assurance Branch

SITE NAME: ELKTON FARM FIREHOLE
LAB REQUEST #: REQ06261

QUALIFIER CODE AND GLOSSARY DEFINITIONS

Qualifier Codes Applied to Sample Results

- B Not detected substantially above (10 times) the level reported in the laboratory or field blanks (includes field, trip, reagent, and equipment blanks).
- C See report narrative for analyst's comments and observations concerning this result.
- E Value exceeds a theoretically greater value (e.g., dissolved>total, orthophosphate>total phosphorus). However, the difference is within the expected precision of the analytical techniques and is not statistically significant.
- I An interference exists which masks the true response. See report narrative for explanation.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- K The identification of the analyte is acceptable; the reported value may be biased high. The actual value is expected to be less than the reported value.
- L The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
- N There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
- NJ There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.
- NA Not analyzed - analysis not performed.
- NR Not requested - analysis not requested.
- R The presence or absence of the analyte can not be determined from the data due to severe quality control problems.
- T The data are rejected and considered unusable.
- T Tentatively Identified Compound. Identified as a result of a library search using the EPA/NIST Mass Spectral Library.
- Standards were not used to verify the identity and quantity of the compound. The reported value is an estimate.
- U The analyte was not detected at or above the quantitation limit.
- UJ The analyte was not detected at or above the quantitation limit. The quantitation limit is an estimate.
- UL The analyte was not detected. The quantitation limit is probably higher due to indications of a low bias.
- < Sample value below quantitation limit. Quantitation limit reported.

Qualifier Codes Applied to Quality Control Results

- A Quality control value is outside acceptance limits.
- D Sample and/or laboratory duplicate values are below the quantitation limit. No precision data reported.
- TD Spike recovery too dilute for accurate quantitation.

Qualifier Codes Applied to Microbiology Results

- < Less than.
- <= Less than or equal to.
- >= Greater than or equal to.
- > Greater than.

Glossary:

- () Numbers in parentheses are analytical spike recoveries (e.g., post-digestion spikes).
- [] Numbers in brackets are matrix spike recoveries (e.g., pre-digestion spikes).
- CFU Colony Forming Unit.
- ISF A prepared sample aliquot fortified with a known concentration of target analyte(s) or a representative subset of target analytes and analyzed. Its purpose is to determine whether the sample matrix contributes bias to the analytical results.
- LSF A sample aliquot fortified with a known concentration of analyte(s) or a representative subset of target analytes and carried throughout the entire lab method. It is analyzed to determine whether the sample matrix contributes bias to the analytical results.
- MS/MSD Matrix spike/matrix spike duplicate; a known increment of target analyte added to a sample before preparation or analyses.
- MSA Value obtained by Method of Standard Additions in which calibration standards are prepared in the sample matrix (see EPA method 200.9).
- RPD Relative Percent Difference (RPD) is used to measure precision when duplicates are analyzed.
- %Rec Percent Recovery (%Rec) is an expression of accuracy.

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06261

ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number: 06081101 06081102
Station ID: 005SS06A01 005SS07A01

SAMPLE

SAMPLE

Nitroaromatics and Nitramines by HPLC

4-Amino-2,6-dinitrotoluene	UL mg/Kg	UL mg/Kg
2-Amino-4,6-dinitrotoluene	UL mg/Kg	UL mg/Kg
1,3-Dinitrobenzene	UL mg/Kg	UL mg/Kg
Dinitrotoluene isomers (2,4- and 2,6-)	UL mg/Kg	UL mg/Kg
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	UL mg/Kg	UL mg/Kg
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	UL mg/Kg	UL mg/Kg
Nitrobenzene	UL mg/Kg	UL mg/Kg
2-Nitrotoluene	UL mg/Kg	UL mg/Kg
3-Nitrotoluene	UL mg/Kg	UL mg/Kg
4-Nitrotoluene	UL mg/Kg	UL mg/Kg
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	UL mg/Kg	UL mg/Kg
1,3,5-Trinitrobenzene	UL mg/Kg	UL mg/Kg
2,4,6-Trinitrotoluene	UL mg/Kg	UL mg/Kg

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06261

ORGANIC QUALITY CONTROL (SURROGATE RECOVERIES)

Matrix: SOLIDS

<u>SURROGATES</u>	SAMPLE NUMBER:	06081101	06081102
Nitroaromatics and Nitramines by HPLC	STATION ID:	005SS06A01	005SS07A01
1,2-Dinitrobenzene	<u>LIMITS</u>	<u>SAMPLE</u>	<u>SAMPLE</u>
	Range	% REC	% REC
	(70-130)	108	111

US EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST # : REQ06261

ORGANIC QUALITY CONTROL (MATRIX SPIKE RECOVERIES)

Matrix : SOLIDS

SAMPLE NUMBER : 06081102
STATION ID : 005SS07A01

ANALYTES

Nitroaromatics and Nitramines by HPLC

	Spike	Recovery	Recovery	RPD	Limit
	MS	MSD	Limits	RPD	Limit
4-Amino-2,6-Dinitrotoluene	116	122	(70-130)	5	25
2-Amino-4,6-Dinitrotoluene	104	112	(70-130)	8	25
1,3-Dinitrobenzene	115	118	(70-130)	2	25
Dinitrotoluene isomers (2,4- and 2,6-)	114	115	(70-130)	1	25
RDX	103	94	(70-130)	8	25
Tetryl	107	104	(60-130)	3	25
Nitrobenzene	119	113	(70-130)	5	25
2-Nitrotoluene	110	114	(70-130)	4	25
3-Nitrotoluene	112	116	(70-130)	4	25
4-Nitrotoluene	113	114	(70-130)	1	25
HMX	105	98	(60-130)	7	25
1,3,5-Trinitrobenzene	110	108	(70-130)	1	25
2,4,6-Trinitrotoluene	101	103	(70-130)	2	25

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #:REQ06261

ORGANIC LABORATORY REAGENT BLANK RESULTS

Nitroaromatics and Nitramines by HPLC

Date Prepared: AUG-12-2006

SURROGATES

1,2-Dinitrobenzene 101 % REC

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: **ELKTON FARM FIREHOLE**

LAB REQUEST #: **REQ06261**

SUPPLEMENTAL SAMPLE INFORMATION

Nitroaromatics and Nitramines by HPLC

SAMPLE #

**SAMPLE
NQL FACTOR**

06081101

1

06081102

1

NQL Factor is an overall correction factor applied to the method's Nominal Quantitation Limit to correct for analytical adjustments made during the analysis.

Nitroaromatic/Nitramine Analysis by HPLC

Analyst:

Jennifer Gundersen
Chemist

Method:

Two solid samples from ELKTON FARM FIREHOLE (REQ06261) were analyzed for nitroaromatic and nitramine explosives and related degradation products (SW-846 Method 8330 analytes). The samples were collected on August 9, 2006, extracted on August 12-13, 2006, and analyzed August 13-14, 2006. All samples were extracted and analyzed according to R3-QA221.1, a combined method based on SW-846 Methods 8000 and 8330.

Soil results are reported on an air-dried weight basis.

No target analytes were detected.

Quality Control:

The samples were held for a day prior to shipping, were warm on arrival at ESC and did not have an accompanying temperature blank, therefore all non-detect results were qualified "UL".

All surrogate recoveries were within acceptance limits.

Lab method blanks (LRBs) showed no contamination by target analytes.

**USEPA Region III
Office of Analytical Services and Quality Assurance (OASQA)
Nitroaromatic and Nitramine Analysis
Nominal Quantitation Limits (NQL)**

Units: Soil = mg/Kg

Actual Quantitation Limit = (NQL Factor) X NQL

CAS #	Compound	NQL
35572-78-2	2-Amino-4,6-dinitrotoluene (2-Am-DNT)	0.05
99-65-0	1,3-Dinitrobenzene (1,3-DNB)	0.05
121-14-2	2,4-Dinitrotoluene (2,4-DNT)	0.05
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.10
98-95-3	Nitrobenzene (NB)	0.05
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.10
99-35-4	1,3,5-Trinitrobenzene (1,3,5-TNB)	0.05
118-96-7	2,4,6-Trinitrotoluene (TNT)	0.05
1946-51-0	4-Amino-2,6-Dinitrotoluene (4-Am-DNT)	0.05
88-72-2	2-Nitrotoluene (2-NT)	0.05
99-08-1	3-Nitrotoluene (3-NT)	0.05
99-99-0	4-Nitrotoluene (4-NT)	0.05
479-45-8	Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	0.10
606-20-2	2,6-Dinitrotoluene (2,6-DNT)	0.05

The "Nominal Quantitation Limit" listed for each target compound is based on the Superfund CLP Protocol. The Actual Quantitation Limits are related to the NQLs by the NQL Factor. This NQL Factor reflects procedural steps, e.g., extract dilution, which influence quantitation limits.



USEPA Contract Laboratory Program
Generic Chain of Custody

DEB06261
FY06185

Reference Case
Client No:
SDG No:

32568
L

Date Shipped: 8/10/2006		Carrier Name: FedEx		Airbill: 6407 9942 8340		Shipped to: U.S. EPA Region III OAS/QA Lab Environmental Science Center 701 Mapes Road Ft. Meade MD 27055-5350	
Chain of Custody Record		Relinquished By		(Date / Time)		Sampler Signature: <i>Kevin Heym</i>	
1		<i>Kevin Heym</i>		8/10/06 1400		Received By <i>Kevin Heym</i> (Date / Time) 8/11/06 1330	
2							
3							
4							

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
005-SS06-A01	Soil (0"-12")/ Kevin Heym	L/C	NIT_ARO (14) 2 (1)	005-SS06-A01	005-SS06-A01	7:00 S: 8/9/2006	060811-01
005-SS07-A01	Soil (0"-12")/ Kevin Heym	L/C	NIT_ARO (14) 4 (1)	005-SS07-A01	005-SS07-A01	11:00 S: 8/9/2006	060811-02

Shipment for Case Complete 7N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: NIT_ARO = Nitroaromatics/Nitroamines	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <input type="checkbox"/>	Shipment Iced? <input type="checkbox"/>

TR Number: 3-071261521-080906-0001

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

LABORATORY COPY

F2V5.1.047 Page 1 of 1



TETRA TECH EM INC.

Marian Murphy
Memo to File Price Battery
Case R32568

August 18, 2006

**MEMO TO FILE
CASE R32568
Elkton Farms Firehole**

Attn: Pat Sosinski
U.S. EPA Region III OASQA Laboratory
Environmental Science Center
701 Mapes Road
Ft. Meade, MD 20755

Dear Ms. Sosinski:

This memo is written to correct the tag information on the jars sent for this case. The sampler switched the tags for the samples. The jar label information is correct. The tag information for sample 005-SS06-AO should read Tag number 2, station location 005-SS06-AO1, sampling date/time is 8/9/2006 at 07:00. The tag information for sample 005-SS07-AO should read Tag number 4, station location 005-SS07-AO1, sampling date/time is 8/9/2006 at 11:00. In addition the samples were refrigerated overnight prior to being packaged for shipment with blue ice.

Please note these changes.

Sincerely,

Marian Murphy
For Sampler Kevin Heym

cc: EPA OSC Charlie Fitzsimmons (3HS31)
START 3 TDD Files

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



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

DATE : September 7, 2006

SUBJECT: Region III Data QA Review

FROM : Khin-Cho Thaung *KCT*
Region III ESAT RPO (3EA21)

TO : Charles Fitzsimmons
Regional Project Manager (3HS31)

Attached is the inorganic data validation report for the Elkton Farms Firehole Site (Case #: 35641; SDG#: MCT144, MCT145) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2743.

Attachments

cc: Marian Murphy (Tetra Tech EMI)

TO File #: 0001 TDF#: 0863

ANALYTICAL SERVICES AND QUALITY ASSURANCE BRANCH



*Printed on 100% recycled/recyclable paper with 100% post-consumer fiber and process chlorine free.
Customer Service Hotline: 1-800-438-2474*

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 31, 2006

SUBJECT: Inorganic Data Validation (IM2 Level)
Case: 35641
SDGs: MCT144, MCT145
Site: Elkton Farms Firehole

FROM: Kenneth W. Curry *KW*
Inorganic Data Reviewer

Mahboobeh Mecanic *MM*
Senior Oversight Chemist

TO: Khin-Cho Thaung
ESAT Region 3 Project Officer

OVERVIEW

Case 35641, Sample Delivery Groups (SDGs) MCT144 and MCT145, from the Elkton Farms Firehole site consisted of two (2) soil samples analyzed for total metals by Bonner Analytical Testing Company (BONNER). The sample set contained no field Quality Control (QC) samples. The samples were analyzed according to Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.3. These same two (2) samples were also analyzed for Toxicity Characteristic Leaching Procedure (TCLP) followed by TCLP metals analysis. TCLP extraction was performed according to EPA Test Methods for Evaluating Solid Waste, SW-846 Method 1311. Leachates were analyzed for metals in accordance with EPA Test Methods for Evaluating Solid Waste, SW-846 Method 6010B and for mercury (Hg) in accordance with EPA Test Methods for Evaluating Solid Waste, SW-846 Method 7471. All samples were analyzed through the Routine Analytical Services (RAS) program.

SUMMARY

Data were validated according to Region III Modifications to the National Functional Guidelines for Inorganic Data Review, Level IM2. Areas of concern with respect to data usability are listed below.

Data for this case are impacted by outliers generated in laboratory blanks in addition to the matrix spike and ICP serial dilution analyses. Details regarding these outliers are discussed under "Major and Minor Problems". Qualified analytical results for all samples are summarized on a single Data Summary Form (DSF).

MAJOR PROBLEM

Matrix spike recovery was extremely low (<30%) for antimony (Sb) in SDG MCT144. Quantitation limits for this analyte in this SDG were rejected and qualified "R" on the DSF.

MINOR PROBLEMS

The preparation blank had a negative value greater than the absolute value of the Method Detection Limit (MDL) for arsenic (As) in SDG MCT145. Quantitation limits for this analyte may be biased low and have been qualified "UL" on the DSF.

Preparation Blanks had reported results greater than the MDLs for sodium (Na) in SDG MCT144 and for barium (Ba) and chromium (Cr) in SDG MCT145. Reported results for these analytes in affected samples which are less than or equal to five times ($\leq 5X$) the blank concentrations may be biased high and have been qualified "B" on the DSFs.

Matrix spike recovery was high ($>125\%$) for lead (Pb) in SDG MCT144. Positive results for this analyte may be biased high and have been qualified "K" on the DSF.

Matrix spike recovery was low ($<75\%$) for selenium (Se) in SDG MCT144. Quantitation limits for this analyte may be biased low and have been qualified "UL" on the DSF.

Percent Differences (%Ds) for the ICP serial dilution analysis were outside control limits ($>10\%$) for beryllium (Be) and zinc (Zn) in SDG MCT144. Reported results regarding these analytes in this SDG are estimated and have been qualified "J" on the DSF.

NOTES

Positive results detected between the MDL and Contract Required Quantitation Limit (CRQL) were qualified "J" on the DSF unless superseded by "B".

The sample cooler chest had an interior temperature of $11.0\text{ }^{\circ}\text{C}$ upon laboratory receipt. Due to the stability of metals no data were qualified based on this warm cooler chest temperature.

Laboratory duplicate results for copper (Cu) and manganese (Mn) in SDG MCT144 were outside the contractual control limit of $20\% \text{ RPD}, \pm \text{CRQL}$. However, the results for these analytes were within the control limit of $35\% \text{ RPD}, \pm 2X \text{ CRQL}$ utilized for data validation of soil samples in Region 3. No data were qualified based on this outlier.

