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RCRA Facility Investigation Report for the Main Post POL AST Release Site (SWMU 219)

May 2011

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Executive Summary

This Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report was written on behalf of White Sands Missile Range (WSMR) pursuant to requirements of WSMR's Hazardous Waste Permit Number NM2750211235 (Permit) dated December 2009. This RFI Report describes activities conducted to characterize soil and groundwater conditions at the Main Post Petroleum, Oil, and Lubricant (POL) Above Ground Storage Tank (AST) release site (the Site), where a fuel spill of approximately 1,370 gallons of gasoline occurred in December 2005. The Site is listed as Solid Waste Management Unit (SWMU) 219 in the WSMR Permit.

Following is a brief chronology describing the corrective action activities related to this site:

- December 2005, a release of approximately 1,370 gallons of gasoline occurred at the AST.
- December 2009 – Permit No. NM2750211235 was issued. Table 4-1 of the permit lists SWMU 219 as a site requiring corrective action. The comment in the table specifies the AST Release Site.
- August 2009 – the RCRA Facility Investigation (RFI) Work Plan for the site was submitted to the NMED.
- November 2009 – the NMED issued a Notice of Disapproval (NOD) of the August 2009 RFI Work Plan.
- February 2010 – WSMR submitted the Revised RFI Work Plan to the NMED. The Revised Work Plan addressed the comments from the November 2009 NOD and included a table summarizing WSMR's response to the comments.
- January through April 2010 – field activities were conducted and data collected according to the February 2010 Revised RFI Work Plan.
- May 2010 – the NMED issued a NOD for the February 2010 Revised RFI Work Plan.
- July 2010 – WSMR sent a letter to the NMED requesting a 60-day extension to respond to the NOD and notifying the NMED that they intended to implement

the RFI Work Plan and respond to the May 2010 NOD in the RFI Report rather than submit a second revised RFI Work Plan.

- August 2010 – the NMED approved the request for a schedule extension and acknowledged WSMR's notification that they would respond to the comments in the RFI Report. October 2010 – WSMR submitted the RFI Report. The RFI report included responses to the NMED's May 2010 NOD for the RFI Work Plan.

- February 2011 – the NMED issued a NOD for the October 2010 RFI Report.

This Revised RFI Report represents a revision to the original October 2010 RFI report and includes responses to the NMED's February 2011 NOD. Several of the comments contained in the February 2011 NOD pertain to what constitutes SWMU 219 and request that the entire POL Area, not just the AST Release Site, be included in the RFI. ~~This RFI was conducted according to the Revised RCRA Facility Investigation Work Plan for the Main Post POL Storage Site, submitted to the New Mexico Environment Department (NMED) in February 2010. The NMED provided comments to the Revised Work Plan in a Notice of Disapproval (NOD) letter dated May 12, 2010. With the exception of Comment No. 1 of the NOD letter, information provided in this report addresses comments made in the May 12, 2010 letter. Comment No. 1 required that the entire POL Area be included in the RFI instead of just the AST Release Area.~~ Appendix 4, Table 4-1 of the Permit identifies SWMU 219 as Main Post POL AST Release Site. No other releases have been identified at the Main Post POL and SWMU 219 was identified and listed as a SWMU because of the reported gasoline spill. Based on this information, investigation of areas outside the AST Release Site is not warranted and is not required by the Permit.

The Main Post POL Storage Area provides storage and a fueling point for the Main Post official vehicles and consists of a number of aboveground storage tanks (ASTs), underground piping, and a filling station. The POL Storage Area has been in service since the 1960s and currently has eight fuel pumps located at the fueling island. Two of the eight pumps are used to dispense diesel fuel while the remaining six pumps dispense gasoline. There are three 6,000 gallon diesel ASTs located to the northwest of the fueling island and three 6,000 gallon gasoline ASTs located to the west of the fueling island. To the east side of the fueling island, there are three 25,000 diesel ASTs and three 25,000 gasoline ASTs. Underground lines convey diesel from the 25,000 gallon diesel ASTs to the 6,000 gallon diesel ASTs and from the 6,000 gallon diesel ASTs to the diesel fuel pumps. Likewise there are underground lines that

convey gasoline from the 25,000 gallon gasoline ASTs to the 6,000 gallon gasoline ASTs and from the 6,000 gallon gasoline ASTs to the gasoline fuel pumps.

On December 7, 2005, a release of approximately 1,370 gallons of gasoline occurred while transferring gasoline between one of the 25,000 gallon gasoline ASTs to the 6,000 gallon gasoline ASTs. The 6,000 gallon ASTs are filled simultaneously at an even rate by the transfer system. According to reports from personnel knowledgeable about the release, d~~D~~uring the transfer, one of the tanks was overtopped and gasoline was released to the concrete secondary containment. The identification of which tank overtopped was not recorded. ~~one of the 6,000 gallon gasoline ASTs. The smaller capacity tank was overfilled during the transfer.~~ The released gasoline was captured by the concrete secondary containment; however, a crack in the southeastern corner of the floor of the concrete containment allowed the majority of the fuel to escape and be released to the subsurface below. The release was verbally reported to the Petroleum Storage Tank Bureau (PSTB) and the NMED Hazardous Waste Bureau (HWB) in December of 2005.

The work conducted as part of this RFI focused on the area of the AST release and included the following specific tasks:

- Collection of soil samples to characterize subsurface conditions and complete lateral and vertical delineation of affected soils to the NMED residential soil screening levels (SSLs).
- Identification of whether subsurface soil impacts could potentially affect the underlying groundwater.
- Screening of potential risks to human health and ecological receptors.

As part of this RFI, soil samples were collected from a total of eight (8) soil borings during two separate sampling events in January and April 2010. Soil samples were analyzed for Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), and lead. The majority of the samples did not contain detectable concentrations of these constituents; however, one sample collected from immediately below the AST containment area indicated that a limited area of soils had been affected by the spill.

The field screening performed on soil samples using a photoionization detector (PID) corresponded to the analytical results obtained from the soil samples. Based on both

the PID and analytical results, limited impacts appear to be present immediately below the southeast corner of the concrete containment area holding the three 6,000 gallon gasoline ASTs.

The vertical extent of the impacted soil is defined by the soil samples collected during this RFI and is limited to approximately 2 to 3 feet below ground surface (ft bgs). The lateral extent of the impacted soil has also been defined and is limited to the area beneath the southeast corner of the containment area.

A human health risk assessment screening was conducted by comparing the analytical results from the RFI to NMED published soil screening levels. Based on the screening results, soils at the Site do not pose a current or future risk to human health.

The data were reviewed to evaluate the potential for cross-media contamination from soil to groundwater. This evaluation consisted of comparing the data to published Dilution Attenuation Factor (DAF) 20 values, while considering other site-specific conditions including depth of contamination, depth to groundwater, and surface water infiltration conditions. Benzene, toluene and total xylenes ~~was~~were the only constituents of potential concern (COPC) present at concentrations above the DAF 20 value. The only reported concentrations of the COPCs above the DAF 20 value were contained in the sample collected from immediately below the concrete (0.5 to 1 ft bgs) in boring SB-006. The samples collected from deeper intervals (4 – 5', 9 – 10' 14 – 15' and 19 – 20') in this same boring did not contain detectable COPCs and the detection limits were an order of magnitude lower than the respective DAF 20 values. In fact, no other sample collected contained any detectable concentrations of these COPCs. Based on the very shallow exceedances of DAF 20 in SB-006 (0.5 – 1') relative to the very deep occurrence of groundwater (greater than 300 feet) and the relatively small size of the source area, there is little or no risk that the COPCs in the shallow soils represents a threat to the groundwater. This is further supported by the fact that surface water infiltration depths in the area do not exceed about 15 feet because of the very high evapotranspiration rates (ARCADIS, 2010). In addition, the area is covered with concrete and asphalt, which should limit infiltration of surface water and further reduce the potential for leaching to occur.

The results of the Screening Level Ecological Risk Assessment (SLERA) and Baseline Ecological Risk Assessment (BERA) for direct contact exposure and for food chain modeling indicate that adverse impacts are unlikely to occur for ecological receptors potentially exposed to constituents in soil. Therefore, no further ecological evaluation of the Site is warranted.

The RFI for the Site was successfully completed and meets the RFI requirements described in the Permit. No further investigation is recommended.

List of Acronyms

°F	Degrees Fahrenheit
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
BERA	Baseline Ecological Risk Assessment
bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
COPC	Constituent of Potential Concern
COPEC	Constituent of Potential Ecological Concern
DAF	Dilution Attenuation Factor
DoD ELAP	Department of Defense Environmental Laboratory Accreditation Program
DQO	Data Quality Objective
ELCR	Excess Lifetime Cancer Risk
ft	feet
ft bgs	feet below ground surface
GPR	Ground Penetrating Radar
GRO	Gasoline Range Organics
HHRA	Human Health Risk Assessment
HI	Hazard Index
HWB	Hazardous Waste Bureau
IDW	Investigation Derived Waste
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NELAC	National Environmental Laboratory Accreditation Conference
NMED	New Mexico Environment Department
NOD	Notice of Disapproval
PID	Photoionization Detector
POL	Petroleum, Oil and Lubricant
PSTB	Petroleum Storage Tank Bureau
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RSL	Regional Screening Level
SLERA	Screening Level Ecological Risk Assessment
SSL	Soil Screening Level
SVOC	Semi-volatile Organic Compounds
SWMU	Solid Waste Management Unit

TPH	Total petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
WMC	Waste Management Center
WSMR	White Sands Missile Range

1. Introduction

This Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report was written on behalf of White Sands Missile Range (WSMR) pursuant to requirements of WSMR's Hazardous Waste Permit (No. NM2750211235) dated December 2009. This RFI Report describes activities conducted to characterize soil

and groundwater conditions at the Main Post Petroleum, Oil, and Lubricant (POL) Aboveground Storage Tank (AST) Release Site (the Site), where a fuel spill of approximately 1,370 gallons of gasoline occurred in December 2005. The Site is listed as Solid Waste Management Unit (SWMU) 219 in the WSMR Permit under Table 4-1 requiring corrective action.

A brief chronology describing the corrective action activities related to this Site follows:

- December 2005, a release of approximately 1,370 gallons of gasoline occurred at the AST.
- December 2009 – Permit No. NM2750211235 was issued. Table 4-1 of the permit lists SWMU 219 as a site requiring corrective action. The comment in the table specifies the AST Release Site.
- August 2009 – the RCRA Facility Investigation (RFI) Work Plan for the site was submitted to the NMED.
- November 2009 – the NMED issued a Notice of Disapproval (NOD) of the August 2009 RFI Work Plan.
- February 2010 – WSMR submitted the Revised RFI Work Plan to the NMED. The Revised Work Plan addressed the comments from the November 2009 NOD and included a table summarizing WSMR's response to the comments.
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~~This RFI was conducted according to the Revised RCRA Facility Investigation Work Plan for the Main Post POL Storage Site, submitted to the New Mexico Environment Department (NMED) in February 2010. The NMED provided comments to the Revised Work Plan in a Notice of Disapproval (NOD) letter dated May 12, 2010. With the exception of Comment No. 1 of the NOD letter, information provided in this report addresses comments made in the May 12, 2010 letter. Comment No. 1 required that the entire POL Area be included in the RFI instead of just the AST Release Area.~~ Appendix 4, Table 4-1 of the Permit identifies SWMU 219 as Main Post POL AST Release Site. No other releases have been identified at the Main Post POL and SWMU 219 was identified and listed as a SWMU because of the reported gasoline spill. Based on this information, investigation of areas outside the AST Release Site is not warranted and is not required by the Permit.

The primary objectives of the RFI were: 1) to determine whether the spill resulted in a release to the surrounding soils or groundwater; 2) to characterize the nature and extent of affected soils and groundwater; and 3) to evaluate potential risks to human and ecological receptors exposed to the affected media.

The work conducted as part of this RFI included the following specific tasks.

- Collection of soil samples to characterize subsurface conditions and complete lateral and vertical delineation of affected soils to the NMED residential soil screening levels (SSLs).
- Identification of whether subsurface soil impacts could potentially affect the underlying groundwater.
- Screening of potential risks to human health and ecological receptors.

These activities are described in more detail in the following sections.

2. Background Information

2.1 Operational History

The Site is located at the WSMR Main Post (Figure 1), within the Main Post POL Storage Area. The POL Storage Area provides storage and a fueling point for the Main Post official vehicles and consists of a number of ASTs, underground piping, and a filling station.

The POL Storage Area has been in service since the 1960s. Currently, there are eight fuel pumps located at the fueling island. Two of the eight pumps are used to dispense diesel fuel while the remaining six pumps dispense gasoline. As shown in Figure 2, there are three 6,000 gallon diesel ASTs located to the northwest of the fueling island and three 6,000 gallon gasoline ASTs located to the west of the fueling island. On the east side of Wesson Street, there are three 25,000 gallon diesel ASTs and three 25,000 gallon gasoline ASTs. The ASTs are located within containment areas which are constructed of concrete walls with a concrete floor. The ASTs are elevated on saddles within the containment to allow for routine inspection.

Underground lines convey diesel from the 25,000 gallon diesel ASTs to the 6,000 gallon diesel ASTs and from the 6,000 gallon diesel ASTs to the diesel fuel pumps. Likewise, underground lines convey gasoline from the 25,000 gallon gasoline ASTs to the 6,000 gallon gasoline ASTs and from the 6,000 gallon gasoline ASTs to the gasoline fuel pumps. The approximate locations of these underground lines are shown in Figure 2.

2.2 Regulatory History

On December 7, 2005, a release of approximately 1,370 gallons of gasoline occurred while transferring gasoline between one of the 25,000 gallon gasoline ASTs to the 6,000 gallon gasoline ASTs. The 6,000 gallon ASTs are filled simultaneously at an even rate by the transfer system. According to WSMR personnel knowledgeable about the release, ~~dDuring the transfer,~~ one of the tanks ~~were~~ was overtopped during the transfer and gasoline was released to the concrete secondary containment. The identification of the actual tank that overtopped was not recorded. The concrete walls of the containment prevented the release of the gasoline to the surrounding ground surface. However, ~~A~~a crack in the southeastern corner of the floor of the concrete containment allowed fuel to escape and be released to the subsurface below. According to base personnel, some of the gasoline was pumped out of the containment following the release, but the volume of gasoline recovered was not recorded. ~~Therefore, the Work Plan was developed using the assumption that all of the released gasoline escaped to the subsurface.~~

The release was verbally reported to the Petroleum Storage Tank Bureau (PSTB) and the NMED Hazardous Waste Bureau (HWB) in December of 2005. Following this incident, the concrete containment was repaired to prevent a similar release in the future.

2.3 Surface Conditions (Topography)

WSMR lies within the Mexican Highland Section of the Basin and Range Province. This province is characterized by a series of tilted fault blocks forming longitudinal, asymmetric ridges, or mountains, and broad intervening basins (BAE Systems, 2004). Very little surface water exists at WSMR due to low annual precipitation, high evapotranspiration rates, and high infiltration characteristics of the soils (BAE Systems, 2004).

The POL ~~Storage Area~~AST Release Site is covered with concrete and the surrounding area is relatively flat and ~~is primarily~~ covered with either asphalt or concrete. As shown in Figure 2, there is an asphalt-lined ~~subsurface stormwater line~~ ditch located ~~near~~immediately ~~the~~ west~~ern boundary~~ of the MP POL AST Release Site. Stormwater runoff from areas immediately outside of and surrounding the MP POL AST Release Site containment structure flows into this ditch and flows northward into a culvert under

Aberdeen Avenue, then into a concrete lined ditch located on the north side of Aberdeen Avenue, which drains stormwater to the east. ~~Storage Area. Stormwater from the southern portion of the POL Storage Area enters this line and flows through a culvert beneath Aberdeen Avenue to the north, then to the east through the stormwater drainage system. Stormwater from the northern portion of the POL Storage Area flows through a culvert located beneath Wesson Street, just south of Aberdeen Avenue. The stormwater then flows through an unlined ditch toward the east.~~

2.4 Geology

The geology of WSMR is dominated by the Tularosa Basin and surrounding mountain ranges. The San Andres Mountains, San Augustin, and Oscura Mountains border the Tularosa Basin on the west while the Sacramento Mountains form the eastern border. A narrow region of north-south-trending, large-displacement normal faulting separates the mountains from the basin, resulting in the change in relief across the missile range. The average elevation of the Tularosa Basin is 4,000 feet above mean sea level. The majority of WSMR property, including most test facilities, is located within the Tularosa Basin (IT, 1992). The Tularosa Basin contains thick sequences of Tertiary and Quaternary age alluvial and bolson fill deposits. These sediments, more than 5,000 feet thick in some areas, consist mainly of silt, sand, gypsum and clay weathered from the surrounding mountain ranges. The average elevation of the basin floor is 4,000 feet above mean sea level and surface features consist of flat sandy areas, sand dunes, basalt flows, and playas (dry lake beds).

The nature of the bolson-fill deposits varies both laterally and vertically throughout the Tularosa Basin. Coarse-grained, poorly sorted sediments deposited near mountain fronts grade into fine-grained, well sorted sediments towards the center of the basin (Kelly, 1973). Sediments further from the mountain fronts also contain a greater percentage of clay and gypsum. Vertically, the sediments are reported to become finer-grained and more consolidated until reaching a laterally continuous clay unit at about 1,000 feet below ground surface (ft bgs) (Kelly and Hearne, 1976). In general, the stratigraphy is represented by unconsolidated to partially consolidated, fine to medium-grained sand with subordinate amounts of clay. Caliche is present as discrete layers and nodules throughout the stratigraphic section.

2.5 Hydrogeology

The WSMR Main Post obtains its potable water supply from an aquifer in the upper bolson deposits. The majority of the groundwater recharge to this bolson aquifer occurs through the coarse, unconsolidated Tertiary/Quaternary alluvial fan deposits and arroyos along the eastern flank of the Organ, San Augustin and San Andres

Mountains. This aquifer consists of a wedge-shaped belt of potable water more than 30 miles long from north to south, and 3 to 5 miles east from the mountain front (BAE Systems, 2004). The closest production wells for the Main Post are approximately 6 miles to the northwest of the Site.

Groundwater in the vicinity of the Main Post is of sufficient quality (less than 1,000-milligrams per liter (mg/L) total dissolved solids) for human consumption. This freshwater zone is assumed to extend down to about 1,800 feet bgs. Recharge to the regional aquifer is from precipitation falling on the mountain ranges and alluvial fans. This precipitation infiltrates the unconsolidated, relatively coarse deposits of the alluvial fans, and the resultant groundwater flows toward the center of the Tularosa Basin, generally to the east-southeast. To the east, groundwater becomes more mineralized, primarily with sulfate and chloride, most likely due to the slow lateral migration rate of groundwater from recharge to discharge areas in the presence of readily soluble minerals in the bolson sediments (BAE Systems, 2004).

The nearest groundwater monitoring wells are located between 1,600 to 2,200 feet to the southwest of the Main Post POL ~~Area~~AST Release Site, as shown in Figure 1. ~~Two~~ One test well~~s~~ ~~are~~is located approximately one mile west of the Main Post POL ~~Area~~ AST Release Site. Depth to groundwater in the monitoring wells ranges from 335 to 341 ft bgs, as shown in Table 1, while depth to groundwater in the test well is between 236 to 238 ft bgs. It is expected that the depth to groundwater beneath the Main Post POL area is at a similar depth to that of the monitoring wells located to the southwest and is expected to be greater than 300 ft bgs.