Data for case 35641, SDGs MCT144 and MCT145, were reviewed in accordance with National Functional Guidelines for Evaluating Inorganic Analyses with Modification for use within Region III.

ATTACHMENTS

INFORMATION REGARDING REPORT CONTENT

Table 1A is a summary of qualifiers applied to the laboratory-generated results during data validation.

TABLE 1A	SUMMARY OF QUALIFIERS ON DATA SUMMARY FORMS AFTER DATA VALIDATION
TABLE 1B	CODES USED IN COMMENTS COLUMN OF TABLE 1A
APPENDIX A	GLOSSARY OF DATA QUALIFIER CODES
APPENDIX B	DATA SUMMARY FORMS
APPENDIX C	CHAIN OF CUSTODY (COC) RECORDS
APPENDIX D	LABORATORY CASE NARRATIVES

TABLE 1A
SUMMARY OF QUALIFIERS ON DATA SUMMARY
FORM AFTER DATA VALIDATION

CASE: 35641

SDG#: MCT144

<u>ANALYTE</u>	<u>SAMPLES AFFECTED</u>	<u>NON-</u> <u>POSITIVE DETECTED</u>		<u>BIAS</u>	<u>COMMENTS*</u>
		<u>VALUES</u>	<u>VALUES</u>		
Sb	MCT144, MCT145		R	Extr./ Low	MSE(13%)
Be	MCT144, MCT145	J			ISD(11%)
Pb	MCT144, MCT145	K		High	MSH(130%)
Se	MCT144, MCT145		UL	Low	MSL(49%)
Na	MCT144, MCT145	B		High	PB (37.125 J mg/Kg)
Zn	MCT144, MCT145	J			ISD(25%)

* See explanation of Comments on Table 1B.

TABLE 1A
SUMMARY OF QUALIFIERS ON DATA SUMMARY
FORM AFTER DATA VALIDATION

CASE: 35641

SDG#: MCT145

<u>ANALYTE</u>	<u>SAMPLES</u> <u>AFFECTED</u>	<u>POSITIVE</u> <u>VALUES</u>	<u>NON-</u> <u>DETECTED</u> <u>VALUES</u> UL	<u>BIAS</u> Low	<u>COMMENTS*</u>
As	MCT144, MCT145				PBN(-6.223 J µg/L)
Ba	MCT144	B		High	PB (125.062 J µg/L)
Cr	MCT144, MCT145	B		High	PB (0.522 J µg/L)

See explanation of Comments on Table 1B.

TABLE 1B
CODES USED IN COMMENTS COLUMN

MSE	=	Matrix spike recovery was extremely low (<30%) [% recovery is in parenthesis]. Quantitation limits are unusable.
PBN	=	A preparation blank had a negative result with an absolute value greater than the MDL (the result is in parenthesis). Quantitation limits may be biased low.
PB	=	The preparation blank had a result > MDL (the result is in parenthesis). Reported results which are less than five times (<5X) the blank concentration may be biased high.
ISD	=	Percent difference (%D) for the ICP serial dilution analysis exceeded the control limit (10%) [% recovery is in parenthesis]. Reported results are estimated.
MSH	=	Matrix spike recovery was high (>125%) [% recovery is in parenthesis]. Reported results may be biased high.
MSL	=	Matrix spike recovery was low (<75%) [% recovery is in parenthesis]. Quantitation limits may be biased low.

APPENDIX A
Glossary of Qualifier Codes

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of analytes):

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

Q = No analytical result.

APPENDIX B

Data Summary Forms

DATA SUMMARY FORM: INORGANIC

Page 1 of 2

Case #: 35641

SDG: MCT144

Number of Soil Samples: 2

Site:

ELKTON FARM FIREHOLE

Number of Water Samples: 0

Lab.:

BONNER

Sample Number :		MCT144		MCT145							
Sampling Location :		005-SS06-A01		005-SS07-A01							
Field QC:											
Matrix :		Soil		Soil							
Units :		mg/Kg		mg/Kg							
Date Sampled :		8/9/2006		8/9/2006							
Time Sampled :		07:00		11:00							
%Solids :		85.8		85.8							
Dilution Factor :		1.0		1.0							
DL											
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM 20	20	16800		12400							
ANTIMONY 6	6		IR		IR						
ARSENIC — 20	1	5.0		4.0							
BARIUM 20	20	726		59.5							
BERYLLIUM .5	0.5	0.70	J	0.56	J						
CADMIUM .5	0.5										
CALCIUM 500	500	932		720							
CHROMIUM 1	1	250		216							
COBALT — .5	5	5.9		5.6	J						
COPPER 2.5	2.5	3.8		10.5							
IRON 10	10	24300		20800							
LEAD 1	1	119	K	292	K						
MAGNESIUM 500	500	2360		1790							
MANGANESE 1	1	145		228							
MERCURY .1	0.1	0.087	J	0.064	J						
NICKEL 1	1	122		9.6							
POTASSIUM — 200	500	696		539	J						
SELENIUM 0.1	0.1		UL		UL						
SILVER .1	1										
SODIUM — 2.5	500	182	B	74.8	B						
THALLIUM — 20	2.5										
VANADIUM .5	5	39.5		30.6							
ZINC 6	6	30.7	J	25.7	J						

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 #: 35641

SDG : MCT145

Number of Soil Samples : 0

Site :

ELKTON FARM FIREHOLE

Number of Leachate Samples : 2

Lab. :

BONNER

Sample Number :		MCT144		MCT145							
Sampling Location :		005-SS06-A01		005-SS07-A01							
Field QC:											
Matrix :		Leachate		Leachate							
Units :		ug/L		ug/L							
Date Sampled :		8/9/2006		8/9/2006							
Time Sampled :		07:00		11:00							
Dilution Factor:		1.0		1.0							
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*ARSENIC	10		UL		UL						
*BARIUM	200	500	B	717							
*CADMIUM	5	0.62	J	0.73	J						
*CHROMIUM	10	0.64	B	0.76	B						
*LEAD	10	63.1		3780							
*MERCURY	0.2										
*SELENIUM	35										
*SILVER	10										

CRQL = Contract Required Quantitation Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

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

APPENDIX C

Chain of Custody (COC) Records



Inorganic Traffic Report & Chain of Custody Record

Case No: 35641
DAS No:

R

Region: 3	Date Shipped: 8/14/2006	Carrier Name: FedEx	Airbill: 6407 9942 8432	Shipped to: Bonner Analytical Testing 2703 Oak Grove Rd. Hattiesburg MS 49402 (601) 264-2854
Project Code: E13-008-06-07-003				
Account Code:				
CERCLIS ID:				
Spill ID: A3DH				
Site Name/State: Elkton Farms/MD				
Project Leader: Kevin Heym				
Action: Removal Action				
Sampling Co: Tetra Tech EM Inc.				

Chain of Custody Record	
Relinquished By	Signature: <i>Kevin Heym</i>
(Date / Time)	(Date / Time)
2	8/14/06 1400
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
MCT144	Soil (0"-12")/ Kevin Heym	L/C	TALM-TCLPM (14)	1 (1)	005-SS06-A01	S: 8/9/2006 7:00		
MCT145	Soil (0"-12")/ Kevin Heym	L/C	TALM-TCLPM (14)	3 (1)	005-SS07-A01	S: 8/9/2006 11:00		

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: TALM-TCLPM = CLP TAL Metals-TCLP Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TR Number: 3-071261521-081406-0001

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

ASO#	BU#	ONEX
TAS#	GI#	TAT
DAS#		7 days
NSI#		

35641

Date: 7/25/2006		Site Activity: Fund Lead Removal	
Site Name: Elkton Farms Firehole			
City: Elkton	State: MD	Latitude: 39.62813 N	Longitude: 75.8477 W
Program: Superfund		Acct. #: 2006 03N302DC6CA3DHRV00	
Site ID:		CERCLIS #: MDN000306146	
Spill ID: A3DH		Operable Unit: 4/25/06	
Site Specific QA Plan Submitted: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		Title: Elkton Farms SAP	
EPA Project Leader: CHARLES FITZSIMMONS		Phone #: 410-305-3027	Cell Phone #: 443-223-9774
Request Preparer: MARIAN MURPHY		Phone #: 610-364-2129	Cell Phone #: 267-446-2839
Site Leader: KEVIN HEYM		Phone #: 610-364-2146	Cell Phone #: 215-651-4022
Contractor: Tetra Tech EM Inc		EPA CO/PO: Lorrie Murray/Karen Wodarczyk	
#Samples 4	Matrix: soil	Parameter: TAL Metals	Method: ILM05.3 ICPAES & Hg 25414
#Samples 4	Matrix: soil	Parameter: TCLP Extraction	Method: SW-846-1311
#Samples 4	Matrix: leachate	Parameter: TCLP Metals on TCLP Extract	Method: ILM05.3 ICPAES 25415
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
Ship Date From: 8/1/2006		Ship Date To: 8/30/2006	Inorg. Validation Level IM2
Unvalidated Data Requested: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		If Yes, TAT Needed: <input type="checkbox"/> 24hrs <input type="checkbox"/> 48hrs <input type="checkbox"/> 72hrs <input type="checkbox"/> 7days <input checked="" type="checkbox"/> Other (Specify) 14	
Validated Data Package Due: <input type="checkbox"/> 14 days <input type="checkbox"/> 21 days <input checked="" type="checkbox"/> 30days <input type="checkbox"/> 42 days <input type="checkbox"/> Other (Specify)			
Electronic Data Deliverables Required: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (EDDs will be provided in Region 3 EDD Format)			
Special Instructions:			

Funding for MA

Anal_req_form

000090

Shannon Chadwell

From: Shannon Chadwell
Sent: Wednesday, August 16, 2006 10:25 AM
To: 'Charles Chan (cchan46@fedcsc.com)'
Cc: Chris Bonner
Subject: Region 3 | Case 35641 | Sample Receipt

Charles,

On 8/15/06 we received 2 soil samples under Fed Ex air bill number 6407 9942 8432. Custody seals were present and intact. Cooler temp was determined to be 11°C. Samples were in good condition except for the following discrepancies:

1. Cooler was received at an elevated temp. Please advise on how to proceed.
2. There was no cooler temp present in shipment.
3. We have no QC listed for SDG MCT144. We would like to choose sample MCT144 for QC.

Thanks,

Belinda Graham
Bonner Analytical
68W02067

Request for Quote (RFQ) for Modified Analysis

Date: May 31, 2006
Name of Contractor Laboratory:
Address of Contractor Laboratory:
Contract Number:
Delivery Order No.:

Subject: Modification Reference Number: 1368.0
Title: TCLP032906.0
Estimated Number of Field Samples: 1
Estimated Sampling Period: Week of 06/05/2006
Sample Matrix: Soil
Data Turnaround Requirements: 21 days
Fraction Affected: Metals and Mercury
Statement of Work: ILM05.3

Purpose:

The Contractor Laboratory is requested to perform the following modified analyses under the Inorganic Statement of Work (SOW) ILM05.3, based on the additional specifications listed below. Unless specifically modified by this modification, all analyses, Quality Control (QC), and reporting requirements specified in SOW ILM05.3 remain unchanged and in full force and effect. The number of samples requested in this modification is not guaranteed.

Please note that accepting a modified analysis request is voluntary, and that the Laboratory is not required to accept the modified analysis. There will be no adverse effect to the Laboratory for not accepting the modified analysis request. However, once the Laboratory accepts the request for modified analysis, it shall perform the analysis in accordance with this modification and as specified in SOW ILM05.3.

The Laboratory is requested to review the modification described herein, determine whether or not it shall accept the requested modified analyses, and complete the attached response form. The Laboratory shall provide comments in response to the required changes in the designated area, in order to ensure that the modified analysis can be completed in accordance with the specifications described herein.

The requirements in the RFQ are as stated and any defects will be assessed by SMO per the laboratory contract. The laboratory should take this into account when submitting their quote.

Notice to Contractors: Acceptance of Modified Analysis samples will not count against the monthly capacity.

Modification to the SOW Specifications:

The Laboratory shall extract samples for Metals and Mercury by Method SW-846 1311 [Toxicity Characteristic Leaching Procedure (TCLP)], as indicated on the Traffic Report/Chain of Custody Record.

The Laboratory shall digest the extracts by preparation methods HW1 or MW1, and analyze for Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, and Silver by ICP-AES.

- The Laboratory shall prepare the extracts by preparation methods CW1 [method CV], or analyze by method AV, and analyze for Mercury by CVAA.
- The Laboratory shall perform Matrix Spike at SOW specified levels.
- The Laboratory shall analyze the extraction blank as the preparation blank (PBW).
- The Laboratory shall report results as aqueous samples.
- The Laboratory shall provide raw data [laboratory bench sheets, logs, notebook pages] for the TCLP procedure. This includes the initial determination of percent solids, determination of extraction fluid, amount of liquid (if any) separated from solid phase, mass of solid material, and volume of extraction fluid used.

Reporting Requirements:

Hardcopy and electronic data reporting are required as specified per SOW ILM05.3. All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative. If specific problems occur with incorporation of the modified analysis into the hardcopy and/or electronic deliverable, the Laboratory shall contact the CCS Manager within the Sample Management Office (SMO) at (703) 818-4233 or via e-mail at WEBCCS@fedcsc.com for resolution.

All samples and/or fractions assigned to an SDG shall be analyzed under the same Modified Analysis requirements as established in this memorandum. The Laboratory shall not include data from multiple Modified Analyses in one SDG.

The Laboratory shall include the Modification Reference Number 1368.0 on each hardcopy data form under the "NRAS No:" header appearing on each form as well as the "NRAS No." field on the Record type 21 of the electronic deliverable (if diskette deliverable is required). The Laboratory shall also document the Modification Reference Number on the SDG Coversheet.

APPENDIX D

Laboratory Case Narrative

000001

Name: Bonner Analytical Testing Company Contract: 68W02067
Code: BONNER Case No: 35641 NRAS No.: 1368.0 SDG No: MCT144
V No.: ILM05.3

EPA Sample No.	Lab Sample ID
<u>MCT144</u>	<u>BT43799</u>
<u>MCT144D</u>	<u>BT43799D</u>
<u>MCT144S</u>	<u>BT43799S</u>
<u>MCT145</u>	<u>BT43800</u>

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

Comments: Beryllium and Zinc flagged as "E" estimated due to interferences found during the analysis of the Serial Dilution.

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: 

Name: Christopher M. Bonner

Date: 08-18-2006

Title: Inorganic Laboratory Manager

Bonner Analytical Testing Company

000002



2703 Oak Grove Road, Hattiesburg, MS 39402
Phone: (601) 264-2854 Fax: (601) 268-7084

SDG NARRATIVE:

SDG Number: MCT144

Case Number: 35641

Contract Number: 68W02067

Sample Receipt:

On 8/15/06 we received 2 soil samples under Fed Ex air bill number 6407 9942 8432. Custody seals were present and intact. Cooler temp was determined to be 11°C. Samples were in good condition except for the following discrepancies:

1. Cooler was received at an elevated temp. Please advise on how to proceed.
No resolution was received at this time.
2. There was no cooler temp present in shipment.
No resolution was received at this time.
3. We have no QC listed for SDG MCT144. We would like to choose sample MCT144 for QC.
No resolution was received at this time.