2.6 Climate

The elevation of the WSMR Main Post is approximately 4,000 feet above mean sea level. Snowfall is infrequent, although heavy snows have occurred. With an average annual rainfall of only 10.8 inches, mostly occurring during late summer as

thunderstorms, often accompanied by hail, the area is considered semi-arid. Intense localized thunderstorms are capable of causing flash flooding (WTS, 2006).

The average summer high temperature is 92°F with lows of about 65°F. During the winter months (December, January, and February), the average high is 57°F, with lows of about 36°F. Average annual humidity readings are approximately 37 percent.

Westerly winds can reach approximately 40 miles per hour, and wind is a climatic factor from February to about May (WTS, 2006).

Precipitation records were reviewed for the month of December 2005 for available weather stations from the National Oceanographic and Atmospheric Administration (NOAA) website. Data were available from 12 different reporting stations within a 100 mile radius of the Site. No significant precipitation was reported during the month, with only one recorded value of 0.10 inches of precipitation recorded on December 13, 2005 at the Sacramento reporting station, which is located approximately 60 miles to the northeast. No recordable precipitation was noted at the 3 stations within 25 miles of the Site.

3. Scope of Activities

Activities performed to complete the field sample collection effort and data evaluation are described in this section. All sample collection and screening procedures were conducted in general accordance with Appendix 5, specifically Section 5.2, of the Permit. Specific activities conducted are described in the following subsections.

3.1 Field Activities

3.1.1 Utility Clearance

Zia Engineering and Environmental Consultants (Zia) performed a utility clearance prior to the start of sample collection activities, as per Appendix 5, Section 5.2.2.a of the Permit. Zia marked the proposed boring locations at the Site and obtained WSMR clearance for the proposed soil sampling locations. On January 8, 2010, Ground Penetrating Radar (GPR) was used to field verify the locations of underground utilities at the Site. The GPR technician marked the locations of utility lines using fluorescent paint. The proposed boring locations were altered slightly to ensure that underground

piping was not damaged by the proposed drilling activities. The actual locations of the borings are shown in Figure 3 and a copy of the GPR report is provided in Appendix A.

WSMR personnel inspected the Site and viewed the GPR markings as well as the proposed boring locations on January 14, 2010. WSMR personnel approved the

locations for drilling.

3.1.2 Soil Sample Collection and Field Screening Procedures

Soil samples were collected and screened following the general guidance of Sections 5.2.2.b and 5.2.2.d of Appendix 5 of the Permit.

Soil samples were collected from locations SB-001 through SB-006 (Figure 3) using a mobile drilling rig equipped with hollow stem augers on January 18 and 19, 2010. Hollow stem auger drilling was chosen due to the potential presence of volatile organic compounds (VOCs). The drilling and sample collection procedures were supervised by a qualified geologist. ~~as per Appendix 5, Section 5.2.2.b.i of the Permit. All drilling, sample collection and field screening procedures were performed using Appendix B of the RCRA Part B Permit., as per Appendix 5, Section 5.2.2.b.i of the Permit.~~

Soil was qualitatively screened for visual and olfactory presence of hydrocarbons. Quantitative screening of soil was conducted using a photoionization detector (PID) to obtain a heated headspace reading of VOCs. The PID used was a MultiRAE Plus Monitor with a 10.6 electron Volt (eV) lamp, with a detection range of 0 to 2000 parts per million (ppm) ~~with~~ and a 0.1 ppm resolution. The PID was calibrated daily using the “fresh air calibration”, which zeroes the unit, ~~then~~ followed by a single sensor calibration for VOCs ~~was performed~~ using 100 ppm isobutylene.

The lead auger was used to drill through the asphalt at locations SB-001 through SB-005 and to drill through the concrete floor of the containment area at location SB-006. A hand auger was used to remove the upper 3 feet of soil at each location to verify that no utility lines were located in vicinity of the borings. Soil was observed for lithology and for visual or olfactory indications of the potential presence of hydrocarbons every 6 inches throughout the upper 3 feet of soil. When visual or olfactory indications of hydrocarbons were present or at pre-determined intervals, soil was collected from the bottom of the auger, at the cutting blades, for PID screening or for laboratory sample

collection. Information from the upper 3 feet of soil was recorded on the boring logs in Appendix B.

Beneath the hand-augered portion of each boring, soil samples were collected by advancing core barrels ahead of the hollow stem augers. Soil cores were collected continuously to the total depth drilled at each location. The soil cores were examined

visually and described according to the Unified Soil Classification System (USCS), American Society for Testing and Materials (ASTM) Standard D 2487-83 (ASTM, 1985). A copy of the USCS chart summarizing the classification system is provided in Appendix B. The sampling tools used, depth of the soil core, amount of soil recovered, soil classification, and other visual observations were recorded on a lithologic log for each sampling location. The boring logs are provided for each boring in Appendix B.

Aliquots of the soil from each soil core were placed into glass sample jars and covered with aluminum foil. ~~, then t~~The jars were placed into the heated cab of the truck and allowed to equilibrate for approximately 10 minutes. The foil was then pierced with the probe portion of the ~~a photoionization detector (~~PID~~)~~ and the highest PID measurement from each aliquot of soil was recorded on the boring logs, along with the depth from which the aliquot was obtained. This heated headspace screening was performed on aliquots of soil from each of the pre-determined sample intervals, at intervals where visual or olfactory indications of potential hydrocarbons were present, and at other routine intervals throughout each boring. All heated headspace readings obtained are provided on each soil boring log. The ambient air temperature was also recorded on the boring log~~, as per Section 5.2.2.d of Appendix 5 of the Permit~~.

Soil samples were planned to be collected from each boring at depths of 4 to 5 feet, 9 to 10 feet, 14 to 15 feet, and 19 to 20 feet, unless field observations indicated that a different interval should be sampled. Actual depths of samples collected are shown in Table 2 and are also indicated on the boring logs in Appendix B.

Soil samples were collected from two additional borings in April 2010 to provide additional lateral delineation of the total petroleum hydrocarbons (TPH) gasoline range organics (GRO) concentrations detected in shallow soil samples from Boring SB006 (discussed later in Section 5.2). The additional borings, SB-007 and SB-008, were located immediately adjacent to the western and northern walls of the AST containment area. These soil samples were collected using a hand auger. The soil borings were advanced with the hand auger in approximately 1 foot increments. The

soil was inspected and observations recorded on boring logs. Headspace analyses were performed in the same manner as described for the January 2010 sampling event. The boring logs for these sample locations are also provided in Appendix B.

3.1.3 Decontamination Procedures

All field equipment, including hand augers, core barrels, ~~flight augers,~~ knives and other non-disposable equipment was decontaminated between each sample and each location, and in accordance with Section 5.2.3 of Appendix 5 of the Permit. The flight augers were decontaminated between each sampling location. Decontamination of large equipment, such as the flight augers and other down-hole equipment, was performed using a high-pressure washer to wash off the equipment over a portable stock tank. Wash water collected in the stock tank was allowed to evaporate in order to minimize waste requiring disposal. Decontamination of smaller equipment, such as the hand augers and knives, included washing the equipment with a solution of potable water and laboratory-grade detergent, scrubbing with a brush, rinsing with potable water, rinsing with distilled water, then allowed to air dry. Any soil that collected in the bottom of the stock tank was placed into the waste soil container, as discussed in Section 3.1.8. The decontamination procedures used during the RFI were consistent with the Standard Practices for Decontamination of Field Equipment Used at Non-Radioactive Waste Sites (ASTM 05088-02).

During the January 2010 event, decontamination water that did not evaporate was collected and stored in a closed-top 55-gallon drum, labeled and disposed of as discussed in Section 3.1.8.

During the April 2010 event, decontamination water was stored in spray bottles and as a result, very little decontamination water was generated. The liquids generated were collected in a 5-gallon open top bucket and allowed to evaporate in order to minimize the waste generated.

3.1.4 Field Quality Control Samples

Field quality control (QC) samples were collected to evaluate the data quality, according to the work plan, and in accordance with Section 5.2.2.e of Appendix 5 of the Permit. Field QC samples included a total of two equipment rinsate blanks, three field blanks, three trip blanks, and three field duplicate samples.

The equipment rinsate blanks were collected by pouring distilled water over a piece of previously decontaminated sampling equipment (such as the hand auger) and catching the rinsate in a laboratory container. The equipment rinsate blanks were analyzed for the same parameters as the primary soil samples.

The field blanks samples were collected by pouring distilled water directly into sample

containers, while working at the site. The field blank is intended to detect any airborne constituents that might affect sampling results. The field blank was analyzed for the same parameters as the primary soil samples.

One trip blank was included with each laboratory cooler that included VOC samples. The trip blanks were analyzed for the same VOC parameters as the primary samples.

Field duplicates were obtained by collecting an aliquot of soil from the same portion of the soil core as the corresponding primary sample. No field compositing of soil was performed prior to collection of the field duplicate samples. The field duplicate samples were analyzed for the same parameters as the parent sample.

3.1.5 Sampling Handling and Shipping

Sample handling was performed in general accordance with Section 5.2.2.j and 5.2.6.b of Appendix 5 of the Permit. Samples were handled with new disposable gloves that were replaced prior to use with each sample. After each sample was placed into the appropriate container and labeled, it was placed into a cooler with ice. The ice was double-bagged using plastic zipper bags. Each sample was recorded on a chain-of-custody form with the requested analyses for that sample. The chain-of-custody form was sealed inside the cooler prior to shipment to the laboratory. A copy of the chain-of-custody forms is provided in Appendix D.~~C~~

~~As required by Sections 5.2.2.j and 5.2.6.b of Appendix 5 of the Permit, s~~Shipping containers were sealed with a custody seal and shipped to the laboratory via overnight courier. None of the custody seals had been broken upon receipt at the laboratory. Copies of the container custody seals and the shipping labels ~~were~~are provided in the final laboratory reports in Appendix D.

3.1.6 Analytical Tests Requested

The samples were submitted to DHL Analytical of Austin Texas, a laboratory accredited by the National Environmental Laboratory Accreditation Conference (NELAC) and Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP). DHL Analytical performed analyses of the samples using the most current approved methods, in general accordance with Section 5.3 of Appendix 5 of the Permit. Appendix ~~C~~D of this report contains a copy of the analytical laboratory reports.

All of the soil samples collected in January 2010 from soil borings ~~within the~~ at the Main Post POL AST Release Site were submitted to the laboratory under proper chain-of-custody for the following analyses:

- Total petroleum hydrocarbons (TPH) gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8015 Modified;
- Benzene, toluene, ethylbenzene and xylenes (BTEX) by USEPA Method 8021B; and
- Lead by USEPA Method 6020.

All of the soil samples collected in April 2010 from Borings SB-007 and SB-008 were submitted to the laboratory under proper chain-of-custody for the following analyses:

- Total petroleum hydrocarbons (TPH) gasoline range organics (GRO) by USEPA Method 8015 Modified; and
- Benzene, toluene, ethylbenzene and xylenes (BTEX) by USEPA Method 8021B.

None of the April samples were analyzed for lead because no additional delineation of lead was required based on the results of the January 2010 sampling event.

3.1.7 Abandonment of Soil Borings

Boring abandonment was performed in general accordance with Section 6.4 of Appendix 6 of the Permit. All of the soil borings were filled with a slurry composed of

Type II Portland Cement, quick gel bentonite, and potable water. This slurry was placed into each hole to the surface. An asphalt patch was placed over the borings where asphalt had been removed in order to advance the borings. After the boring inside the concrete containment was abandoned, the concrete floor of the containment was patched with a concrete patch.

3.1.8 Waste Handling

All wastes generated during the investigation described in this report were handled in general accordance with Section 5.2.2.b.iv of Appendix 5 of the Permit.

Miscellaneous trash (drinking water bottles, shipping boxes, paper trash, etc.) that did not come into contact with soil or decontamination equipment was containerized and disposed of as solid waste.

Investigation derived waste (IDW) generated during the sampling events included soil cuttings, decontamination fluids, disposable gloves, plastic sheeting, aluminum foil, and other materials that came into contact with either the soil or decontamination equipment and liquids. IDW soils~~lids~~ generated during the January 2010 event were placed into ~~a~~ one one-cubic yard pallet box, while decontamination liquids were placed into ~~a~~one 55-gallon closed-top drum. Other solid wastes that came into contact with soils, such as gloves and paper towels, ~~was~~were contained in one 5-gallon plastic bucket. The IDW generated during the April 2010 included soil and PPE since the liquid was allowed to evaporate. The IDW from this event ~~were~~ was placed into ~~a~~ one 55-gallon open-top drum. Each container was labeled with the date, contents, and point of contact information and delivered to the WSMR waste management center (WMC) for storage pending waste characterization and disposal. A copy of the drum logs documenting delivery of the IDW to the WMC is provided in Appendix D.

To supplement the RFI data and provide additional data for waste characterization purposes, one soil sample collected during the January 2010 sampling event [MNPA-MPOL-SB-006-(3.0-4.0)] was analyzed for the full VOC list by USEPA Method 8260B and for the full semi-volatile organic compound (SVOC) list by USEPA Method 8270C. The analytical data were provided to the WMC and WSMR personnel determined that the waste was characterized as non-regulated. The waste was disposed of off-site by the WMC on April 28, 2010.

A separate composite sample (MP01-CS-001) of the IDW solids was collected during the April 2010 sampling event and this sample was submitted to the laboratory under a separate chain of custody for waste characterization analyses. The composite sample was collected by obtaining three aliquots of soil from the drum using a clean stainless steel auger. The aliquots were obtained from near the top of the drum, near the center of the drum and near the bottom of the drum. The three aliquots of soil were placed in

a clean stainless steel bowl and mixed with a clean trowel to composite the soil. The sample was submitted to the laboratory for specific waste characterization analyses. The drum of IDW generated during the April 2010 event was transported to the WMC on April 13, 2010. The laboratory report for the composite waste characterization sample was provided to WSMR personnel on May 18, 2010. According to subsequent communication with WMC personnel, the IDW was classified as non-regulated and was disposed off-site in July 2010.

~~Appendix D contains a copy of the correspondence from WMC indicating the final disposition of the IDW from both events.~~

3.1.9 Survey

In accordance with Section 5.2.2.f of Appendix 5 of the Permit, ~~F~~following completion of each field effort, the physical coordinates and ground surface elevation was measured at each boring. The first six borings at the Site were surveyed on February 12, 2010. The additional two borings installed in April 2010 were surveyed on April 28, 2010.

All of the locations were surveyed in relation to a control point. Northing and easting data were measured to the nearest 0.001 meter and elevation was measured to the nearest 0.001 foot. A copy of the survey data is provided in Appendix ~~E~~C.

3.2 Data Evaluation

3.2.1 Regulatory Criteria

Data developed during the RFI were evaluated according to the NMED risk-based soil screening guidance document *Technical Background Document for Development of Soil Screening Levels Revision 5.0* (NMED, 2009). SSLs are presented in Table A-1 of that document (SSG Table A-1) for various exposure scenarios.

Additional screening values were obtained from the combined USEPA Regional Screening Levels (RSLs), found on the USEPA website, which is located on the internet at http://www.epa.gov/region09/superfund/prg/index.html. The RSL summary table includes soil screening values for both Residential Soil and for Industrial Soil.

The NMED guidance document for evaluation of TPH (NMED, 2006) provides several

screening levels for TPH, depending on the source of the petroleum product. The source of potential impacts at the Site is gasoline. No screening level is provided for TPH GRO in the NMED guidance document.

The Site is located within the Main Post of WSMR and access to the Site is limited to personnel approved to enter the area. Although this would imply that an industrial/occupational exposure would be appropriate, the Residential SSLs were used in order to provide a conservative evaluation of potential impacts.

In addition to the Residential SSLs, the SSL for protection of groundwater due to leaching was used to screen the samples. Because the samples were not saturated, depth to groundwater in the vicinity is greater than 300 ft bgs, and the source area is less than 0.5 acres, a dilution attenuation factor of 20 (DAF 20) was used to evaluate leaching potential.

3.2.2 Data Quality Evaluation

The primary data quality objectives (DQOs) for this investigation were to provide representative data usable to characterize site conditions, delineate the nature and extent of affected media (if present), and to support corrective action decisions as appropriate. Analytical data reports were reviewed and evaluated in accordance with Appendix 5 of the Permit and in accordance with applicable USEPA SW-846 method requirements as described in the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA, October 1999), USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA, July 2002) and the site-specific requirements defined in the White Sands Missile Range Site-Wide Quality Assurance Project Plan (ARCADIS, 2009).

The analytical data were validated using Level II quality assurance (QA) and quality control (QC) criteria. A copy of the analytical data reports and the data validation

summary reports are provided in Appendix D~~C~~. The data validation results indicated that all the data are usable and meet the project's data quality objectives.

3.2.3 Risk Assessments

Human health and ecological risk assessments were performed using data collected

during both the January and April 2010 sampling events.

The human health risk assessment (HHRA) was performed to evaluate potential risks associated with human exposure to constituents of potential concern (COPCs) at the Site. The HHRA was conducted following the approach provided in the NMED guidance and USEPA guidance for risk assessments (see Appendix E for references). Both a screening level ecological risk assessment (SLERA) and a baseline ecological risk assessment (BERA) were performed for the Site. These assessments evaluated potential risks associated with ecological receptors that may be exposed to constituents of potential ecological concern (COPECs). The SLERA and BERA were performed using an approach based on NMED and USEPA guidance (see Appendix E~~F~~ for references).

For purposes of the risk assessment, the soil data were divided by sample depth interval based on the exposure pathways identified for the site. In brief, the soil data were categorized as follows:

- Surface soil data, including soil samples collected from depths of 0 to 2 ft bgs, were used to evaluate potential exposure of human (current/future site worker; hypothetical future resident) and ecological receptors;
- Surface and subsurface soil data (0 to 10 ft bgs) were used to evaluate potential exposure of human (future construction worker) and ecological receptors that could be exposed to subsurface soil (e.g., burrowing wildlife); and
- Total soil data (vadose zone) were used to evaluate potential exposure of human receptors through the vapor intrusion exposure pathway.

The detailed procedures followed for the risk assessments are described in Appendix ~~F~~E.

4. Investigation Results

Results of the field investigation and data evaluation activities are discussed in this section.

4.1 Subsurface Conditions

The boring logs (Appendix B) indicate that the upper 2 to 3 feet of soils consist of well-graded sand that extends across the area investigated. A clay layer was encountered in all but one boring (SB-001) from depths of 2 to 3 ft bgs and was approximately 3 to 4 feet in thickness. This clay layer was underlain by well-graded to poorly graded sand to a depth of 20 ft bgs. None of the borings extended more than 20 ft bgs.

As shown in the boring logs, the soils were moist throughout the depth of the investigation, but no saturated soil was encountered.

4.2 Soil Sampling Field Screening Results

The PID measurements collected during field screening are presented in the soil boring logs (Appendix B). The only soil samples that contained organic vapors as measured by the PID were from the 4 to 5 ft bgs interval at Boring SB-002 and several samples from Boring SB-006. The PID measurements recorded from samples collected at Boring SB-006 declined significantly with depth, with a recording of 308 ppm immediately below the concrete to 10 ppm at a depth of 9 ft bgs. No measureable organic vapors were recorded from the samples collected deeper than 9 ft bgs at location SB-006.

4.3 Soil Sampling Analytical Results

The analytical results for soil samples collected during the RFI are provided in Table 3. Analytical reports from the laboratory are provided in Appendix D~~C~~ along with the data validation summary.

The reported concentrations in samples collected from the upper 10 ft bgs were compared to the Residential SSL for each constituent. The reported concentrations in all samples ~~collected from greater than 10 ft bgs~~ were compared to the DAF 20 SSL.