ICP-AES Metals

The analytical run began 8/17/2006 @ 0937 hrs. The matrix spike failed for Sb, Se and Pb; a post spike was analyzed at twice the indigenous level for Pb and at twice the CRQL for Sb and Se.

Mercury

The analytical run began 8/18/2006 @ 1542 hrs. The calibration curve failed; the instrument was recalibrated.

CSF

No Discrepancies

000003

Sample Equation:

Lab ID BT43799

EPA Sample # MCT144

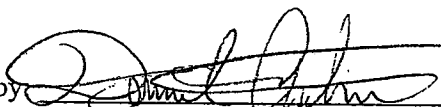
Date & Time 8/17/2006 @ 1052

Metals: 144432 $\mu\text{g/L}$ (0.100 L) 100 % 1000 g 1 mg
 (Analyte Al) * (1.00 g) 85.8 % 1 kg 1000 μg = 16800 $\frac{\text{mg}}{\text{kg}}$

Date & Time 8/18/2006 @ 1610

Hg: 0.1485 $\mu\text{g/L}$ (0.100 L) 100 % 1000 g 1 mg
 * (0.20 g) 85.8 % 1 kg 1000 μg = 0.987 $\frac{\text{mg}}{\text{kg}}$

Authorized by


 Daniel Antrim
 Quality Assurance Officer

000001

000000

000000

COVER PAGE

Lab Name: Bonner Analytical Testing Company Contract: 68W02067
Lab Code: BONNER Case No: 35641 NRAS No.: 1368.0 SDG No: MCT145
OW No.: ILM05.3

EPA Sample No.

Lab Sample ID

MCT144BT43801MCT144DBT43801DMCT144SBT43801SMCT145BT43802

ICP-AES ICP-MS

Are ICP-AES and ICP-MS interelement corrections
applied?

(Yes/No)

YESNOAre ICP-AES and ICP-MS background corrections
applied?

(Yes/No)

YESNOIf yes, were raw data generated before
application of background corrections?

(Yes/No)

NONO

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: Name: Christopher M. BonnerDate: 08-18-2006Title: Inorganic Laboratory Manager

000002

Bonner Analytical Testing Company



2703 Oak Grove Road, Hattiesburg, MS 39402
Phone: (601) 264-2854 Fax: (601) 268-7084

SDG NARRATIVE:

SDG Number: MCT145

Case Number: 35641

Contract Number: 68W02067

Sample Receipt:

On 8/15/06 we received 2 soil samples under Fed Ex air bill number 6407 9942 8432. Custody seals were present and intact. Cooler temp was determined to be 11°C. Samples were in good condition except for the following discrepancies:

1. Cooler was received at an elevated temp. Please advise on how to proceed.
No resolution was received at this time.
2. There was no cooler temp present in shipment.
No resolution was received at this time.
3. We have no QC listed for SDG MCT144. We would like to choose sample MCT144 for QC.
No resolution was received at this time.

ICP-AES Metals
No Discrepancies

Mercury

The analytical run began 8/17/2006 @ 1412 hrs. The calibration curve failed; the instrument was recalibrated. CRI02 failed; the CRI was reanalyzed.

CSF
No Discrepancies

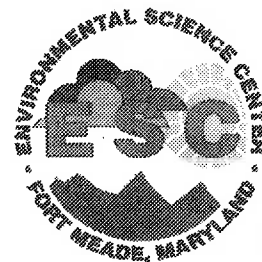
Sample Equation:

Lab ID BT43801 EPA Sample # MCT144
Date & Time 8/17/2006 @ 1534
Metals: 500.1 µg/L * 1 (Dilution Factor) = 500 µg/L
(Analyte Pb)
Date & Time 8/17/2006 @ 1437
Hg: 0.0210 µg/L * 1 (Dilution Factor) = 0.021 µg/L
(CRL rep)

Authorized by: Daniel Antrim
Daniel Antrim
Quality Assurance Officer



U.S. EPA REGION III
Analytical Services & Quality Assurance Branch
Environmental Science Center
701 Mapes Road
Fort Meade, Maryland 20755-5350



LABORATORY FINAL RESULTS

ELKTON FARM FIREHOLE

Lab Request # : REQ06225
Request Form : DAS R32533
Report prepared on: 07/14/2006
Site contact(s) : Charles Fitzsimmons (3HS31)
Matthew Kandefer

Approved for release:


ASQAB Representative

ASQAB Contact: Jill Bilyeu, Quality Assurance Officer
Phone: 410-305-2638
E-mail: Bilyeu.Jill@epa.gov

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST # REQ06225

SAMPLE DESCRIPTIONS

<u>Sample #</u>	<u>Station</u>	<u>Description</u>	<u>Matrix</u>	<u>Type</u>	<u>End Collection</u> <u>Date</u> <u>Time</u>
06061403	010PS01A01	010-PS01-A01	Soil	GRAB	06/12/2006 13:09

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06225

TESTS REQUESTED

ORGANICS	060614
Nitroaromatics and Nitramines by HPLC	03
	X

(X = Test Requested)

USEPA Region III Analytical Services & Quality Assurance Branch

SITE NAME: ELKTON FARM FIREHOLE
LAB REQUEST #: REQ06225

QUALIFIER CODE AND GLOSSARY DEFINITIONS

Qualifier Codes Applied to Sample Results

- B Not detected substantially above (10 times) the level reported in the laboratory or field blanks (includes field, trip, rinsate, and equipment blanks).
- C See report narrative for analyst's comments and observations concerning this result.
- E Value exceeds a theoretically greater value (e.g., dissolved>total, orthophosphate>total phosphorus). However, the difference is within the expected precision of the analytical techniques and is not statistically significant.
- I An interference exists which masks the true response. See report narrative for explanation.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- K The identification of the analyte is acceptable; the reported value may be biased high. The actual value is expected to be less than the reported value.
- L The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
- N There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
- NJ There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.
- NA Not analyzed - analysis not performed.
- NR Not requested - analysis not requested.
- R The presence or absence of the analyte can not be determined from the data due to severe quality control problems.
- T Tentatively Identified Compound. Identified as a result of a library search using the EPA/NIST Mass Spectral Library. Standards were not used to verify the identity and quantity of the compound. The reported value is an estimate.
- U The analyte was not detected at or above the quantitation limit.
- UJ The analyte was not detected at or above the quantitation limit. The quantitation limit is an estimate.
- UL The analyte was not detected. The quantitation limit is probably higher due to indications of a low bias.
- < Sample value below quantitation limit. Quantitation limit reported.

Qualifier Codes Applied to Quality Control Results

- A Quality control value is outside acceptance limits.
- D Sample and/or laboratory duplicate values are below the quantitation limit. No precision data reported.
- TD Spike recovery too dilute for accurate quantitation.

Qualifier Codes Applied to Microbiology Results

- < Less than.
- <= Less than or equal to.
- >= Greater than or equal to.
- > Greater than.

Glossary:

- () Numbers in parentheses are analytical spike recoveries (e.g., post-digestion spikes).
- [] Numbers in brackets are matrix spike recoveries (e.g., pre-digestion spikes).
- CFU Colony Forming Unit.
- ISF A prepared sample aliquot fortified with a known concentration of target analyte(s) or a representative subset of target analytes and analyzed. Its purpose is to determine whether the sample matrix contributes bias to the analytical results.
- LSF A sample aliquot fortified with a known concentration of analyte(s) or a representative subset of target analytes and carried throughout the entire lab method. It is analyzed to determine whether the sample matrix contributes bias to the analytical results.
- MS/MSD Matrix spike/matrix spike duplicate; a known increment of target analyte added to a sample before preparation or analyses.
- MSA Value obtained by Method of Standard Additions in which calibration standards are prepared in the sample matrix (see EPA method 200.9).
- RPD Relative Percent Difference (RPD) is used to measure precision when duplicates are analyzed.
- %Rec Percent Recovery (%Rec) is an expression of accuracy.

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE
 LAB REQUEST #: REQ06225

ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number: 06061403
 Station ID: 010PS01A01
 SAMPLE

Nitroaromatics and Nitramines by HPLC

4-Amino-2,6-dinitrotoluene	0.332	mg/Kg
2-Amino-4,6-dinitrotoluene	0.227	mg/Kg
Dinitrotoluene isomers (2,4- and 2,6-)	0.352	mg/Kg
1,3,5-Trinitrobenzene	0.021	J mg/Kg
2,4,6-Trinitrotoluene	0.374	J mg/Kg

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE
LAB REQUEST #: REQ06225

ORGANIC QUALITY CONTROL (SURROGATE RECOVERIES)

Matrix: SOLIDS

SAMPLE NUMBER: 06061403
STATION ID: 010PS01A01

SURROGATES

SAMPLE

LIMITS

% REC

Range

97

(70-130)

Nitroaromatics and Nitramines by HPLC

1,2-Dinitrobenzene

US EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST # : REQ06225

ORGANIC QUALITY CONTROL (MATRIX SPIKE RECOVERIES)

Matrix : SOLIDS

SAMPLE NUMBER : 06061403
STATION ID : 010PFS01A01

ANALYTES

Nitroaromatics and Nitramines by HPLC

4-Amino-2,6-Dinitrotoluene

2-Amino-4,6-Dinitrotoluene

1,3-Dinitrobenzene

Dinitrotoluene isomers (2,4- and 2,6-)

RDX

Tetryl

Nitrobenzene

2-Nitrotoluene

3-Nitrotoluene

4-Nitrotoluene

HMX

1,3,5-Trinitrobenzene

2,4,6-Trinitrotoluene

ANALYTES	Spike MS	Recovery MSD	Recovery Limits	RPD	Limit
	%	%	Range	RPD	Limit
	78	79	(70-130)	1	25
	73	81	(70-130)	11	25
	102	100	(70-130)	2	25
	104	104	(70-130)	0	25
	100	99	(70-130)	1	25
	106	101	(60-130)	5	25
	109	105	(70-130)	4	25
	104	102	(70-130)	2	25
	99	106	(70-130)	6	25
	107	101	(70-130)	6	25
	94	91	(60-130)	3	25
	104	100	(70-130)	4	25
	202 A	38 A	(70-130)	137 A	25

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06225

ORGANIC LABORATORY REAGENT BLANK RESULTS

Nitroaromatics and Nitramines by HPLC

Date Prepared: JUN-21-2006

SURROGATES

1,2-Dinitrobenzene

104

% REC

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: **ELKTON FARM FIREHOLE**

LAB REQUEST #: **REQ06225**

SUPPLEMENTAL SAMPLE INFORMATION

Nitroaromatics and Nitramines by HPLC

SAMPLE #

SAMPLE

NQL FACTOR

06061403

1

NQL Factor is an overall correction factor applied to the method's Nominal Quantitation Limit to correct for analytical adjustments made during the analysis.

Nitroaromatic/Nitramine Analysis by HPLC

Analyst:

Jennifer Gundersen
Chemist

Method:

One solid sample from ELKTON FARM FIREHOLE (REQ06225) was analyzed for nitroaromatic and nitramine explosives and related degradation products (SW-846 Method 8330 analytes). The sample was collected on June 12, 2006, extracted on June 20-22 2006, and analyzed June 21-26, 2006. All samples were extracted and analyzed according to R3-QA221.1, a combined method based on SW-846 Methods 8000 and 8330.

Soil results are reported on an air-dried weight basis.

In addition to the Method 8330 analytes, 3,5-dinitroaniline (3,5-DNA), a common degradation product of nitroaromatic explosives, was detected in the sample. Detection was based on comparison of retention time and a library spectrum of the authentic compound. No calibration was made and no quantitation was done. This result is included for the client's information only. Please contact the analyst if there are questions or if estimates of concentration are needed.

Quality Control:

Initial calibration and second source verification were within acceptance limits.

All continuing calibrations were within acceptance limits.

All surrogate recoveries were within acceptance limits.

Matrix spike and duplicate: Percent recovery for TNT was outside acceptance limits in the matrix spike and matrix spike duplicate. The relative percent difference (RPD) for TNT was outside acceptance limits. Outliers are the result of the high concentration of target analyte in the sample. Recoveries and RPD values outside of acceptance limits were qualified "A". All other MS/MSD results were within limits.

Lab method blanks (LRBs) showed no contamination by target analytes.

The result for 1,3,5-TNB was qualified "J" because the value was below calibration limits.

The result for TNT was qualified "J" because the recoveries and RPD in the MS/MSD samples were outside acceptance limits. This was likely due to sample heterogeneity.

USEPA Region III
Office of Analytical Services and Quality Assurance (OASQA)
Nitroaromatic and Nitramine Analysis
Nominal Quantitation Limits (NQL)

Units: Soil = mg/Kg

Actual Quantitation Limit = (NQL Factor) X NQL

CAS #	Compound	NQL
35572-78-2	2-Amino-4,6-dinitrotoluene (2-Am-DNT)	0.05
99-65-0	1,3-Dinitrobenzene (1,3-DNB)	0.05
121-14-2	2,4-Dinitrotoluene (2,4-DNT)	0.05
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.10
98-95-3	Nitrobenzene (NB)	0.05
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.10
99-35-4	1,3,5-Trinitrobenzene (1,3,5-TNB)	0.05
118-96-7	2,4,6-Trinitrotoluene (TNT)	0.05
1946-51-0	4-Amino-2,6-Dinitrotoluene (4-Am-DNT)	0.05
88-72-2	2-Nitrotoluene (2-NT)	0.05
99-08-1	3-Nitrotoluene (3-NT)	0.05
99-99-0	4-Nitrotoluene (4-NT)	0.05
479-45-8	Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	0.10
606-20-2	2,6-Dinitrotoluene (2,6-DNT)	0.05

The "Nominal Quantitation Limit" listed for each target compound is based on the Superfund CLP Protocol. The Actual Quantitation Limits are related to the NQLs by the NQL Factor. This NQL Factor reflects procedural steps, e.g., extract dilution, which influence quantitation limits.