Both the Residential SSL and the DAF 20 SSL, where available, are provided for each constituent analyzed~~, as shown~~ in Table 3.

4.3.1 Gasoline Range Organics

The NMED guidance document for evaluation of TPH (NMED, 2006) does not provide

an SSL for gasoline; thus no SSL is available for GRO.

GRO was reported at a concentration of 1.04 milligrams per kilogram (mg/kg) in the sample collected from 4 to 5 ft bgs from location SB-002. The samples collected from deeper intervals in this boring did not contain detectable GRO.

GRO was reported at a concentration of 511 mg/kg in the sample collected from immediately below the concrete at location SB-006. Samples from surrounding borings (SB-001 through SB-005, SB-007 and SB-008) provide lateral delineation of the TPH GRO. The deeper samples from SB-006 did not contain detectable amounts of TPH GRO, providing vertical delineation of the TPH GRO. The distribution of TPH GRO concentrations in the soils is shown on Figure 4. The data are summarized in Table 3.

4.3.2 Volatile Organic Compounds

The sample collected from immediately below the concrete at location SB-006 contained benzene, ethylbenzene and xylenes at concentrations above the DAF 20 SSL but below their respective Residential SSLs. Samples from surrounding borings (SB-001 through SB-005, SB-007 and SB-008) provide lateral delineation of the BTEX concentrations in SB-006. The deeper samples from SB-006 did not contain detectable amounts of BTEX, providing vertical delineation of the BTEX. The distribution of BTEX concentrations in the soils is shown on Figure 4. The data are summarized in Table 3.

4.3.3 Lead

Lead was reported in the samples collected from SB-001 through SB-006 at concentrations ranging from 4.9 to 47.5 mg/kg, all of which are below the Residential SSL. No DAF value is available for lead.

4.3.4 Waste Characterization Analytical Results

Table 4 contains a summary of the waste characterization sample analytical results. The analytical data were provided to the WMC, as discussed in Section 3.1.8.

4.4 Risk Assessment Screening

4.4.1 Human Health Risk Assessment Screening

A HHRA was conducted to evaluate exposure to COPCs in surface soil (0 to 2 ft bgs), combined surface and subsurface soil (0 to 10 ft bgs), and total soil (0 to 20 ft bgs) for site workers under current and future land-use conditions, and construction workers and residents (adult and child) under hypothetical future land-use conditions. Appendix E~~F~~ provides additional details of the procedures and results of the HHRA, which are summarized in this subsection.

In accordance with NMED guidance (NMED, 2009), constituent concentrations in surface soil and in combined surface and subsurface soil were compared to health-based screening levels and the calculated ratios summed. The ratios were multiplied by $1x10^{-5}$ for carcinogens and by 1 for non-carcinogens. The results of this data screening process indicate that after comparison to health-based soil screening levels for industrial worker exposure, residential exposure, and construction worker exposure, no COPCs were selected for surface soil or for combined surface and subsurface soil at the Site. This demonstrates that the constituent concentrations in surface soil and in combined surface and subsurface soil at the Site are unlikely to result in adverse health impacts to current or future site workers, current or future construction workers or future residents via direct contact exposure (i.e., ingestion, inhalation of vapor/dust, dermal).

All the VOCs detected in total soil were selected as COPCs for the vapor intrusion evaluation. The total cumulative Excess Lifetime Cancer Risk (ELCR) for a hypothetical future resident exposed to indoor air at the Site is 9×10^{-5}, which is within the acceptable target risk range of 1×10^{-6} to 1×10^{-4}. The total cumulative hazard index (HI) for a hypothetical future child resident is 26, which is above the benchmark of 1. Xylenes were identified as the primary contributor to the calculated hazard.

A closer examination of the detected and non-detected concentrations and their spatial extent indicates that it is unlikely that xylenes would represent a significant exposure risk to hypothetical future site worker or resident receptors. Xylenes were detected in only 1 of 29 samples, with a maximum concentration of 66 mg/kg. This sample was reported for sample location MPOL-SB-006 and was collected from 0.5 to 1 ft bgs, underneath the concrete pavement area adjacent to the 6,000 gallon gasoline ASTs

where the release occurred. Of the 29 total samples that were collected from surface and shallow soil (i.e., from 0 to 20 bgs) at the Site, xylenes were not detected in any other sample, including the four samples collected at 4 ft bgs, 10 ft bgs, 15 ft bgs , and 20 ft bgs from MPOL-SB-006. Xylenes are considered unlikely to represent a significant future exposure concern because of the following reasons:

- The evaluated scenarios (i.e., hypothetical future worker and residential exposure via vapor intrusion) are unlikely because they would involve a significant land use change in the future (i.e., from an operating military installation to commercial/industrial or a single-family residential development); and

- Elevated xylenes concentration was only detected at 0.5 to 1 ft bgs underneath concrete pavement at the release area. In the event that future redevelopment at the site involves construction of a building over soil containing xylenes, xylenes concentration in surface soil will significantly decrease due to volatilization into ambient air during reconstruction. Given the extremely low frequency of detection (i.e., 3 percent), and that the one detection was limited to surface soil (i.e., 1 ft bgs) from a single sample obtained from underneath concrete pavement, it is unlikely that this detection represents a significant source of vapors that could migrate into an overlying structure at some point in the future.

Based on this evaluation, xylenes are unlikely to represent a significant exposure risk via vapor intrusion under future land use conditions.

4.4.2 Ecological Risk Assessment Results

A SLERA and BERA were completed for the Site to evaluate whether ecological receptors may be adversely impacted by exposure to site-related constituents detected in surface soil and subsurface soil, and to conduct food chain modeling for the COPECs identified as bioaccumulative. Appendix E~~F~~ provides additional details of the

procedures and results of the SLERA and BERA, which are summarized in this subsection.

The results of the SLERA and BERA for direct contact exposure and for food chain modeling indicate that adverse impacts are unlikely to occur for ecological receptors potentially exposed to constituents in soil. Therefore, no further ecological evaluation

of the Site is warranted.

5. Conclusions

A RFI of the Site was performed in order to evaluate whether the reported release of gasoline resulted in impacts to soil and if the potential exists for impacts to groundwater. The investigation was performed according to the requirements of the WSMR permit. Soil samples were collected from eight borings within the Site. The analytical reports were reviewed and the data were determined to meet the data quality objectives.

The evaluations of data performed for this RFI have resulted in the following conclusions:

- Based on both the PID and analytical results, limited impacts appear to be present immediately below the southeast corner of the concrete containment area~~ .holding the three 6,000 gallon gasoline ASTs.~~

- The vertical extent of the impacted soil is defined by the soil samples collected during this RFI and is limited to approximately 2 to 3 ft bgs. The lateral extent of the impacted soil has also been defined and is limited to the area beneath and immediately adjacent to the southeast corner of the containment area.

- A human health risk assessment screening was conducted using the analytical results and most recent screening levels. The impacted soil does not pose a current or future risk to human health.

- An evaluation of the data was performed to determine whether the affected soils represent a risk of potential future leaching to groundwater. Benzene, ethylbenzene and total xylenes ~~was the only COPC~~ are present at concentrations above the respective DAF 20 values. The only reported concentrations of the

COPCs above the DAF 20 value were contained in the sample collected from immediately below the concrete (0.5 to 1 ft bgs) in boring SB-006. The samples collected from deeper intervals (4 – 5', 9 – 10' 14 – 15' and 19 – 20') in this same boring did not contain detectable COPCs and the detection limits were an order of magnitude lower than the respective DAF 20 values. In fact, no other sample collected contained any detectable concentrations of these COPCs. Based on the very shallow exceedances of DAF 20 in SB-006 (0.5 – 1') relative to the very deep occurrence of groundwater (greater than 300 feet), there is little or no risk that the COPCs in the shallow soils represents a threat to the groundwater. This is further supported by the fact that surface water infiltration depths in the area do not exceed about 15 feet because of the very high evapotranspiration rates (ARCADIS, 2010). In addition, the area is covered with asphalt, which should minimize infiltration of surface water and further reduce the potential for leaching to occur.

- ~~The samples collected from deeper intervals in that boring did not contain detectable benzene concentrations of BTEX and the detection limits were at least one an order of magnitude lower than the DAF 20 value. The depth to groundwater in the vicinity of the site is greater than 300 feet bgs. There is no evidence to suggest that groundwater could be impacted from the AST release or that residual contamination in soils represents any future risk to groundwater. Reference Table 1 here.~~

- The results of the SLERA and BERA for direct contact exposure and for food chain modeling indicate that adverse impacts are unlikely to occur for ecological receptors potentially exposed to constituents in soil. Therefore, no further ecological evaluation of the Site is warranted.

6. Recommendations

The RFI for the Site was successfully completed and meets the RFI requirements described in the Permit. No further investigation is recommended.

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Appendix **A**

GPR Report

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Appendix **E**

Risk Assessments

REPORT DOCUMENTATION PAGE

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14. ABSTRACT

This RFI Report describes activities conducted to characterize soil and groundwater conditions at the Main Post POL AST Release Site (the Site), SWMU 219 in the WSMR Permit. On December 7, 2005, a release of approximately 1,370 gallons of gasoline occurred while transferring gasoline between one of the 25,000 gallon gasoline ASTs to the 3 6,000 gallon gasoline ASTs. A crack in the southeastern corner of the concrete containment allowed the majority of the fuel to escape and be released to the subsurface below. The release was verbally reported to the PSTB and the NMED HWB in December of 2005. Soil samples were collected from beneath the outside the containment area. The vertical extent of the impacted soil is defined by the soil samples collected during this RFI and is limited to approximately 2 to 3 ft bgs. The lateral extent of the impacted soil has also been defined and is limited to the area beneath the southeast corner of the containment area. A human health risk assessment screening was conducted by comparing the analytical results from the RFI to NMED published soil screening levels. Based on the screening results, soils at the Site do not pose a current or future risk to human health. No further investigation is recommended.

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SWMU 219 (CCWS-77)

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SWMU 219 (CCWS-77)

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Executive Summary

This Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report was written on behalf of White Sands Missile Range (WSMR) pursuant to requirements of WSMR's Hazardous Waste Permit Number NM2750211235 (Permit) dated December 2009. This RFI Report describes activities conducted to characterize soil and groundwater conditions at the Main Post Petroleum, Oil, and Lubricant (POL) Above Ground Storage Tank (AST) release site (the Site), where a fuel spill of approximately 1,370 gallons of gasoline occurred in December 2005. The Site is listed as Solid Waste Management Unit (SWMU) 219 in the WSMR Permit.

Following is a brief chronology describing the corrective action activities related to this Site:

- December 2005, a release of approximately 1,370 gallons of gasoline occurred at the AST.
- December 2009 – Permit No. NM2750211235 was issued. Table 4-1 of the Permit lists SWMU 219 as a site requiring corrective action. The comment in the table specifies the AST Release Site.
- August 2009 – the RCRA Facility Investigation (RFI) Work Plan for the Site was submitted to the New Mexico Environmental Department (NMED).
- November 2009 – the NMED issued a Notice of Disapproval (NOD) of the August 2009 RFI Work Plan.
- February 2010 – WSMR submitted the Revised RFI Work Plan to the NMED. The Revised Work Plan addressed the comments from the November 2009 NOD and included a table summarizing WSMR's response to the comments.
- January through April 2010 – field activities were conducted and data collected according to the February 2010 Revised RFI Work Plan.
- May 2010 – the NMED issued a NOD for the February 2010 Revised RFI Work Plan.
- July 2010 – WSMR sent a letter to the NMED requesting a 60-day extension to respond to the NOD and notifying the NMED that they intended to implement the

RFI Work Plan and respond to the May 2010 NOD in the RFI Report rather than submit a second revised RFI Work Plan.

- August 2010 – the NMED approved the request for a schedule extension and acknowledged WSMR's notification that they would respond to the comments in the RFI Report. October 2010 – WSMR submitted the RFI Report. The RFI Report included responses to the NMED's May 2010 NOD for the RFI Work Plan.

- February 2011 – the NMED issued a NOD for the October 2010 RFI Report.

This Revised RFI Report represents a revision to the original October 2010 RFI Report and includes responses to the NMED's February 2011 NOD. Several of the comments contained in the February 2011 NOD pertain to what constitutes SWMU 219 and request that the entire POL Area, not just the AST Release Site, be included in the RFI. Appendix 4, Table 4-1 of the Permit identifies SWMU 219 as Main Post POL AST Release Site. No other releases have been identified at the Main Post POL and SWMU 219 was identified and listed as a SWMU because of the reported gasoline spill. Based on this information, investigation of areas outside the AST Release Site is not warranted and is not required by the Permit.

The Main Post POL Storage Area provides storage and a fueling point for the Main Post official vehicles and consists of a number of ASTs, underground piping, and a filling station. The POL Storage Area has been in service since the 1960s and currently has eight fuel pumps located at the fueling island. Two of the eight pumps are used to dispense diesel fuel while the remaining six pumps dispense gasoline. There are three 6,000 gallon diesel ASTs located to the northwest of the fueling island and three 6,000 gallon gasoline ASTs located to the west of the fueling island. To the east side of the fueling island, there are three 25,000 diesel ASTs and three 25,000 gasoline ASTs. Underground lines convey diesel from the 25,000 gallon diesel ASTs to the 6,000 gallon diesel ASTs and from the 6,000 gallon diesel ASTs to the diesel fuel pumps. Likewise there are underground lines that convey gasoline from the 25,000 gallon gasoline ASTs to the 6,000 gallon gasoline ASTs and from the 6,000 gallon gasoline ASTs to the gasoline fuel pumps.

On December 7, 2005, a release of approximately 1,370 gallons of gasoline occurred while transferring gasoline between one of the 25,000 gallon gasoline ASTs to the 6,000 gallon gasoline ASTs. The 6,000 gallon ASTs are filled simultaneously at an even rate by the transfer system. According to reports from personnel knowledgeable about the release, during the transfer, one of the tanks was overtopped and gasoline

was released to the concrete secondary containment. The identification of which tank overtopped was not recorded. The released gasoline was captured by the concrete secondary containment; however, a crack in the southeastern corner of the floor of the concrete containment allowed the majority of the fuel to escape and be released to the subsurface below. The release was verbally reported to the Petroleum Storage Tank Bureau (PSTB) and the NMED Hazardous Waste Bureau (HWB) in December of 2005.

The work conducted as part of this RFI focused on the area of the AST release and included the following specific tasks:

- Collection of soil samples to characterize subsurface conditions and complete lateral and vertical delineation of affected soils to the NMED residential soil screening levels (SSLs).
- Identification of whether subsurface soil impacts could potentially affect the underlying groundwater.
- Screening of potential risks to human health and ecological receptors.

As part of this RFI, soil samples were collected from a total of eight (8) soil borings during two separate sampling events in January and April 2010. Soil samples were analyzed for Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), and lead. The majority of the samples did not contain detectable concentrations of these constituents; however, one sample collected from immediately below the AST containment area indicated that a limited area of soils had been affected by the spill.

The field screening performed on soil samples using a photoionization detector (PID) corresponded to the analytical results obtained from the soil samples. Based on both the PID and analytical results, limited impacts appear to be present immediately below the southeast corner of the concrete containment area holding the three 6,000 gallon gasoline ASTs.

The vertical extent of the impacted soil is defined by the soil samples collected during this RFI and is limited to approximately 2 to 3 feet below ground surface (ft bgs). The lateral extent of the impacted soil has also been defined and is limited to the area beneath the southeast corner of the containment area.

A human health risk assessment screening was conducted by comparing the analytical results from the RFI to NMED published SSLs. Based on the screening results, soils at the Site do not pose a current or future risk to human health.

The data were reviewed to evaluate the potential for cross-media contamination from soil to groundwater. This evaluation consisted of comparing the data to published Dilution Attenuation Factor (DAF) 20 values, while considering other site-specific conditions including depth of contamination, depth to groundwater, and surface water infiltration conditions. Benzene, toluene and total xylenes were the only constituents of potential concern (COPC) present at concentrations above the DAF 20 value. The only reported concentrations of the COPCs above the DAF 20 value were contained in the sample collected from immediately below the concrete (0.5 to 1 ft bgs) in boring SB-006. The samples collected from deeper intervals (4- 5', 9-10', 14-15' and 19-20') in this same boring did not contain detectable COPCs and the detection limits were an order of magnitude lower than the respective DAF 20 values. In fact, no other sample collected contained any detectable concentrations of these COPCs. Based on the very shallow exceedances of DAF 20 in SB-006 (0.5-1') relative to the very deep occurrence of groundwater (greater than 300 feet) and the relatively small size of the source area, there is little or no risk that the COPCs in the shallow soils represents a threat to the groundwater. This is further supported by the fact that surface water infiltration depths in the area do not exceed about 15 feet because of the very high evapotranspiration rates (ARCADIS, 2010). In addition, the area is covered with concrete and asphalt, which should limit infiltration of surface water and further reduce the potential for leaching to occur.

The results of the Screening Level Ecological Risk Assessment (SLERA) and Baseline Ecological Risk Assessment (BERA) for direct contact exposure and for food chain modeling indicate that adverse impacts are unlikely to occur for ecological receptors potentially exposed to constituents in soil. Therefore, no further ecological evaluation of the Site is warranted.

The RFI for the Site was successfully completed and meets the RFI requirements described in the Permit. No further investigation is recommended.

Table ES-1 – White Sands Missile Range Response to New Mexico Environment Department Comments			
Comment No.	**NMED Comments**	**WSMR Response**	**Section/Page Reference**
1	The Report's cover letter dated October 7, 2010, states that it "already completed investigation activities based on the first NOD and therefore requested an extension to complete the investigation report in lieu of submitting another revised work plan." NMED's Approval for Extension letter dated August 17, 2010, states, "NMED understands that the Permittee is conducting the investigation at risk without an approved Work Plan. The Permittee must adhere to the requirements in NMED's November 6, 2009 NOD and May 12,2010 NOD related to the RCRA Investigation Work Plan for the Main Post POL, [Solid Waste Management Unit (SWMU)] 219 when conducting the investigation activities and when preparing the Investigation Report." The Permittee did not comply with the requirements included in either NOD, nor did the investigation include the entire SWMU. Submit a work plan to address all comments in both of NMED's NODs as well as describe the proposed investigation methods for the entire SWMU 219 for approval by NMED prior to beginning further investigations.	The Permittee respectfully disagrees with this comment. The requirements of both NODs, with the exception of expanding the investigation to areas outside the AST Release Site, were incorporated into the RFI Report. Permittee does not agree with the extent of the SWMU identified by NMED and contends the AST Release Site constitutes SWMU 219, not the entire POL Area. This is reflected in the Comment section of Table 4-1 in Appendix 4 of the Permit. There have been no other documented releases in the Main Post POL Area. The POL area is an active fueling station, and routine inspections and leak tests are conducted. Based on this information, the RFI performed is appropriate. It should also be noted that the initial NOD to the work plan dated November 6, 2009 did not comment on the proposed scope, which focused only on the AST area. WSMR does not understand why the second NOD dated May 23, 2010 contained separate unrelated comments to the first NOD.	Not applicable
2	The second NOD dated May 12, 2010 (Second NOD), Comment 1, required the Permittee to investigate the entire SWMU. In the response to NMED's Comment 1, the Permittee states, "Appendix 4, Table 4-1 specifically notates SWMU 219 as the AST Release Site." However, the Permittee's Hazardous Waste Facility Permit (Permit) does not identify the "AST Release Site" as SWMU 219; it is merely a "Comment" from the table. The "Unit Description" provides the clear definition of the SWMU, which is the Main Post POL. The Permittee must submit another work plan to fulfill the aforementioned Permit requirement to investigate the entire SWMU and clearly define the boundary of the entire SWMU 219 site. NMED has attached two figures that define the aerial extent of SWMU 219. NMED notes that the Permittee did not define the site boundary as requested in the first and second NODs.	As discussed in the response to Comment 1, the Permittee respectfully disagrees with this comment. The site boundary was adequately defined in the Work Plan and in the RFI, as confirmed by the analytical data delineating the vertical and horizontal extents of impacts.	Not applicable
3	Comments from NMED's November 6, 2009 NOD (First NOD) and the Second NOD directed the Permittee to revise the figures to include the entire SWMU 219 site. The relevant comments are reiterated here: a. Figure 1 (Main Post Site Map) must include the newly illustrated boundary of SWMU 219 provided by NMED and properly label the site "SWMU 219" in relation to the Main Post. The aerial photograph used to illustrate the Main Post must also be a current photograph. This figure must also include any other AOCs and SWMUs located in the vicinity of the Main Post POL. The title of Figure 1 must be changed to "White Sands Missile Range, New Mexico, Main Post POL SWMU 219."	As discussed in the response to Comment 1, the Permittee respectfully disagrees with the NMED regarding the extent of the SWMU. Therefore, the figure titles have not been changed. a. The aerial photograph used by NMED from Google Maps is actually a 2007 image. The aerial photograph used to create Figure 1 in the RFI was a 2008 aerial photograph. The most recent photograph available is from 2009. Figure 1 has been updated using the 2009 aerial photograph. Figure 1 has been updated to depict other AOCs/SWMUs in the vicinity of the Main Post POL AST Release Site. These SWMUs include SWMUs 10, 12 and 14, located approximately 300 feet to the north-northwest of the AST Release Site. SWMU 10 is the Wash Pad, Drains, & Sump at Building1778 (formerly identified	Figure 1 Figure 2