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

Case No: 35434
DAS No: R32533
SDG No: L

Date Shipped: 6/13/2006		Carrier Name: FedEx		Airbill: 640799426819		Shipped to: Ft. Meade ASQAB 701 Mapes Rd. Ft. Meade MD 207555350 (410) 305-2667	
Chain of Custody Record				Sampler Signature: <i>[Signature]</i>			
Relinquished By		(Date / Time)		Received By		(Date / Time)	
1 MAT Kandefer		6/13/06 16:06		Matthew Egan		6/14/06 11:10	
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.	FOR LAB USE ONLY Sample Condition On Receipt
C20B0	Soil (>12")/ Matthew Kandefer	M/G	Nitro (14)	164 (Ice Only) (1)	010-PS01-A01	S: 6/12/2006 13:09	MC20B0	06061403

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: Nitro = Soil-Nitroaromatics	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? — Shipment Iced? —

TR Number: 3-073938891-061306-0003

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

LABORATORY COPY

ORIGIN ID: CYEA (810) 485-6410
SHIPPING
TETRA TECH EM INC
7 CREEK PARKWAY
SUITE 700
BOOTHWYN, PA 19061
UNITED STATES US

Ship Date: 13JUN06
Actual Wgt: 8.0 LB MAN
System#: 756666/CAFE2285
Account: S 243514405
Dimmed: 12x10x12 IN

TO PAT SOSINSKI

USEPA REGION 3
ENVIRONMENTAL SCIENCE CENTER
701 MAPES ROAD
FT. GEORGE MEADE, MD 207555350

(410) 305-3021

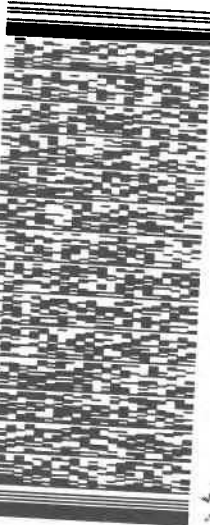
FedEx
Express



REF: 90030010610003



Delivery Address
Barcode



BILL SENDER

PRIORITY OVERNIGHT

TRK# 6407 9942 6819 0201

WED

Deliver By:
14JUN06

BWI AA

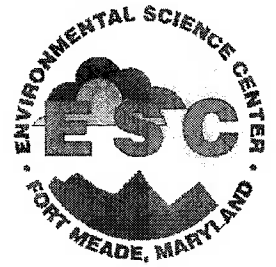
20755 -MD-US 18 ADWA



Part # 156148-434 NRIT 02-06



U.S. EPA REGION III
Analytical Services & Quality Assurance Branch
Environmental Science Center
701 Mapes Road
Fort Meade, Maryland 20755-5350



LABORATORY FINAL RESULTS

ELKTON FARM FIREHOLE

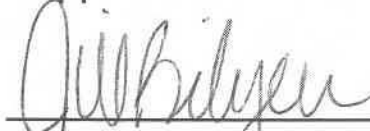
Lab Request # : REQ06210

Request Form : DAS R32504

Report prepared on: 06/15/2006

Site contact(s) : Charles Fitzsimmons (3HS31)
Matthew Kandefer

Approved for release:



ASQAB Representative

ASQAB Contact: Jill Bilyeu, Quality Assurance Officer
Phone: 410-305-2638
E-mail: Bilyeu.Jill@epa.gov

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06210

TESTS REQUESTED

INORGANICS		060530				
		01	02	03	04	05
Metals Analysis		X	X	X	X	X
INORGANICS		060605				
		40	41	42	43	
Metals Analysis		X	X	X	X	X

(X = Test Requested)

USEPA Region III Analytical Services & Quality Assurance Branch

SITE NAME: ELKTON FARM FIREHOLE
LAB REQUEST #: REQ06210

QUALIFIER CODE AND GLOSSARY DEFINITIONS

Qualifier Codes Applied to Sample Results

- B Not detected substantially above (10 times) the level reported in the laboratory or field blanks (includes field, trip, rinsate, and equipment blanks).
- C See report narrative for analyst's comments and observations concerning this result.
- E Value exceeds a theoretically greater value (e.g., dissolved>total, orthophosphate>total phosphorus). However, the difference is within the expected precision of the analytical techniques and is not statistically significant.
- I An interference exists which masks the true response. See report narrative for explanation.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- K The identification of the analyte is acceptable; the reported value may be biased high. The actual value is expected to be less than the reported value.
- L The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
- N There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
- NJ There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.
- NA Not analyzed - analysis not performed.
- NR Not requested - analysis not requested.
- R The presence or absence of the analyte can not be determined from the data due to severe quality control problems. The data are rejected and considered unusable.
- T Tentatively Identified Compound. Identified as a result of a library search using the EPA/NIST Mass Spectral Library. Standards were not used to verify the identity and quantity of the compound. The reported value is an estimate.
- U The analyte was not detected at or above the quantitation limit.
- UJ The analyte was not detected at or above the quantitation limit. The quantitation limit is an estimate.
- UL The analyte was not detected. The quantitation limit is probably higher due to indications of a low bias.
- < Sample value below quantitation limit. Quantitation limit reported.

Qualifier Codes Applied to Quality Control Results

- A Quality control value is outside acceptance limits.
- D Sample and/or laboratory duplicate values are below the quantitation limit. No precision data reported.
- TD Spike recovery too dilute for accurate quantitation.

Qualifier Codes Applied to Microbiology Results

- < Less than.
- <= Less than or equal to.
- >= Greater than or equal to.
- > Greater than.

Glossary:

- () Numbers in parentheses are analytical spike recoveries (e.g., post-digestion spikes).
- [] Numbers in brackets are matrix spike recoveries (e.g., pre-digestion spikes).
- CFU Colony Forming Unit.
- ISF A prepared sample aliquot fortified with a known concentration of target analyte(s) or a representative subset of target analytes and analyzed. Its purpose is to determine whether the sample matrix contributes bias to the analytical results.
- LSF A sample aliquot fortified with a known concentration of analyte(s) or a representative subset of target analytes and carried throughout the entire lab method. It is analyzed to determine whether the sample matrix contributes bias to the analytical results.
- MS/MSD Matrix spike/matrix spike duplicate; a known increment of target analyte added to a sample before preparation or analyses.
- MSA Value obtained by Method of Standard Additions in which calibration standards are prepared in the sample matrix (see EPA method 200.9).
- RPD Relative Percent Difference (RPD) is used to measure precision when duplicates are analyzed.
- %Rec Percent Recovery (%Rec) is an expression of accuracy.

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST # REQ06210

SAMPLE DESCRIPTIONS

<u>Sample #</u>	<u>Station</u>	<u>Description</u>	<u>Matrix</u>	<u>Type</u>	<u>End Collection</u>	
					<u>Date</u>	<u>Time</u>
06053001	007-AA01	007-AA01-A01	Filters	COMP	05/24/2006	16:42
06053002	007-AA02	007-AA02-A01	Filters	COMP	05/24/2006	16:43
06053003	007-AA03	007-AA03-A01	Filters	COMP	05/24/2006	16:44
06053004	007-AA04	007-AA04-A01	Filters	COMP	05/24/2006	16:40
06053005	007-AAFB	007-AAFB-A02	Filters	GRAB	05/24/2006	16:45
06060540	007-AA05	007-AA05-A02	Filters	COMP	06/01/2006	16:37
06060541	007-AA06	007-AA06-A02	Filters	COMP	06/01/2006	15:04
06060542	007-AAFB	007-AAFB-A02	Filters	GRAB	06/01/2006	16:55
06060543	007-AA08	007-AA08-A02	Filters	COMP	06/01/2006	16:40

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06210

INORGANIC ANALYTICAL SAMPLE RESULTS

SAMPLE NUMBER:

06053001

06053002

06053003

06053005

STATION ID:

007-AA01

007-AA02

007-AA03

007-AA04

007-AAFB

SAMPLE

SAMPLE

SAMPLE

SAMPLE

FIELD BLANK

Metals Analysis

Aluminum	5.41 ug/filter	37.8 ug/filter	0.62 ug/filter	<0.25 ug/filter
Antimony	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Arsenic	<0.12 ug/filter	<0.12 ug/filter	<0.12 ug/filter	<0.12 ug/filter
Barium	0.14 ug/filter	0.55 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Beryllium	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Cadmium	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Chromium	0.15 ug/filter	<0.10 ug/filter	0.40 ug/filter	<0.10 ug/filter
Cobalt	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Copper	<0.10 ug/filter	0.11 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Iron	9.9 ug/filter	56.5 ug/filter	<5.0 ug/filter	<5.0 ug/filter
Lead	<0.10 ug/filter	0.13 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Manganese	0.18 ug/filter	1.97 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Mercury			<0.2 C ug/filter	
Nickel	<0.10 ug/filter	0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Selenium	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Silver	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Thallium	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Vanadium	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter
Zinc	1.10 ug/filter	0.27 ug/filter	<0.10 ug/filter	<0.10 ug/filter

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06210

INORGANIC ANALYTICAL SAMPLE RESULTS

SAMPLE NUMBER:	06060540	06060541	06060542	06060543
STATION ID:	007-AA05	007-AA06	007-AAFB	007-AA08
	SAMPLE	SAMPLE	SAMPLE	SAMPLE

Metals Analysis

Aluminum	5.54 ug/filter	2.76 ug/filter	<0.12 ug/filter	
Antimony	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	
Arsenic	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	
Barium	0.19 ug/filter	0.15 ug/filter	<0.10 ug/filter	
Beryllium	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	
Cadmium	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	
Chromium	0.16 ug/filter	<0.12 ug/filter	0.71 ug/filter	
Cobalt	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	
Copper	<0.10 ug/filter	0.19 ug/filter	<0.10 ug/filter	
Iron		<0.10 ug/filter	<0.10 ug/filter	
Lead	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	
Manganese	0.22 ug/filter	0.19 ug/filter	<0.10 ug/filter	
Mercury				<0.2 C ug/filter
Nickel	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	
Selenium	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	
Silver	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	
Thallium	<0.10 ug/filter	<0.10 ug/filter	<0.10 ug/filter	
Vanadium	<0.12 ug/filter	<0.12 ug/filter	<0.12 ug/filter	
Zinc	0.15 ug/filter	0.95 ug/filter	0.74 ug/filter	

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06210

INORGANIC QUALITY CONTROL RESULTS

SAMPLE NUMBER:

06053004

06060543

STATION ID:

007-AA04

007-AA08

Units:

% REC

RPD

% REC

RPD

Metals Analysis

Mercury

[] = LSF

() = ISF

[108]

D

[106]

D

Metals Determinations

Analysts:

R.L. Costas
Chemist

J.R. Dorsey
Chemist

Methods:

Filter samples from ELKTON FARMS FIREHOLE (REQ06210) were prepared for analyses by acid digestion and analyzed inductively coupled plasma-mass spectrometry (ICP-MS) on 05/31/2006 and 6/06/2006. The sample results, reported as $\mu\text{g}/\text{filter}$ are presented in the attached table. In addition, a summary of the sample results, reported as $\mu\text{g}/\text{m}^3$, is provided in the tables below. The following are the digestion, analytical techniques, and methods employed:

Digestion Methods

EPA Method 200.2 ⁽¹⁾, NIOSH Method 7300 ⁽²⁾, and Internal SOP R3-QA155.3.

Digestion and Analytical Methods

EPA Method 200.8 ⁽¹⁾, analysis by ICP-MS, NIOSH Method 7300 ⁽²⁾, Internal SOP R3-QA116.2.

⁽¹⁾ EPA Methods for the Determination of Metals in Environmental Samples, May 1994.

⁽²⁾ NIOSH Manual of Analytical Methods (NMAM), Fourth Edition

NOTES:

Because of the nature of filter sample analysis, the samples are digested whole, therefore predigestion matrix spike and method duplicate analyses are not applicable. Client supplied clean filters were used as duplicate fortified samples to demonstrate the precision and accuracy of the employed methods and unfortified blank filters were used to determine background levels. These results were subtracted from all samples are listed in the tables below. Analyses of all filter QC samples yielded acceptable results.

ATTACHMENT: $\mu\text{g}/\text{m}^3$ Results Table

$\mu\text{g}/\text{m}^3$ Results Table

Analyzed 5/31/2006	Blank filter results	007-AA01 06053001	007-AA02 06053002	007-AA03 06053003
	($\mu\text{g}/\text{filter}$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
Aluminum	0.09	4.36	29.9	0.50
Antimony	0	<0.08	<0.08	<0.08
Arsenic	0.03	<0.10	<0.10	<0.10
Barium	0.04	0.11	0.44	<0.08
Beryllium	0	<0.08	<0.08	<0.08
Cadmium	0	<0.08	<0.08	<0.08
Chromium	2.15	0.12	<0.08	0.32
Cobalt	0	<0.08	<0.08	<0.08
Copper	0.13	<0.08	0.09	<0.08
Iron	0	8.0	44.8	<4.0
Lead	0.01	<0.08	0.10	<0.08
Manganese	0.01	0.14	1.56	<0.08
Nickel	0.03	<0.08	0.08	<0.08
Selenium	0.01	<0.08	<0.08	<0.08
Silver	0	<0.08	<0.08	<0.08
Thallium	0	<0.08	<0.08	<0.08
Vanadium	0	<0.08	<0.08	<0.08
Zinc	0.19	0.89	0.22	<0.08

Analyzed 6/06/2006	Blank filter results	007-AA05 06060540	007-AA06 06060541
	($\mu\text{g}/\text{filter}$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
Aluminum	0.16	4.41	2.74
Antimony	0	<0.10	<0.10
Arsenic	0	<0.10	<0.10
Barium	0.04	0.15	0.15
Beryllium	0	<0.10	<0.10
Cadmium	0	<0.10	<0.10
Chromium	1.66	0.13	<0.12
Cobalt	0	<0.10	<0.10
Copper	0.14	<0.10	0.19
Iron	0	<0.10	<0.10
Lead	0.02	<0.10	<0.10
Manganese	0.01	0.18	0.19
Nickel	0.04	<0.10	<0.10
Selenium	0	<0.10	<0.10
Silver	0	<0.10	<0.10
Thallium	0	<0.10	<0.10
Vanadium	0	0.13	<0.12
Zinc	0.12	0.12	0.94

Mercury Determinations

Analyst:

S. Greco
Chemist

Samples from ELKTON FARM FIREHOLE (REQ06210), prepared on 06/07/2006 with the instrument run dated 06/08/2006, were analyzed for total mercury using U.S. EPA ERT modified NIOSH Method 6009, NIOSH Method 6009 Issue 2 and Internal SOP: R3-QA131.7.

The sample results, reported as $\mu\text{g}/\text{filter}$ are presented in the attached table. In addition, a summary of the sample results, reported as $\mu\text{g}/\text{m}^3$, is provided in the tables below.

$\mu\text{g}/\text{m}^3$ Results Table			
Analyzed	Blank filter		
6/08/2006	results	007-AA04	007-AA08
		06053004	06060543
	($\mu\text{g}/\text{filter}$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
Mercury	0	<0.2	<0.2



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

Case No:
DAS No:
SDG No:

R32504

L

Date Shipped:	6/1/2006	Chain of Custody Record		Sampler Signature:	
Carrier Name:	FedEx	Relinquished By	(Date / Time)	Received By	(Date / Time)
Airbill:	640799426510	1	6/1/06 1430	6/1/06 6206	
Shipped to:	Ft. Meade ASQAB	2			12:00
	701 Mapes Rd.	3			
	Ft. Meade MD 207555350	4			
	(410) 305-2667				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY SAMPLE No. <i>1008</i> ORGANIC Sample Confidit on On Receipt
MC20A6	Ambient Air/ Matthew Kandefer	L/G	TM (No Hg) (7)	150 (Not preserved) (1)	007-AA05-A02	S: 6/1/2006 E: 6/1/2006	1254 Ltrs 060605-40
MC20A7	Ambient Air/ Matthew Kandefer	L/G	TM (No Hg) (7)	151 (Not preserved) (1)	007-AA06-A02	S: 6/1/2006 E: 6/1/2006	1008 Ltrs -41
MC20A8	Ambient Air/ Matthew Kandefer	L/G	TM (No Hg) (7)	152 (Not preserved) (1)	007-AAFB-A02	S: 6/1/2006 E: 6/1/2006	0 Ltrs -42
MC20A9	Ambient Air/ Matthew Kandefer	L/G	Hg (7)	153 (Not preserved) (1)	007-AA08-A02	S: 6/1/2006 E: 6/1/2006	99.89 Ltrs -43

Shipment for Case Complete ?N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: Hg = Mercury, TM (No Hg) = CLP TAL Total Metals (No Hg)	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? <input type="checkbox"/> Shipment Iced? <input type="checkbox"/>

TR Number: 3-073938891-060106-0001

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

LABORATORY COPY

F2V5.1.047 Page 1 of 1



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

Case No:	R32504	L
DAS No:		
SDG No:		
For Lab Use Only		
Lab Contract No:		
Unit Price:		
Transfer To:		
Lab Contract No:		
Unit Price:		

Date Shipped:	5/25/2006	Sampler Signature:	<i>[Signature]</i>
Carrier Name:	FedEx	Received By:	<i>[Signature]</i>
Airbill:	640799426326	(Date / Time)	5/25/06 1330
Shipped to:	Ft. Meade ASQAB 701 Mapes Rd. Ft. Meade MD 207555350 (410) 305-2667		

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY SAMPLE No. SAMPLE Volume
MC20A1	Ambient Air/ Matthew Kandefer	L/G	TM (No Hg) (7)	145 (Not preserved) (1)	007-AA01-A01	S: 5/24/2006 E: 5/24/2006	1240 L.t.u.s 06053001
MC20A2	Ambient Air/ Matthew Kandefer	L/G	TM (No Hg) (7)	146 (Not preserved) (1)	007-AA02-A01	S: 5/24/2006 E: 5/24/2006	1262 L.t.u.s 02
MC20A3	Ambient Air/ Matthew Kandefer	L/G	TM (No Hg) (7)	147 (Not preserved) (1)	007-AA03-A01	S: 5/24/2006 E: 5/24/2006	1257 L.t.u.s 03
MC20A4	Ambient Air/ Matthew Kandefer	L/G	Hg (7)	148 (Not preserved) (1)	007-AA04-A01	S: 5/24/2006 E: 5/24/2006	84.8 L.t.u.s 04
MC20A5	Ambient Air/ Matthew Kandefer	L/G	TM (No Hg) (7)	149 (Not preserved) (1)	007-AA05-A01	S: 5/24/2006	0 L.t.u.s 05

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: Hg = Mercury, TM (No Hg) = CLP TAL Total Metals (No Hg)	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? <input type="checkbox"/> Shipment Iced? <input type="checkbox"/>

TR Number: 3-073938891-052506-0001

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

LABORATORY COPY

ORIGIN ID: CYER (610) 485-6410
SHIPPING
TETRA TECH EM INC
7 CREEK PARKWAY
SUITE 700
BOOTHWYN, PA 19061
UNITED STATES US

Ship Date: 25MAY06
Actual Wgt: 3.0 LB MAN
System#: 755666/CARE2285
Account: 5244514405
Dimmed: 11XBx12 IN

TO ASOAB SAMPLE RECEIVING

USEPA REGION 3

ENVIRONMENTAL SCIENCE CENTER
701 MAPES ROAD

FT. GEORGE MEADE, MD 207555350

(410) 305-3021

FedEx
Express



REF: 98030018518003



Delivery Address
Barcode

BILL SENDER

PRIORITY OVERNIGHT

TRK# 6407 9942 6326 Form 0201

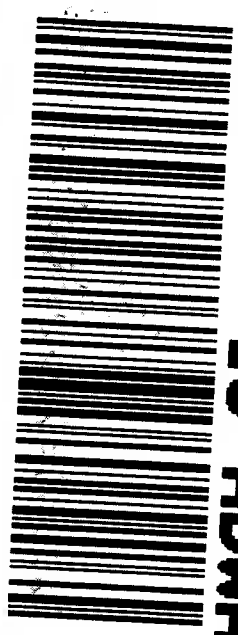
20755 -MD-US

18 ADWA

BWI AA

FRI

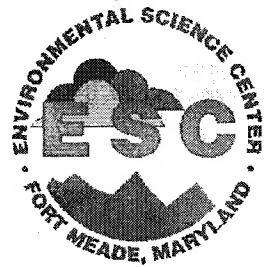
Deliver By: 26MAY06



Part # 156148-434 NRIT 02-06



U.S. EPA REGION III
Analytical Services & Quality Assurance Branch
Environmental Science Center
701 Mapes Road
Fort Meade, Maryland 20755-5350



LABORATORY FINAL RESULTS

ELKTON FARM FIREHOLE


Lab Request # : REQ06127

Request Form : DAS R32433

Report prepared on: 03/23/2006

Site contact(s) : Charles Fitzsimmons (3HS31)
Matt Kandefer

Approved for release:


ASQAB Representative

ASQAB Contact: Jill Bilyeu, Quality Assurance Officer
Phone: 410-305-2638
E-mail: Bilyeu.Jill@epa.gov

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06127

TESTS REQUESTED

INORGANICS									
060224									
Metals Analysis	75	76	77	78	79				
	X	X	X	X	X				
Percent Dry Weight	X	X	X	X	X				
TCLP Extraction for Metals Analysis	X	X	X	X	X				
INORGANICS									
060228									
Metals Analysis	15								
	X								
Percent Dry Weight	X								
TCLP Extraction for Metals Analysis	X								
ORGANICS									
060224									
Nitroaromatics and Nitramines by HPLC	75	76	77	78	79				
	X	X	X	X	X				
ORGANICS									
060228									
Nitroaromatics and Nitramines by HPLC	15								
	X								

(X = Test Requested)

USEPA Region III Analytical Services & Quality Assurance Branch

SITE NAME: ELKTON FARM FIREHOLE
LAB REQUEST #: REQ06127

QUALIFIER CODE AND GLOSSARY DEFINITIONS

Qualifier Codes Applied to Sample Results

- B Not detected substantially above (10 times) the level reported in the laboratory or field blanks (includes field, trip, rinsate, and equipment blanks).
- C See report narrative for analyst's comments and observations concerning this result.
- E Value exceeds a theoretically greater value (e.g., dissolved total, orthophosphate total phosphorus). However, the difference is within the expected precision of the analytical techniques and is not statistically significant.
- I An interference exists which masks the true response. See report narrative for explanation.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- K The identification of the analyte is acceptable; the reported value may be biased high. The actual value is expected to be less than the reported value.
- L The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
- N There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
- NJ There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.
- NA Not analyzed - analysis not performed.
- NR Not requested - analysis not requested.
- R The presence or absence of the analyte can not be determined from the data due to severe quality control problems.
- T Tentatively Identified Compound. Identified as a result of a library search using the EPA/NIST Mass Spectral Library. Standards were not used to verify the identity and quantity of the compound. The reported value is an estimate.
- U The analyte was not detected at or above the quantitation limit.
- UJ The analyte was not detected at or above the quantitation limit. The quantitation limit is an estimate.
- UL The analyte was not detected. The quantitation limit is probably higher due to indications of a low bias.
- < Sample value below quantitation limit. Quantitation limit reported.

Qualifier Codes Applied to Quality Control Results

- A Quality control value is outside acceptance limits.
- D Sample and/or laboratory duplicate values are below the quantitation limit. No precision data reported.
- TD Spike recovery too dilute for accurate quantitation.

Qualifier Codes Applied to Microbiology Results

- < Less than.
- <= Less than or equal to.
- >= Greater than or equal to.
- > Greater than.

Glossary:

- () Numbers in parentheses are analytical spike recoveries (e.g., post-digestion spikes).
- [] Numbers in brackets are matrix spike recoveries (e.g., pre-digestion spikes).
- CFU Colony Forming Unit.
- ISF A prepared sample aliquot fortified with a known concentration of target analyte(s) or a representative subset of target analytes and analyzed. Its purpose is to determine whether the sample matrix contributes bias to the analytical results.
- LSF A sample aliquot fortified with a known concentration of analyte(s) or a representative subset of target analytes and carried throughout the entire lab method. It is analyzed to determine whether the sample matrix contributes bias to the analytical results.
- MS/MSD Matrix spike/matrix spike duplicate; a known increment of target analyte added to a sample before preparation or analyses.
- MSA Value obtained by Method of Standard Additions in which calibration standards are prepared in the sample matrix (see EPA method 200.9).
- RPD Relative Percent Difference (RPD) is used to measure precision when duplicates are analyzed.
- %Rec Percent Recovery (%Rec) is an expression of accuracy.

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST # REQ06127

SAMPLE DESCRIPTIONS

<u>Sample #</u>	<u>Station</u>	<u>Description</u>	<u>Matrix</u>	<u>Type</u>	<u>End Collection Date Time</u>
06022475	003SS05A01	003-SS05-A01	Soil	GRAB	02/21/2006 11:45
06022476	003SS15A01	003-SS15-A01	Soil	GRAB	02/21/2006 15:10
06022477	003SS17A01	003-SS17-A01	Soil	GRAB	02/21/2006 15:30
06022478	003SS18A01	003-SS18-A01	Soil	GRAB	02/21/2006 15:40
06022479	005SS01A01	005-SS01-A01	Soil	GRAB	02/21/2006 12:00
06022815	005SS02A01	005-SS02-A01	Soil	GRAB	02/24/2006 14:00

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06127

INORGANIC ANALYTICAL SAMPLE RESULTS

SAMPLE NUMBER:

06022475

06022476

06022477

06022479

STATION ID:

003SS05A01

003SS15A01

003SS17A01

003SS18A01

005SS01A01

Metals Analysis

Aluminum	10600 ug/g	9340 ug/g	11000 ug/g	10100 ug/g	9720 ug/g
Antimony	<6.0 ug/g	<6.0 ug/g	55.6 ug/g	<6.0 ug/g	<6.0 ug/g
Arsenic	<20.0 ug/g	<20.0 ug/g	<20.0 ug/g	<20.0 ug/g	<20.0 ug/g
Barium	339 ug/g	268 ug/g	1460 ug/g	147 ug/g	69.3 ug/g
Beryllium	0.7 ug/g	0.7 ug/g	<0.5 ug/g	0.7 ug/g	<0.5 ug/g
Cadmium	2.5 ug/g	10.2 ug/g	110 ug/g	3.0 ug/g	<0.5 ug/g
Calcium	1890 J ug/g	1310 ug/g	3880 ug/g	1050 ug/g	1010 ug/g
Chromium	21.0 ug/g	19.4 ug/g	24.8 ug/g	19.5 ug/g	17.1 ug/g
Cobalt	6.1 ug/g	7.3 ug/g	9.9 ug/g	7.4 ug/g	5.1 ug/g
Copper	49.3 ug/g	92.2 ug/g	21400 ug/g	90.1 J ug/g	38.6 ug/g
Iron	15400 ug/g	15400 ug/g	31600 ug/g	15400 ug/g	13400 ug/g
Lead	42.2 ug/g	101 ug/g	1560 ug/g	45.0 ug/g	12.0 ug/g
Magnesium	3550 J ug/g	2460 ug/g	8960 ug/g	2560 ug/g	943 ug/g
Manganese	321 J ug/g	372 ug/g	488 ug/g	357 ug/g	203 ug/g
Mercury	0.1 ug/g	0.2 ug/g	1.7 ug/g	0.3 ug/g	<0.1 ug/g
Nickel	31.3 ug/g	24.5 ug/g	136 ug/g	26.8 ug/g	5.4 ug/g
Potassium	480 ug/g	446 ug/g	300 ug/g	690 ug/g	374 ug/g
Selenium	<20.0 ug/g	<20.0 ug/g	<20.0 ug/g	<20.0 ug/g	<20.0 ug/g
Silver	<1.0 ug/g	127 ug/g	2.0 ug/g	<1.0 ug/g	<1.0 ug/g
Sodium	<200 ug/g	<200 ug/g	<200 ug/g	<200 ug/g	<200 ug/g
Thallium	<20.0 J ug/g	<20.0 ug/g	<100 ug/g	<20.0 ug/g	<20.0 ug/g

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06127

INORGANIC ANALYTICAL SAMPLE RESULTS

SAMPLE NUMBER: 06022815
STATION ID: 005SS02A01

SAMPLE

Metals Analysis

Aluminum	7300 ug/g
Antimony	<6.0 ug/g
Arsenic	<20.0 ug/g
Barium	48.6 ug/g
Beryllium	<0.5 ug/g
Cadmium	<0.5 ug/g
Calcium	586 ug/g
Chromium	125 J ug/g
Cobalt	<5.0 ug/g
Copper	708 ug/g
Iron	12100 ug/g
Lead	134 ug/g
Magnesium	722 ug/g
Manganese	103 J ug/g
Mercury	<0.1 ug/g
Nickel	37.0 J ug/g
Potassium	256 ug/g
Selenium	<20.0 ug/g
Silver	<1.0 ug/g
Sodium	<200 ug/g
Thallium	<20.0 ug/g

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06127

INORGANIC ANALYTICAL SAMPLE RESULTS

SAMPLE NUMBER:

06022475

06022476

06022477

06022478

06022479

STATION ID:

003SS05A01

003SS15A01

003SS17A01

003SS18A01

005SS01A01

SAMPLE

SAMPLE

SAMPLE

SAMPLE

SAMPLE

Metals Analysis

Vanadium

26.1 ug/g

23.2 ug/g

15.6 ug/g

25.7 ug/g

26.0 ug/g

Zinc

752 ug/g

1420 ug/g

33800 J ug/g

300 ug/g

28.5 ug/g

Percent Dry Weight

Percent Dry Weight (60C)

80.1 %

69.8 %

71.4 %

71.4 %

77.9 %

TCLP Extraction for Metals Analysis

Arsenic TCLP

<800 ug/L

<800 ug/L

<800 ug/L

<800 ug/L

<800 ug/L

Barium TCLP

4260 ug/L

1830 ug/L

2190 ug/L

878 ug/L

<800 ug/L

Cadmium TCLP

<20 ug/L

74 ug/L

1810 ug/L

<20 ug/L

<20 ug/L

Chromium TCLP

<40 ug/L

<40 ug/L

<40 ug/L

<40 ug/L

<40 ug/L

Lead TCLP

<200 ug/L

<200 ug/L

5490 ug/L

<200 ug/L

<200 ug/L

Mercury TCLP

<0.2 ug/L

<0.2 ug/L

<0.2 ug/L

<0.2 ug/L

<0.2 ug/L

Selenium TCLP

<800 ug/L

<800 ug/L

<800 ug/L

<800 ug/L

<800 ug/L

Silver TCLP

<40 ug/L

44 ug/L

<40 ug/L

<40 ug/L

<40 ug/L

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06127

INORGANIC ANALYTICAL SAMPLE RESULTS

SAMPLE NUMBER: 06022815
STATION ID: 005SS02A01
SAMPLE

Metals Analysis

Vanadium 28.4 ug/g
Zinc 22.7 ug/g

Percent Dry Weight

Percent Dry Weight (60C) 80.3 %

TCLP Extraction for Metals Analysis

Arsenic TCLP <800 ug/L
Barium TCLP <800 ug/L
Cadmium TCLP <20 ug/L
Chromium TCLP <40 ug/L
Lead TCLP 1100 ug/L
Mercury TCLP <0.2 ug/L
Selenium TCLP <800 ug/L
Silver TCLP <40 ug/L

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06127

INORGANIC QUALITY CONTROL RESULTS

SAMPLE NUMBER: 06022475 06022476 06022815
STATION ID: 003SS05A01 003SS15A01 005SS02A01

Units:		% REC	% REC	RPD	RPD
Metals Analysis					
Aluminum	[TD]				12
Antimony	[71]				D
Arsenic	[89]				D
Barium	[89]				23
Beryllium	[96]				D
Cadmium	[89]				D
Calcium	[178 A]				10
Chromium	[96]				89 A
Cobalt	[94]				D
Copper	[92]				6
Iron	[123]				2
Lead	[92]				5
Magnesium	[156 A]				17
Manganese	[166 A]				45 A
Mercury	[101]				D
Nickel	[102]				157 A
Potassium	[96]				12
Selenium	[99]				D
Silver	[110]	[TD]	18		D
Sodium	[100]				D
Thallium	[64 A]				D
Vanadium	[94]				14
Zinc	[TD]				1