Table ES-1 – White Sands Missile Range Response to New Mexico Environment Department Comments

Comment No.	NMED Comments	WSMR Response	Section/Page Reference
	b. Figure 2 (Site Layout SWMU 219) must be a site plan scaled to focus on SWMU 219 and adjacent features and structures that clearly "illustrate the boundaries, structures, [and/or] features" of the entire SWMU 219 site as listed in the Permit (Appendix 7, Section 7.3.13, Item 2). Provide additional figures to identify specific features if they are unable to be clearly displayed on one figure. All utilities (aboveground and underground) must be depicted and labeled. All existing and former buildings and structures must be properly labeled. All existing and former ASTs and underground storage tanks (USTs) must also be identified on the figure(s). Historical and current aerial photographs and assessments must be used to compile this information on appropriate figure(s). Figure 2 must be titled "White Sands Missile Range, New Mexico, Main Post POL SWMU 219" and Figure 2.	as SWMUs 10 and 11). SWMU 12 is the Wash Ramp, Drains, Sump, & Oil/Waste Separator @ Building 1778 (formerly identified as SWMUs 12 and 13). SWMU 14 is Used Battery Accumulation Area at Main Post (formerly identified as SWMUs 14 and 15). Consistent with our response to Comment 1, the title of this figure was not changed. b. Figure 2 has been revised to show buildings and structures in the immediate vicinity of the Main Post POL AST Release Site. Buildings include Building 1719 (Main Post POL Operations Building which is the operations headquarters for the Main Post fuel facility), Building 1788 (Main GSA Vehicle Maintenance Building) and Building 1789 (GSA Maintenance Shop Annex Building where WMSR repairs heavy vehicles and semi trucks), Building 1776 (Battery Accumulation Area where used batteries are stored), and Building 1791 (Canopy Storage Area where trailers and building materials are stored). Locations of current USTs, ASTs and known utilities are shown on Figure 2. However, as-built drawings were not available and the locations of some utilities could not be identified. Historical aerial photographs of this area were not available for review. Consistent with our response to Comment 1, the title of this figure was not changed.	
4	Comment 8, Second NOD, states that "past sampling has not been conducted at SWMU 219, the scope of work must be expanded to include the entire SWMU. Additionally, fuel lines are present at the site. Therefore, the sampling suite must be revised to include volatile organic compounds (VOCs) using EPA Method 8260, semi volatile organic compound (SVOCs) using EPA Method 8270, GRO, diesel range organics (DRO) extended, and RCRA 8 metals." The Permittee did not address this comment. Address all requirements specified by NMED in the Second NOD in the work plan proposing investigation of the entire SWMU.	As discussed in the response to Comment 1, the Permittee respectfully disagrees with the NMED regarding the extent of the SWMU. WSMR contends the AST Release Site constitutes SWMU 219, not the entire POL Area. The analytical suite used was adequate and appropriate to characterize a release of gasoline, which is the focus of this RFI Report. It should be noted that the November 6, 2009 NOD did not contest the selected analytical suite, or the general scope of the proposed investigation.	Not applicable
5	The Executive Summary, paragraph 1, page b, explains that the AST gasoline release in December 2005 occurred while transferring fuel from the higher capacity 25,000 gallon tanks to the three smaller capacity 6,000 gallon tanks. a. Reword the description to verify that all three 6,000 gallon tanks were filled simultaneously and the release was a result of overfill from all three 6,000 gallon tanks and provide a more specific description of the location of the release from the secondary	a. The Executive Summary has been revised to state that all three 6,000 gallon ASTs are filled at the same time; however, according to WSMR personnel knowledgeable about the release, only one tank was overtopped. There were no records t as to which tank overtopped. The location of the crack in the containment has been further clarified in the report. b. The background section has been revised to reflect the following:	Executive Summary Sections 2.1 and 2.2

Table ES-1 – White Sands Missile Range Response to New Mexico Environment Department Comments			
Comment No.	**NMED Comments**	**WSMR Response**	**Section/Page Reference**
	containment [see the Permittee's Response to Comment 5 (Response to Second Notice of Disapproval for the RCRA Facility Investigation Work Plan for the Main Post POL AST Release Site, SWMU 219)]. b. Provide a description (in the background section of the report) of the surface conditions at the location where the release occurred. 1. Describe the base of the secondary containment (e.g., gravel or asphalt). 2. Indicate if the transport path of the release on the ground surface included surface depressions (e.g., storm water drainages, cracks or potholes in the asphalt) where fuel could have ponded.	1. The secondary containment consists of concrete walls and a concrete floor. 2. The transport path of the release was through the floor of the containment area, not along the ground surface.	
6	The Permittee's Response to Comment 6 (Response to NOD for RCRA Facility Investigation Work Plan) states, "[i]t is assumed that no gasoline was recovered from [the] December 2005 release." Verify that no gasoline was recovered from the release and state as such in Section 2.2 of revised Report, or otherwise state the basis for the assumption.	According to facility personnel, some of the released gasoline was pumped out of the secondary containment and recovered. However, the volume of recovered gasoline was not recorded. Section 2.2 of the Revised Report has been modified to include this information.	Section 2.2
7	Section 2.3 (Surface Conditions), page 3, states, "[s]tormwater from the northern portion of the POL Storage Area flows through a culvert located beneath Wesson Street, just south of Aberdeen A venue. The storm water then flows through an unlined ditch toward the east." Propose to collect samples from the storm water lagoons and unlined ditch to verify that gasoline from the AST release site did not reach them. This sampling must be proposed in the work plan to investigate the entire SWMU (see Comment 4).	There are no storm water lagoons in the vicinity of the Main Post POL. A note concerning storm water lagoons was inadvertently included in the legends for Figures 2, 3 and 4. These figures have been changed and the note removed. The figures have been revised to more clearly identify the stormwater features. The gasoline that was released from the AST was contained within the walls of the secondary containment. Although an unknown volume was released through a crack in the floor of the containment, the gasoline that escaped the secondary containment would not have reached the storm water ditches. As described in the RFI Report, the lateral and vertical extents of the affected soils were delineated. This further demonstrates that the release of gasoline constituents did not migrate far beyond the southeastern corner of the AST containment area and therefore, could not have reached the storm water ditches.	Figures 2, 3 and 4; Section 2.3
8	Section 2.6 (Climate), page 5, describes the climate at the Main Post. However, the Permittee does not discuss whether this area experiences seasonal rains nor did the Permittee discuss any major precipitation events that occurred before, on, or around the December 2005 release date. Include this information in the revised Report.	A copy of the daily precipitation records for December 2005, the month in which the release occurred, was obtained from the National Oceanographic and Atmospheric Administration (NOAA). No significant precipitation was recorded during December 2005. This information has been included in the Revised Report.	Section 2.6
9	Section 3.1.2 (Soil Sample Collection and Field Screening Procedures), page 6, states, "[t]he lead auger was used to drill through the asphalt at	The hand augers used for this investigation have a 6-inch solid barrel with cutting teeth. The field geologist inspected the soil at the bottom of the	Section 3.1.2