Percent Dry Weight

Percent Dry Weight (60c)

TCLP Extraction for Metals Analysis

Arsenic	[102]				D
Barium	[105]				D
Cadmium	[110]				D
Chromium	[104]				D
Lead	[103]				14
Mercury	[110]				D

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06127

INORGANIC QUALITY CONTROL RESULTS

SAMPLE NUMBER:	06022475	06022476	06022815
STATION ID:	003SS05A01	003SS15A01	005SS02A01

Units:		% REC	% REC	RPD	RPD
		[108]			D
		[99]			D

TCLP Extraction for Metals Analysis

Selenium
Silver
[] = LSF
() = ISF

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

Site Name : ELKTON FARM FIREHOLE
 Lab Request #: REQ06127

Wet Dry Conversion Table

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

Sample Number	Station ID	Percent Dry Weight (60C)	Metals Analysis	Units	Wet	Dry
06022475	003SS05A01	SAM 80.1	Aluminum	ug/g	8491	10600
			Antimony	ug/g	<	5
			Arsenic	ug/g	<	16
			Barium	ug/g	272	339
			Beryllium	ug/g	0.6	0.7
			Cadmium	ug/g	2	2.5
			Calcium	ug/g	1514 J	1890 J
			Chromium	ug/g	17	21
			Cobalt	ug/g	4.9	6.1
			Copper	ug/g	39.5	49.3
			Iron	ug/g	12335	15400
			Lead	ug/g	33.8	42.2
			Magnesium	ug/g	2844 J	3550 J
			Manganese	ug/g	257 J	321 J
			Mercury	ug/g	0.1	0.1
			Nickel	ug/g	25.1	31.3
			Potassium	ug/g	384	480
			Selenium	ug/g	16	20
			Silver	ug/g	1	1
			Sodium	ug/g	160	200
			Thallium	ug/g	16 J	20 J
			Vanadium	ug/g	20.9	26.1
			Zinc	ug/g	602	752

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

Site Name : ELKTON FARM FIREHOLE
 Lab Request #: REQ06127

Wet Dry Conversion Table

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

Sample Number	Station ID	Percent Dry Weight (60C)	Metals Analysis	Units	Wet	Dry
06022476	003SS15A01 SAM	69.8	Aluminum	ug/g	6519	9340
			Antimony	ug/g	4	6
			Arsenic	ug/g	14	20
			Barium	ug/g	187	268
			Beryllium	ug/g	0.5	0.7
			Cadmium	ug/g	7.1	10.2
			Calcium	ug/g	914	1310
			Chromium	ug/g	13.5	19.4
			Cobalt	ug/g	5.1	7.3
			Copper	ug/g	64.4	92.2
			Iron	ug/g	10749	15400
			Lead	ug/g	70	101
			Magnesium	ug/g	1717	2460
			Manganese	ug/g	260	372
			Mercury	ug/g	0.1	0.2
			Nickel	ug/g	17.1	24.5
			Potassium	ug/g	311	446
			Selenium	ug/g	14	20
			Silver	ug/g	89	127
			Sodium	ug/g	140	200
			Thallium	ug/g	14	20
			Vanadium	ug/g	16.2	23.2
			Zinc	ug/g	991	1420

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

Site Name : ELKTON FARM FIREHOLE
 Lab Request #: REQ06127

Wet Dry Conversion Table

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

Sample Number	Station ID	Metals Analysis	Percent Dry Weight (60C)	71.4	Units	Wet	Dry
06022477	003SS17A01 SAM	Aluminum			ug/g	7854	11000
		Antimony			ug/g	39.7	55.6
		Arsenic			ug/g	14	20
		Barium			ug/g	1042	1460
		Beryllium			ug/g	0.4	0.5
		Cadmium			ug/g	79	110
		Calcium			ug/g	2770	3880
		Chromium			ug/g	17.7	24.8
		Cobalt			ug/g	7.1	9.9
		Copper			ug/g	15280	21400
		Iron			ug/g	22562	31600
		Lead			ug/g	1114	1560
		Magnesium			ug/g	6397	8960
		Manganese			ug/g	348	488
		Mercury			ug/g	1.2	1.7
		Nickel			ug/g	97	136
		Potassium			ug/g	214	300
		Selenium			ug/g	14	20
		Silver			ug/g	1	2
		Sodium			ug/g	143	200
		Thallium			ug/g	71	100
		Vanadium			ug/g	11.1	15.6
		Zinc			ug/g	24133 J	33800 J

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

Site Name : ELKTON FARM FIREHOLE

Lab Request #: REQ06127

Wet Dry Conversion Table

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

Sample Number	Station ID	Percent Dry Weight (60C)	Metals Analysis	Units	Wet	Dry
06022478	003SS18A01	SAM 71.4	Metals Analysis			
			Aluminum	ug/g	7211	10100
			Antimony	ug/g	4	6
			Arsenic	ug/g	14	20
			Barium	ug/g	105	147
			Beryllium	ug/g	0.5	0.7
			Cadmium	ug/g	2	3
			Calcium	ug/g	750	1050
			Chromium	ug/g	13.9	19.5
			Cobalt	ug/g	5.3	7.4
			Copper	ug/g	64.3 J	90.1 J
			Iron	ug/g	10996	15400
			Lead	ug/g	32	45
			Magnesium	ug/g	1828	2560
			Manganese	ug/g	255	357
			Mercury	ug/g	0.2	0.3
			Nickel	ug/g	19.1	26.8
			Potassium	ug/g	493	690
			Selenium	ug/g	<	<
			Silver	ug/g	<	<
			Sodium	ug/g	<	<
			Thallium	ug/g	<	<
			Vanadium	ug/g	18.3	25.7
			Zinc	ug/g	214	300

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

Site Name : ELKTON FARM FIREHOLE

Lab Request #: REQ06127

Wet Dry Conversion Table

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

Sample Number	Station ID	Percent Dry Weight (60C)	Metals Analysis	Units	Wet	Dry
06022479	005SS01A01	SAM 77.9	Aluminum	ug/g	7572	9720
			Antimony	ug/g	<	5
			Arsenic	ug/g	<	16
			Barium	ug/g	54	20
			Beryllium	ug/g	<	69.3
			Cadmium	ug/g	0.4	0.5
			Calcium	ug/g	<	0.5
			Chromium	ug/g	787	1010
			Cobalt	ug/g	13.3	17.1
			Copper	ug/g	4	5.1
			Iron	ug/g	30.1	38.6
			Lead	ug/g	10439	13400
			Magnesium	ug/g	9	12
			Manganese	ug/g	735	943
			Mercury	ug/g	158	203
			Nickel	ug/g	0.1	0.1
			Potassium	ug/g	4.2	5.4
			Selenium	ug/g	291	374
			Silver	ug/g	<	16
			Sodium	ug/g	<	1
			Thallium	ug/g	<	200
			Vanadium	ug/g	156	<
			Zinc	ug/g	16	20
				ug/g	22.2	28.5

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

Site Name : ELKTON FARM FIREHOLE

Lab Request #: REQ06127

Wet Dry Conversion Table

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

Sample Number	Station ID	Percent Dry Weight (60C)	Metals Analysis	Units	Wet	Dry
06022815	005SS02A01	SAM 80.3	Aluminum	ug/g	5862	7300
			Antimony	ug/g	5	6
			Arsenic	ug/g	16	20
			Barium	ug/g	39	48.6
			Beryllium	ug/g	<	0.5
			Cadmium	ug/g	<	0.5
			Calcium	ug/g	471	586
			Chromium	ug/g	100 J	125 J
			Cobalt	ug/g	4	5
			Copper	ug/g	569	708
			Iron	ug/g	9716	12100
			Lead	ug/g	108	134
			Magnesium	ug/g	580	722
			Manganese	ug/g	83 J	103 J
			Mercury	ug/g	0.1	0.1
			Nickel	ug/g	30 J	37 J
			Potassium	ug/g	206	256
			Selenium	ug/g	<	<
			Silver	ug/g	<	<
			Sodium	ug/g	<	<
			Thallium	ug/g	<	<
			Vanadium	ug/g	22.8	28.4
			Zinc	ug/g	18.2	22.7

Mercury Determinations

Analyst:

S. Greco
Chemist

Samples from ELKTON FARM FIREHOLE (REQ06127), prepared on 03/06/2006 with the instrument run dated 03/07/2006, were analyzed for total mercury using EPA Methods 245.1¹ and 245.5² and Internal SOP: R3-QA131.7.

The method employed has comparable chemistries and performance to the requested method SW-846 Method 7471A³.

Results for solid samples are reported in ug/g (ppm) dry weight at 60 degrees centigrade. This data is reported to allow for conversion to wet weight. The Percent Dry Weight test pertains only to metals results.

¹ EPA Methods for the Determination of Metals in Environmental Samples, May 1994.

² Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020.

³ SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Third Edition.

Metals Determinations

Analysts:

R.L. Costas
Chemist

J.R. Dorsey
Chemist

Methods:

Samples from ELKTON FARM FIREHOLE (REQ06127) were prepared for analysis by acid digestion and analyzed by inductively coupled plasma-atomic emission spectrometry (ICP-AES) on 03/20/2006. The results are presented in the attached table. The following are the digestion and analytical techniques and methods:

Digestion Methods

EPA Method 200.2¹ and Internal SOP R3-QA155.3

Analytical Methods

EPA Method 200.7¹, analysis by ICP-AES, and Internal SOP R3-QA159.2

¹ EPA Methods for the Determination of Metals in Environmental Samples, May 1994.

NOTE: The reporting limits for some analytes may be higher than requested values due to daily acceptable quality control criteria. Qualified data below the reporting limit may be available upon request.

NOTE: The qualifier flag "J" was applied to the zinc results for sample 060224-77 (003SS17A01) because it was above the high calibration standard. It was also applied to the copper results for sample 06022478 (003SS18A01) because of possible carryover.

Results for solid samples are reported in ug/g (ppm) **DRY** weight at 60 degrees centigrade. This, Percent Dry Weight test, pertains only to metals results. The drying temperature of 60 degrees centigrade is selected to retain volatile elements. The % Dry Weight (60 C) is reported to allow for conversion to wet weight.

TCLP Metals Determinations

Analyst:

R. Costas
Chemist

J. Dorsey
Chemist

Methods:

Samples from ELKTON FARM FIREHOLE (REQ06127) were extracted in accordance with the Toxicity Characteristic Leaching Procedure (TCLP), Method 1311¹, as referenced in the 40 CFR Part 261, App II. and Internal SOP R3-QA135.2. The extracts were prepared for analysis by acid digestion and analyzed by inductively coupled plasma optical emission spectrometry on 03/20/2006. The following are the digestion and analytical techniques and methods used:

Digestion Method

EPA Method 200.2² for ICP-AES and Internal SOP R3-QA155.3

Analytical Method

EPA Method 200.7² for ICP-AES and Internal SOP R3-QA159.2

¹ SW-846, Method 1311, TCLP, Revision 0, July 1992

² EPA Methods for the Determination of Metals in Environmental Samples, May 1994.

The following are the current regulatory levels for TCLP, presented in ug/L for ease of comparison to the data presented:

<u>Element</u>	<u>Regulatory Level</u>
Arsenic	5000 ug/L
Barium	100000 ug/L
Cadmium	1000 ug/L
Chromium	5000 ug/L
Lead	5000 ug/L
Selenium	1000 ug/L
Silver	5000 ug/L

NOTE: Sample number 06022477 (003SS17A01) is above the regulatory level for Cadmium and Lead.

TCLP Mercury Determinations

Analyst:

S. Greco
Chemist

Samples from ELKTON FARM FIREHOLE (REQ06127) were extracted in accordance with the Toxicity Characteristic Leaching Procedure (TCLP), Method 1311¹, as referenced in the 40 CFR Part 261, App II. and Internal SOP R3-QA135.2. These samples were digested on 03/13/2006 and analyzed on 03/14/2006. The following are the digestion and analytical techniques and methods used:

Digestion and Analytical Method

EPA Method 245.1², and Internal SOP R3-QA131.6, for cold vapor atomic spectrometry

¹ SW-846, Method 1311, TCLP, Revision 0, July 1992

² EPA Methods for the Determination of Metals in Environmental Samples, May 1994.

Currently the regulatory level for TCLP for Mercury is **200 ug/L**.

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE
LAB REQUEST #: REQ06127

ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:
Station ID:

06022475	06022477	06022478	06022815
003SS05A01	003SS17A01	003SS18A01	005SS02A01
SAMPLE	SAMPLE	SAMPLE	SAMPLE

Nitroaromatics and Nitramines by HPLC

4-Amino-2,6-dinitrotoluene	0.731 mg/Kg	0.414 mg/Kg	0.915 mg/Kg	0.232 mg/Kg
2-Amino-4,6-dinitrotoluene	0.524 mg/Kg	0.402 mg/Kg	0.441 mg/Kg	0.168 mg/Kg
Dinitrotoluene isomers (2,4- and 2,6-)	0.0660 J mg/Kg	0.0673 J mg/Kg	0.0694 J mg/Kg	0.290 mg/Kg
1,3,5-Trinitrobenzene		0.077 mg/Kg	0.214 mg/Kg	
2,4,6-Trinitrotoluene	0.531 mg/Kg	0.783 mg/Kg	1.08 mg/Kg	19.6 mg/Kg

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06127

ORGANIC QUALITY CONTROL (SURROGATE RECOVERIES)

Matrix: SOLIDS

SAMPLE NUMBER:

STATION ID:

LIMITS

Nitroaromatics and Nitramines by HPLC

1,2-Dinitrobenzene

Range
(70-130)

06022475	06022476	06022477	06022478	06022479	06022815
003SS05A01	003SS15A01	003SS17A01	003SS18A01	005SS01A01	005SS02A01
<u>SAMPLE</u>	<u>SAMPLE</u>	<u>SAMPLE</u>	<u>SAMPLE</u>	<u>SAMPLE</u>	<u>SAMPLE</u>
% REC	% REC	% REC	% REC	% REC	% REC
108	100	103	102	110	93

US EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE
LAB REQUEST # : REQ06127

ORGANIC QUALITY CONTROL (MATRIX SPIKE RECOVERIES)

Matrix : SOLIDS

SAMPLE NUMBER : 06022475
STATION ID : 003SS05A01

ANALYTES

Nitroaromatics and Nitramines by HPLC

	Spike	Recovery	Recovery	RPD	Limits
	MS	MSD	Limits	RPD	Limits
	%	%	Range	RPD	Limit
4-Amino-2,6-Dinitrotoluene	79	131 A	(70-130)	50 A	25
2-Amino-4,6-Dinitrotoluene	158 A	196 A	(70-130)	21	25
1,3-Dinitrobenzene	108	110	(70-130)	2	25
Dinitrotoluene isomers (2,4- and 2,6-)	107	153 A	(70-130)	35 A	25
RDX	95	92	(70-130)	3	25
Tetryl	109	111	(60-130)	2	25
Nitrobenzene	134 A	114	(70-130)	17	25
2-Nitrotoluene	108	110	(70-130)	2	25
3-Nitrotoluene	183 A	161 A	(70-130)	13	25
4-Nitrotoluene	94	99	(70-130)	5	25
HMX	98	116	(60-130)	17	25
1,3,5-Trinitrobenzene	110	118	(70-130)	7	25
2,4,6-Trinitrotoluene	194 A	219 A	(70-130)	12	25

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #: REQ006127

ORGANIC LABORATORY REAGENT BLANK RESULTS

Nitroaromatics and Nitramines by HPLC

Date Prepared: MAR-06-2006

SURROGATES

1,2-Dinitrobenzene

110

% REC

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06127

SUPPLEMENTAL SAMPLE INFORMATION

Nitroaromatics and Nitramines by HPLC

<u>SAMPLE #</u>	<u>SAMPLE NQL FACTOR</u>
06022475	1
06022476	1
06022477	1
06022478	1
06022479	1
06022815	1

NQL Factor is an overall correction factor applied to the method's Nominal Quantitation Limit to correct for analytical adjustments made during the analysis.

Nitroaromatic/Nitramine Analysis by HPLC

Analyst:

Jennifer Gundersen
Chemist

Method:

Six solid samples from ELKTON FARM FIREHOLE (REQ06127) were analyzed for nitroaromatic and nitramine explosives and related degradation products (SW-846 Method 8330 analytes). The samples were received on February 24-28, 2006, extracted on March 6, 2006, and analyzed March 7-8, 2006. All samples were extracted and analyzed according to R3-QA221.1, a combined method based on SW-846 Methods 8000 and 8330.

Soil results are reported on an air-dried weight basis.

In addition to the Method 8330 analytes, 3,5-dinitroaniline (3,5-DNA), a common degradation product of nitroaromatic explosives, was detected in several samples. Detection was based on comparison of retention time and a library spectrum of the authentic compound. No calibration was made and no quantitation was done. The following samples contain 3,5-DNA: 060224-75, 060224-76, 060224-77 and 060224-78. These results are included for the client's information only. Please contact the analyst if there are questions or if estimates of concentration are needed.

Quality Control:

Initial calibration and second source verification were within acceptance limits.

All continuing calibrations were within acceptance limits.

All surrogate recoveries were within acceptance limits.

Matrix spike and duplicate: Percent recoveries for nitrobenzene, TNT, 2-am-4,6-DNT, 4-am-2,6-DNT, 2,4-/2,6-DNT and 3-NT were outside acceptance limits in the matrix spike and matrix spike duplicate. The relative percent difference for 4-am-2,6-DNT and 2,4-/2,6-DNT were outside acceptance limits. Outliers are the result of the high concentration of target analytes in the sample and/or coeluting interferences. Recoveries and RPD values outside of acceptance limits were qualified "A". All other MS/MSD results were within limits.

Lab method blanks (LRBs) showed no contamination by target analytes.

USEPA Region III
Office of Analytical Services and Quality Assurance (OASQA)
Nitroaromatic and Nitramine Analysis
Nominal Quantitation Limits (NQL)

Units: Soil = mg/Kg

Actual Quantitation Limit = (NQL Factor) X NQL

CAS #	Compound	NQL
35572-78-2	2-Amino-4,6-dinitrotoluene (2-Am-DNT)	0.05
99-65-0	1,3-Dinitrobenzene (1,3-DNB)	0.05
121-14-2	2,4-Dinitrotoluene (2,4-DNT)	0.05
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.10
98-95-3	Nitrobenzene (NB)	0.05
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.10
99-35-4	1,3,5-Trinitrobenzene (1,3,5-TNB)	0.05
118-96-7	2,4,6-Trinitrotoluene (TNT)	0.05
1946-51-0	4-Amino-2,6-Dinitrotoluene (4-Am-DNT)	0.05
88-72-2	2-Nitrotoluene (2-NT)	0.05
99-08-1	3-Nitrotoluene (3-NT)	0.05
99-99-0	4-Nitrotoluene (4-NT)	0.05
479-45-8	Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	0.10
606-20-2	2,6-Dinitrotoluene (2,6-DNT)	0.05

The "Nominal Quantitation Limit" listed for each target compound is based on the Superfund CLP Protocol. The Actual Quantitation Limits are related to the NQLs by the NQL Factor. This NQL Factor reflects procedural steps, e.g., extract dilution, which influence quantitation limits.



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

Case No: DAS No: R32433 SDG No:	L
For Lab Use Only	
Lab Contract No:	
Unit Price:	
Transfer To:	
Lab Contract No:	
Unit Price:	

Chain of Custody Record		Sampler Signature:	Received By	(Date / Time)
Relinquished By				
1	Matr Kandefer	2/23/06/1500	Matthew 2/24/06	1100
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.	FOR LAB USE ONLY Sample Condition On Receipt
MC2068	Soil/Sediment/ Matthew Kandefer	L/G	TALMetal (14), TCLP Metal (14)	2 (Ice Only), 3 (Ice Only) (2)	003-SS05-A01	S: 2/21/2006	C2068	000224-75
MC2069	Soil/Sediment/ Matthew Kandefer	L/G	TALMetal (14), TCLP Metal (14)	5 (Ice Only), 6 (Ice Only) (2)	003-SS15-A01	S: 2/21/2006	C2069	-76
MC2070	Soil/Sediment/ Matthew Kandefer	L/G	TALMetal (14), TCLP Metal (14)	8 (Ice Only), 9 (Ice Only) (2)	003-SS17-A01	S: 2/21/2006	C2070	-77
MC2071	Soil/Sediment/ Matthew Kandefer	L/G	TALMetal (14), TCLP Metal (14)	11 (Ice Only), 12 (Ice Only) (2)	003-SS18-A01	S: 2/21/2006	C2071	-78
MC2072	Soil/Sediment/ Matthew Kandefer	L/G	TALMetal (14), TCLP Metal (14)	14 (Ice Only), 15 (Ice Only) (2)	005-SS01-A01	S: 2/21/2006	C2072	-79

Shipment for Case Complete?	Sample(s) to be used for laboratory QC: MC2068	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: TALMetal = Soil-TAL Metals, TCLP Metal = Soil-TCLP Extract-Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact?	Shipment Iced?



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

Case No:
R32433

L

Date Shipped: 2/23/2006	Carrier Name: FedEx	Relinquished By: <i>M. H. L.</i>	Sampler Signature: <i>M. H. L.</i>	Chain of Custody Record
Airbill: 640799423522	Ft. Meade ASQAB	(Date / Time) 2/23/06 1500	Received By: <i>M. H. L.</i>	(Date / Time) 2/24/06 1200
Shipped to: 701 Mapes Rd.	Ft. Meade MD 20755350	2		
(410) 305-2667		3		
		4		

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	INORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
C2068	Soil/Sediment/ Matthew	L/G	Nitro (14)	1 (Ice Only) (1)	003-SS05-A01	S: 2/21/2006 11:45	MC2068	060224-75
C2069	Soil/Sediment/ Matthew	L/G	Nitro (14)	4 (Ice Only) (1)	003-SS15-A01	S: 2/21/2006 15:10	MC2069	-76
C2070	Soil/Sediment/ Matthew	L/G	Nitro (14)	7 (Ice Only) (1)	003-SS17-A01	S: 2/21/2006 15:30	MC2070	-77
C2071	Soil/Sediment/ Matthew	L/G	Nitro (14)	10 (Ice Only) (1)	003-SS18-A01	S: 2/21/2006 15:40	MC2071	-78
C2072	Soil/Sediment/ Matthew	L/G	Nitro (14)	13 (Ice Only) (1)	005-SS01-A01	S: 2/21/2006 12:00	MC2072	-79

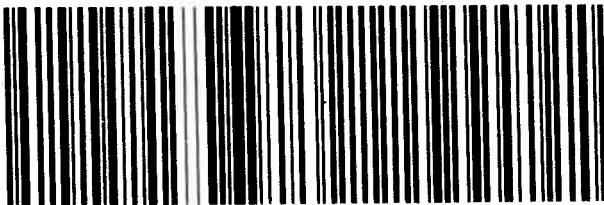
Shipment for Case Complete? N	Sample(s) to be used for laboratory QC: C2068, C2069	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: Nitro = Soil-Nitroaromatics	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? —	Shipment Iced? —

Nitro = Soil-Nitroaromatics

TR Number: 3-073938891-022306-0002

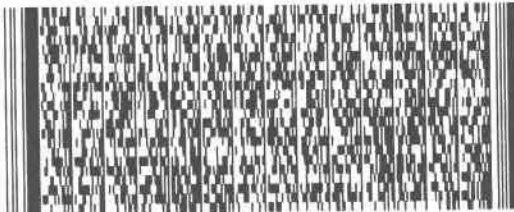
LABORATORY COPY

Part # 156148-434 NRIT 3-03



STANDARD OVERNIGHT
FRI
Deliver By
24FEB06
AA
BM1
18 ADWA
20755 -MD-US
Form 0201
TRK# 6407 9942 3522

BILL SENDER



Delivery Address
Barcode



REF: 90010010510003



Express

FedEx

(410) 305-2601

TOPAT SOSINSKI
USEPA REGION 3
ENVIRONMENTAL SCIENCE CENTER
701 MAPES ROAD
FT. GEORGE MEADE, MD 207555350

SHIPING
ORIGIN ID: CYER (610) 485-6410
SHIPING
TETRA TECH EM INC
7 CREEK PARKWAY
SUITE 700
BOOTHWYN, PA 19061
UNITED STATES US
Ship Date: 23FEB06
Actual Wgt: 60.0 LB MAN
System#: 755666/CAFE2285
Account: S 244514405
Dimmed: 30x15x18 IN



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

Case No: R32433 DAS No: SDG No:		L	
Date Shipped: 2/27/2006 Carrier Name: FedEx Airbill: 854559929858 Shipped to: Ft. Meade ASQAB 701 Mapes Rd. Ft. Meade MD 20755350 (410) 305-2667		For Lab Use Only Lab Contract No: Unit Price: Transfer To: Lab Contract No: Unit Price:	

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY ORGANIC SAMPLE No. Sample Condition On Receipt
-----------------------------	------------------------	-------------------	-----------------------------	---------------------------------------	-------------------------	---------------------------------	--

MC2073	Soil/Sediment/ Matthew Kandefer	L/G	TAL Metal (14), TCLP Metal (14)	17 (Ice Only), 18 (Ice Only) (2)	005-SS02-A01	S: 2/24/2006 14:00 14:00	C2073 06022815
--------	---------------------------------------	-----	------------------------------------	-------------------------------------	--------------	--------------------------------	-------------------

Chain of Custody Record	
Relinquished By	(Date / Time)
1 Matt Kandefer	2/24/06 1500
2 Maureen Murphy	2/27/06 1530
3	
4	

Sampler Signature:	Received By	(Date / Time)
	Maureen Murphy	2/24/06 1500
	Maureen Murphy	2/27/06 1555

Shipment for Case Complete?	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact?	Shipment Iced?
TAL Metal = Soil-TAL Metals, TCLP Metal = Soil-TCLP Extract-Metals				

LABORATORY COPY



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

Case No: R32433		L	
DAS No:			
SDG No:			
Date Shipped: 2/27/2006		For Lab Use Only	
Carrier Name: FedEx		Lab Contract No:	
Airbill: 854559929858		Unit Price:	
Shipped to: Ft. Meade ASQAB 701 Mapes Rd. Ft. Meade MD 207555350 (410) 305-2667		Transfer To:	
		Lab Contract No:	
		Unit Price:	

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	INORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
C2073	Soil/Sediment/ Matthew Kandefer	L/G	Nitro (14)	16 (Ice Only) (1)	005-SS02-A01	11-00/10 1400 S: 2/24/2006	MC2073	060225 15"

Shipment for Case Complete?	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
				Custody Seal Intact?	Shipment Iced?
Analysis Key: Nitro = Soil-Nitroaromatics	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G			

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

TR Number: 3-073938891-022306-0004

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

LABORATORY COPY

FedEx® US Airbill
Express

 FedEx
Tracking
Number

8545 5992 9858

1 From This portion can be removed for Recipient's records.

Date 1/27/00 FedEx Tracking Number 854559929858

Sender's Name _____ Phone _____

Company TETRA TECH EM INC/CRC ACCT

Address 7 CREEK PARK STE 700

City GOTHAMYN State PA ZIP 19061

2 Your Internal Billing Reference

9001001 051003

3 To Recipient's Name

PAT SUSAN

Phone

Company Recipient's Address

 US Fed Ex Acct
7.1 Maple Rd

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

To request a package be held at a specific FedEx location, print FedEx address here

City FA Hoad State PA ZIP 10755

0321873468



8545 5992 9858

Form 1076

0215

4a Express Package Service To add SATURDAY Delivery, see Section 6. Packages up to 150 lbs.

☒ FedEx Priority Overnight Next business morning.
☐ FedEx Standard Overnight Next business afternoon.
☐ FedEx 2Day Second business day.
☐ FedEx Express Saver Third business day.
 FedEx Envelope rate not available. Minimum charge: One-pound rate.

4b Express Freight Service To add SATURDAY Delivery, see Section 6. Packages over 150 lbs.

☐ FedEx 1Day Freight* Next business day.
☐ FedEx 2Day Freight Second business day.
☐ FedEx 3Day Freight Third business day.

* Call for Confirmation.

5 Packaging

☐ FedEx Envelope*
☐ FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Surety Pak.
☐ FedEx Box
☐ FedEx Tube
☒ Other

6 Special Handling

☐ SATURDAY Delivery Available ONLY to FedEx Priority Overnight, FedEx 2Day, FedEx 3Day Freight, and FedEx 2Day Freight to select ZIP codes.
☐ HOLD Weekday at FedEx Location
☐ HOLD Saturday at FedEx Location
 Includes FedEx addresses in Section 3.

Does this shipment contain dangerous goods? One box must be checked.

☐ No
☐ Yes As per attached Shipper's Declaration not required.
☐ Yes Shipper's Declaration not required.
☐ Dry Ice Dry Ice, 3, UN 1845
☐ Cargo Aircraft Only

7 Payment Bill to:

☒ Sender
☐ Recipient
☐ Third Party
☐ Credit Card
☐ Cash/Check

Enter FedEx Acct. No. or Credit Card No. below.

Acct. No.

Total Packages

Total Weight

Total Charges

Your liability is limited to \$100 unless you declare a higher value. See the FedEx Service Guide for details.

8 NEW Residential Delivery Signature Options

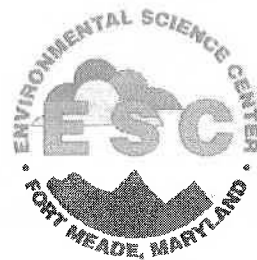
☐ No Signature Required Package may be left without a signature for delivery.
☐ Direct Signature Anyone at recipient's address may sign for delivery. Fee applies.
☐ Indirect Signature If no one is available at recipient's address, anyone may sign for delivery. Fee applies.
 If you require a signature, check Direct or Indirect.

Rev. Date 5/05/99/1/02/99/01/94-2005 FedEx PRINTED IN U.S.A. GRS

 NO POUCH NEEDED.
See back for peel and stick application instructions.



**U.S. EPA REGION III
Analytical Services & Quality Assurance Branch
Environmental Science Center
701 Mapes Road
Fort Meade, Maryland 20755-5350**



LABORATORY FINAL RESULTS

ELKTON FARM FIREHOLE


Lab Request # : REQ06123

Request Form : DAS R32433

Report prepared on: 03/23/2006

Site contact(s) : Charles Fitzsimmons (3HS31)
Matt Kandefer

Approved for release:



ASQAB Representative

ASQAB Contact: Jill Bilyeu, Quality Assurance Officer

Phone: 410-305-2638

E-mail: Bilyeu.Jill@epa.gov

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE
LAB REQUEST # REQ06123

SAMPLE DESCRIPTIONS

Sample #	Station	Description	Matrix	Type	End Collection Date	Time
06022485	003SS05A01	003-SS05-A01	Soil	GRAB	02/21/2006	11:45
06022486	003SS15A01	003-SS15-A01	Soil	GRAB	02/21/2006	15:10
06022487	003SS17A01	003-SS17-A01	Soil	GRAB	02/21/2006	15:30
06022488	003SS18A01	003-SS18-A01	Soil	GRAB	02/21/2006	15:40
06022489	005SS01A01	005-SS01-A01	Soil	GRAB	02/21/2006	12:00
06022816	005SS02A01	005-SS02-A01	Soil	GRAB	02/24/2006	14:00

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06123

TESTS REQUESTED

INORGANICS		060224							
		85	86	87	88	89			
Percent Dry Weight		X	X	X	X	X			
Total Cyanide		X	X	X	X	X			

INORGANICS		060228	
		16	
Percent Dry Weight		X	
Total Cyanide		X	

(X = Test Requested)

USEPA Region III Analytical Services & Quality Assurance Branch

SITE NAME: ELKTON FARM FIREHOLE
LAB REQUEST #: REQ06123

QUALIFIER CODE AND GLOSSARY DEFINITIONS

Qualifier Codes Applied to Sample Results

- B Not detected substantially above (10 times) the level reported in the laboratory or field blanks (includes field, trip, rinsate, and equipment blanks).
- C See report narrative for analyst's comments and observations concerning this result.
- E Value exceeds a theoretically greater value (e.g., dissolved total, orthophosphate-total phosphorus). However, the difference is within the expected precision of the analytical techniques and is not statistically significant.
- I An interference exists which masks the true response. See report narrative for explanation.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- K The identification of the analyte is acceptable; the reported value may be biased high. The actual value is expected to be less than the reported value.
- L The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
- N There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
- NJ There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.
- NA Not analyzed - analysis not performed.
- NR Not requested - analysis not requested.
- R The presence or absence of the analyte can not be determined from the data due to severe quality control problems.
- T Tentatively Identified Compound. Identified as a result of a library search using the EPA/NIST Mass Spectral Library.
- U Standards were not used to verify the identity and quantity of the compound. The reported value is an estimate.
- U The analyte was not detected at or above the quantitation limit.
- UJ The analyte was not detected at or above the quantitation limit. The quantitation limit is an estimate.
- UL The analyte was not detected. The quantitation limit is probably higher due to indications of a low bias.
- < Sample value below quantitation limit. Quantitation limit reported.

Qualifier Codes Applied to Quality Control Results

- A Quality control value is outside acceptance limits.
- D Sample and/or laboratory duplicate values are below the quantitation limit. No precision data reported.
- TD Spike recovery too dilute for accurate quantitation.

Qualifier Codes Applied to Microbiology Results

- < Less than.
- <= Less than or equal to.
- >= Greater than or equal to.
- > Greater than.

Glossary:

- () Numbers in parentheses are analytical spike recoveries (e.g., post-digestion spikes).
- [] Numbers in brackets are matrix spike recoveries (e.g., pre-digestion spikes).
- CFU Colony Forming Unit.
- ISF A prepared sample aliquot fortified with a known concentration of target analyte(s) or a representative subset of target analytes and analyzed. Its purpose is to determine whether the sample matrix contributes bias to the analytical results.
- LSF A sample aliquot fortified with a known concentration of analyte(s) or a representative subset of target analytes and carried throughout the entire lab method. It is analyzed to determine whether the sample matrix contributes bias to the analytical results.
- MS/MSD Matrix spike/matrix spike duplicate; a known increment of target analyte added to a sample before preparation or analyses.
- MSA Value obtained by Method of Standard Additions in which calibration standards are prepared in the sample matrix (see EPA method 200.9).
- RPD Relative Percent Difference (RPD) is used to measure precision when duplicates are analyzed.
- %Rec Percent Recovery (%Rec) is an expression of accuracy.

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06123

INORGANIC ANALYTICAL SAMPLE RESULTS

SAMPLE NUMBER:

06022485

06022486

06022487

06022488

06022489

STATION ID:

003SS05A01

003SS15A01

003SS17A01

003SS18A01

005SS01A01

SAMPLE

SAMPLE

SAMPLE

SAMPLE

SAMPLE

Percent Dry Weight

Percent Dry Weight (105C)

79.7 %

69.1 %

69.6 %

70.2 %

77.6 %

Total Cyanide

Cyanide

<1.0 mg/Kg

<1.0 mg/Kg

1.0 J mg/Kg

<1.0 mg/Kg

<1.0 mg/Kg

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME : ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06123

INORGANIC ANALYTICAL SAMPLE RESULTS

SAMPLE NUMBER: 06022816

STATION ID: 005SS02A01
SAMPLE

Percent Dry Weight

Percent Dry Weight (105C) 79.0 %

Total Cyanide

Cyanide 1.7 mg/Kg

U.S EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

SITE NAME: ELKTON FARM FIREHOLE

LAB REQUEST #: REQ06123

INORGANIC QUALITY CONTROL RESULTS

SAMPLE NUMBER: 06022485

06022486

STATION ID: 003SS05A01

003SS15A01

Units:

% REC

RPD

RPD

Percent Dry Weight

Percent Dry Weight (105c)

Total Cyanide

Cyanide

[100]

D

[] = LSF

() = ISF

U.S. EPA REGION III ANALYTICAL SERVICES & QUALITY ASSURANCE BRANCH

Site Name : ELKTON FARM FIREHOLE

Lab Request #: REQ06123

Wet Dry Conversion Table

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

Sample Number	Station ID					Units	Wet	Dry
06022485	003SS05A01	SAM	Percent Dry Weight (105C)	79.7	Total Cyanide	Cyanide	< 1	< 1
06022486	003SS15A01	SAM	Percent Dry Weight (105C)	69.1	Total Cyanide	Cyanide	< 1	< 1
06022487	003SS17A01	SAM	Percent Dry Weight (105C)	69.6	Total Cyanide	Cyanide	< 1	< 1
06022488	003SS18A01	SAM	Percent Dry Weight (105C)	70.2	Total Cyanide	Cyanide	< 1	< 1
06022489	005SS01A01	SAM	Percent Dry Weight (105C)	77.6	Total Cyanide	Cyanide	< 1	< 1
06022816	005SS02A01	SAM	Percent Dry Weight (105C)	79	Total Cyanide	Cyanide	1.7	2.2

Total Cyanide Determinations

Analyst:

Donald M. Brown
LMIT Chemist

Method:

Six (6) soil samples from ELKTON FARM FIREHOLE (REQ06123) were prepared for analysis using the Midi-Distillation System and analyzed for Total Cyanide (CN⁻) March 3, 2006, by semi-automated colorimetry. The sample and quality control results are presented in the attached tables. The following are the analytical method and internal SOP employed:

Analytical Methods

EPA Method 335.4⁽¹⁾, "Determination of Total Cyanide by Semi-Automated Colorimetry."

Internal SOP R3-QA170.0, "Total Cyanide Analysis of Aqueous and Solid Samples."

⁽¹⁾Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020.

Notes:

Results for solid samples are reported in mg/Kg **WET** weight.

Percent Dry Weight Determinations

Analyst:

Donald M. Brown
LMIT Chemist

Method:

Six (6) soil samples from ELKTON FARM FIREHOLE (REQ06123) were analyzed on March 6 and March 7, 2006, for Percent Dry Weight. The samples were dried at 105°C following the procedure outlined in the Region III ASQAB laboratory SOP R3-QA056.3.

These results are to be used to convert analyte concentrations to a dry weight basis for organic and non-metal analyses. Normally, analytical values are reported on a wet weight basis for organics and non-metals.



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

Case No:
DAS No:
SDG No:

R32433

L

Date Shipped: 2/23/2006	Carrier Name: FedEx	Albill: 640799423522	Shipped to: Ft. Meade ASQAB 701 Mapes Rd. Ft. Meade MD 20755350 (410) 305-2667
Chain of Custody Record			
Relinquished By	(Date / Time)	Sampler Signature	Received By (Date / Time)
1 Matt Kandfer 2/23/06 1:50			2/21/06 12:00
2 Matt Turner 2/27/06 14:15			2/27/06 14:15
3			
4			

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition, Or Receipt
MC2068	Soil/Sediment/ Matthew Kandfer	L/G	TALMetal (14), TCLP Metal (14)	2 (Ice Only), 3 (Ice Only) (2)	003-SS05-A01	S: 2/21/2006	C2068	80-85
MC2069	Soil/Sediment/ Matthew Kandfer	L/G	TALMetal (14), TCLP Metal (14)	5 (Ice Only), 6 (Ice Only) (2)	003-SS15-A01	S: 2/21/2006	C2069	81-86
MC2070	Soil/Sediment/ Matthew Kandfer	L/G	TALMetal (14), TCLP Metal (14)	8 (Ice Only), 9 (Ice Only) (2)	003-SS17-A01	S: 2/21/2006	C2070	82-87
MC2071	Soil/Sediment/ Matthew Kandfer	L/G	TALMetal (14), TCLP Metal (14)	11 (Ice Only), 12 (Ice Only) (2)	003-SS18-A01	S: 2/21/2006	C2071	83-88
MC2072	Soil/Sediment/ Matthew Kandfer	L/G	TALMetal (14), TCLP Metal (14)	14 (Ice Only), 15 (Ice Only) (2)	005-SS01-A01	S: 2/21/2006	C2072	84-89

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC: MC2068	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: TALMetal = Soil-TAL Metals, TCLP Metal = Soil-TCLP Extract-Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? —	Shipment Iced? —

TR Number: 3-073938891-022306-0001

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

F2V5.1.047 Page 1 of 1

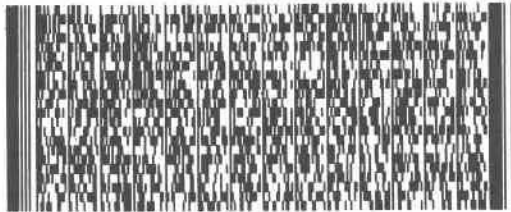
LABORATORY COPY

Ship Date: 23FEB06
Actual Wgt: 60.0 LB MAN
System#: 755666/CAFE2285
Account: S 244514405
Dimmed: 30x15x18 IN

FedEx
Express



SECRET



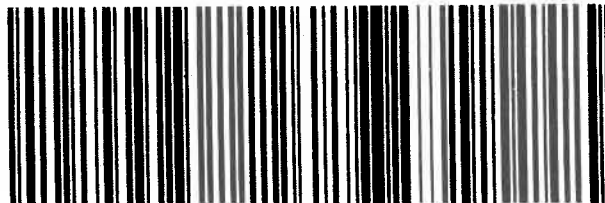
BILL SENDER

FRI

BWI **AA**

18 ADWA

Part # 156148-434 NRIT 3-03





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

Date Shipped: 2/27/2006		Case No: R32433	
Carrier Name: FedEx		DAS No: L	
Airbill: 854559929858		SDG No:	
Shipped to: Ft. Meade ASQAB		For Lab Use Only	
701 Mapes Rd.		Lab Contract No:	
Ft. Meade MD 207555350		Unit Price:	
(410) 305-2667		Transfer To:	
		Lab Contract No:	
		Unit Price:	

Chain of Custody Record			
Relinquished By	(Date / Time)	Sampler Signature: Received By	(Date / Time)
1 Matt Kandefer	2/24/06 1500	Maureen Murphy	2/24/06 1500
2 Maureen Murphy	2/27/06 1530	Maureen Murphy	2/27/06 1255
3			
4			

INORGANIC SAMPLE No. MC2073	MATRIX/ SAMPLER Soil/Sediment/ Matthew Kandefer	CONC/ TYPE L/G	ANALYSIS/ TURNAROUND TAL Metal (14), TCLP Metal (14)	TAG No/ PRESERVATIVE/ Bottles 17 (Ice Only), 18 (Ice Only) (2)	STATION LOCATION 005-SS02-A01	SAMPLE COLLECT DATE/TIME S: 2/24/2006 14:00	ORGANIC SAMPLE No. C2073	FOR LAB USE ONLY Sample Condition On Receipt 06072816
-----------------------------	---	----------------	--	--	-------------------------------	---	--------------------------	---

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: 4	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: TAL Metal = Soil-TAL Metals, TCLP Metal = Soil-TCLP Extract-Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? — Shipment Iced? —

175

200

FedEx **USAirbill**
Express
FedEx
Tracking
Number

8545 5992 9858

1 From this page (400) 000-0000 (240) 000-0000

Date 11/11/00 FedEx Tracking Number 8545 5992 9858

Sender's Name _____ Phone _____

Company _____

Address _____

City _____

State _____

ZIP _____

Dept./Room/Suite/Room _____

2 Your Internal Billing Reference _____

3 To Recipient's Name _____

Phone _____

Company _____

Recipient's Address _____

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address _____

To request a package be held at a specific FedEx location, print FedEx address here.

City _____

State _____

ZIP _____

Dept./Room/Suite/Room _____



8545 5992 9858

NO POUCH NEEDED.
See back for peel and stick application instructions.

14 of 14

SPH22

0215

Form
ID No.

4a Express Package Service To add SATURDAY Delivery, see Section 6. Packages up to 150 lbs.

☒ FedEx Priority Overnight ☐ FedEx Standard Overnight ☐ FedEx First Overnight
Next business morning Next business afternoon* Earliest delivery time, subject to delivery location

☐ FedEx 2Day ☐ FedEx Express Saver
Second business day* Third business day*
FedEx Envelope are not available. Minimum charge: One-pound rate.

4b Express Freight Service To add SATURDAY Delivery, see Section 6. Packages over 150 lbs.

☐ FedEx 1Day Freight* ☐ FedEx 2Day Freight ☐ FedEx 3Day Freight
Next business day* Second business day* Third business day*

* Call for Confirmation

5 Packaging

☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ Other

 FedEx Pak*
Includes FedEx Small Pak,
FedEx Large Pak, and FedEx Surety Pak.

* Declared value limit \$500

6 Special Handling

☐ SATURDAY Delivery ☐ HOLD Weekday ☐ HOLD Saturday

 Available ONLY for FedEx Priority
Overnight, FedEx 2Day, FedEx
Express, and FedEx Freight.
Freight to select ZIP codes.

 Available ONLY for FedEx Priority
Overnight, FedEx 2Day, FedEx
Express, and FedEx Freight.
Freight to select locations.

Does this shipment contain dangerous goods?

☐ No ☐ Yes ☐ Yes ☐ Yes ☐ Dry Ice
Shipment attached Shipper's Declaration not required Dry Ice 3 UN 1845

Dangerous goods including dry ice cannot be shipped in FedEx packaging.

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below.

☐ Sender ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

 Acct. No. in Section
A of this form.

Total Packages

Total Weight

Total Charges

Your liability is limited to \$100 unless you declare a higher value. See the FedEx Service Guide for details.

8 NEW Residential Delivery Signature Options If you require a signature, check Direct or Indirect:

☐ No Signature Required ☐ Direct Signature ☐ Indirect Signature
Anyone at recipient's address may sign for delivery. If no one is available at recipient's address, anyone at a neighboring address may sign for delivery. For details, see the FedEx Service Guide.

New Sign-A-Save! Call 1-800-777-3333, 24 hours a day, 7 days a week.

519