Table ES-1 – White Sands Missile Range Response to New Mexico Environment Department Comments			
Comment No.	**NMED Comments**	**WSMR Response**	**Section/Page Reference**
	locations SB-00 1 through SB-005 and to drill through the concrete floor of the containment area of location SB-006. A hand auger was used to remove the upper 3 feet of soil at each location to verify that no utility lines were located in vicinity of the borings. Beneath the hand-augered portion of each boring, soil samples were collected by advancing core barrels ahead of the hollow stern augers. Soil cores were collected continuously to the total depth drilled at each location." It is not clear if the hand-augered intervals from the surface to 3 feet below ground surface were continuously sampled or if soil samples were collected only after the Permittee hand-augered to a depth of 3 feet. Identify all the sampling intervals where soil samples were collected and indicate the sample intervals on the soil boring logs. Revise the Report accordingly.	barrel every 6-inches and recorded the observed lithology on the boring logs. Samples were collected from the bottom of the barrel and screened using the PID either at specified intervals or where visual or olfactory screening indicated the potential presence of hydrocarbons. All sample intervals for both PID screening and for laboratory analysis are indicated on the boring logs. Section 3.1.2 has been revised to clarify this information.	
10	Section 3 .1.2 (Soil Sample Collection and Field Screening Procedures), page 6, describes the use of field screening equipment to measure the total VOCs in the headspace of the soil samples collected. Describe the equipment that was used, including manufacturer, bulb strength and detection range, the calibration process, and frequency of calibration. The boring logs from Appendix B must include instrument readings for all soil samples. Provide justification for omitting any of the readings, or if readings were not obtained. Revise the Report accordingly.	The specifications and calibration frequency for the PID used to obtain heated headspace readings have been added to the Revised Report in Section 3.1.2. Heated headspace readings were obtained at each pre-determined sample interval, at intervals where visual or olfactory indications of potential hydrocarbons were present and at other routine intervals throughout each boring. All heated headspace PID readings obtained are provided in the boring logs and no readings were omitted.	Section 3.1.2
11	Section 3 .1.3 (Decontamination Process), paragraph 1 does not include a description of the decontamination procedures for the drilling rig or other heavy equipment used. Revise the Report to include this information.	Flight augers were decontaminated using a high-pressure washer prior to use at each soil boring. Liquids were contained in a stock tank and allowed to evaporate to minimize waste disposal. This information has been incorporated into the Revised Report.	Sections 3.1.3 and 3.1.8
12	Section 3.1.8 (Waste Handling), page 10, states that "waste was disposed of off-site by WMC on April28, 2010." The Permittee also states that the waste generated from the April 2010 event "was disposed of July 2010." Provide additional information pertaining to the investigation derived waste (IDW) management and disposal in accordance with Section 7.3.14.a of the Permit. The additional information must also include the quantities and types of waste generated (solids and/or liquids) and if these wastes were separated for disposal. Submit this information as an additional appendix in the revised Report.	The quantities and types of waste have been clarified in the text of the Revised Report. A copy of the drum logs documenting delivery of the wastes to the WMC is provided in Appendix D in the Revised Report.	Section 3.1.8 and Appendix D
13	Section 4.2 (Soil Sampling Field Screening Results), page 13, includes numerical values that do not have units. Revise the Report to include the units of measure.	The unit of measure for the PID is parts per million (ppm). This information has been included in the Revised Report.	Section 4.2
14	Section 5, (Conclusions), page 17, states, "[b]enzene was the only	The Revised Report has been corrected to reflect the presence of	Section 5

Table ES-1 – White Sands Missile Range Response to New Mexico Environment Department Comments			
Comment No.	**NMED Comments**	**WSMR Response**	**Section/Page Reference**
	[constituent of potential concern (COPC)] present at concentrations above the DAF 20 value." However, Figure 4 (BTEX and GRO Concentrations) and Table 3 (Summary of Soil Sample Analytical Results) show that ethylbenzene and total xylenes also exceed the NMED DAF 20·screening values. Revise this conclusion to include discussion of all results that exceed screening levels and explain why a DAF 20 was chosen for comparison.	ethylbenzene and total xylenes at concentrations above the NMED DAF20 SSL in the shallow soil sample at one location. A discussion of why the DAF20 SSL was used was provided in Section 3.2.1.	
15	Section 5 (Conclusions), page 18, states, "[t]he RFI for the Site was successfully completed and meets the RFI requirements described in the Permit. No further investigation is recommended." The Permittee has not demonstrated that "no further investigation" is warranted for SWMU 219 because the entire site was not investigated. The Permittee must submit another work plan to investigate the rest of SWMU 219 (see Comment 2).	The Permittee respectively disagrees with this comment. SWMU 219, the Main Post POL AST Release Site has been properly investigated, delineated and no further investigation is warranted at this time. No justification has been provided by NMED for investigation of additional areas in the vicinity of the documented release.	Not applicable
16	Table 1 (Depth to Groundwater in Nearby Wells), does not include a description for the locations of each of the monitoring wells (e.g. NW of "Site"). Revise the table to include a column labeled "Location" that describes where the monitoring wells are located with respect to SWMU 219.	The locations of the wells listed in Table 1 are provided in Figure 1. Additional descriptions of the well locations have been added to Table 1.	Table 1
17	Table 2 (Soil Sample Locations and Depth Intervals), must be revised to separate the row cells for SB-007 and SB-008, and include units of measure for the PID readings. It must be explained in the text and comments section why lead was not included in the analysis for samples SB-007 and SB-008.	Table 2 has been corrected to separate the locations and depth intervals between locations SB-007 and SB-008. Lead was not analyzed in samples collected from SB-007 and SB-008 because lead was adequately delineated by the earlier samples (SB-001 through SB-006). This explanation was included in Section 3.1.6 of the original RFI Report.	Table 2
18	Table 3 (Summary of Soil Sample Analytical Results), must highlight values that exceed soil screening levels (SSLs) and DAF 20 to identify the exceedances on the tables (see also Comment 17 regarding lead data).	Table 3 shows exceedances of the DAF20 screening value in italics font. No exceedances of the SSL occurred; thus, no highlighting of data exceeding SSLs is required.	No change
19	Table 4 (Waste Characterization Samples Analytical Data Summary), must provide a note/comment for sample CS-001 that identifies the sample matrix (i.e., solids or liquids). Revise "Acronym/Notes" to define "NA" and explain why analysis was not conducted for certain constituents.	The source of sample CS-001 was a composite of IDW soil, as discussed in Section 3.1.8. A note has been added to Table 4 to clarify the matrix. As discussed in Section 3.1.8, the WMC did not request specific waste characterization sampling be performed after all samples had been collected and submitted for laboratory analyses during the January 2010 event. Therefore, analysis of full VOCs and SVOCs was requested for the sample that most likely had impacts after that sample had been submitted to the laboratory. WMC did not request additional analysis of metals or ignitability for the waste generated during the January 2010 event, but did request those analyses be performed on the composite soil sample collected from the April 2010 event. A note has been added to Table 4 to clarify that those constituents were not analyzed because they were not	Table 4

Table ES-1 – White Sands Missile Range Response to New Mexico Environment Department Comments

Comment No.	NMED Comments	WSMR Response	Section/Page Reference
		required by WMC.	
20	The following comments pertain to figures: a. The current Figure 2 must be changed to Figure 3 (AST Release Site Layout) in the revised Report. Clearly "illustrate the boundaries, structures, [and/or] features" of the December 2005 AST Release as required by the Permit, Appendix 7, Section 7.3 .13, Item 2. All existing and former buildings and structures must be properly labeled. Provide additional figures to identify specific features if they are unable to be clearly displayed on one figure. All existing and former ASTs and USTs must be identified on the figure(s). Ensure all text on figure(s) is consistent and legible (see Comment 3). Differentiate between buildings, ASTs, and USTs on the figure(s). Ensure the USTs, ASTs and associated secondary containment are shown to scale. The figure(s) must depict surface conditions (e.g., asphalt and gravel) and topography. b. The current Figure 3 must be changed to Figure 4 (Soil Boring Locations) in the revised Report. Revise the symbol color of soil sample locations from yellow to black so it does not conflict with Note 2 on the figure reporting the BTEX and GRO concentrations. c. The current Figure 4 must be changed to Figure 5 (BTEX and GRO Concentrations) in the revised Report. Revise the symbol color of the soil sample locations from yellow to black as required by Item C above. Also define "NA" from the SB-006 (3-4) result table.	a. Figure 2 has been revised and contains the site plan with site structures and features identified, as discussed in our response to Comment No. 3. The figure number was not changed because no new figures were added. b. Note 2 on Figure 4 refers to the data boxes and not to the boring locations. Because none of the reported results exceed the Residential SSL, this note has been removed from Figure 4. There is no need to change the color of the boring location symbol. The figure number was not changed because no new figures were added. c. Figure 4 has been corrected to depict <0.00556 mg/kg as the result for total xylenes for the sample from 3-5 ft bgs at location SB-006. See responses to items a and b above. The figure number was not changed because no new figures were added.	Figures 2, 3 and 4
21	Revise the table formats for the Boring/Well Construction Logs as described below: a. Reformat the cells to show all field parameters recorded, and provide the appropriate units (e.g., air temperature in degrees Fahrenheit or Celsius). b. Provide consistent names on all figures, (e. g., "Pumps" used instead of "Dispenser Island" and "Tanks" used instead of "ASTs, 3 X 6,000 gallon unleaded gasoline"). c. Explain why the number of blow counts was not recorded when split barrel samplers were utilized. d. On the SB-006 boring log, the column labeled "Color" is incomplete. Explain why the log was not completed.	The Boring/Well Construction Logs have been updated as follows: a. The log format used is a standardized form that can be used for multiple purposes. All field parameters recorded are included on the logs. A note has been added to indicate the unit and location of the air temperature recorded. b. The sketch on the logs has been modified. The sketch included on the logs is not intended to be used as a detailed site map, but to generally show the location of the boring and/or well. Site details are provided in the report figures. c. No blow counts were recorded because no split spoons were driven with a slide hammer on the rig. All samples were collected from core barrels which were driven with the auger. Blow hammers cannot be used with this type of equipment. Furthermore, blow counts are	Appendix B

Table ES-1 – White Sands Missile Range Response to New Mexico Environment Department Comments			
Comment No.	**NMED Comments**	**WSMR Response**	**Section/Page Reference**
	e. Define "TOC." f. Provide a key to symbols and identify the soil or rock classification system used to log the soil borings in accordance with Appendix 7, Section 7.3 .14.b of the Permit. The soil classification must be included in the boring logs.	typically used for geotechnical borings and the information they provide are of limited use for environmental investigations. d. The boring log for SB-006 has been modified to include color for all intervals logged. e. TOC is a standard term used for top of casing. Because no wells were installed, no top of casing was recorded. The notes section has been updated to reflect this definition. f. All soils were described using the Unified Soil Classification System (USCS), as discussed in the text of the RFI Report. A note has been added to the boring logs to confirm the use of the USCS. A copy of the official USCS Chart describing the soil symbols has been added to Appendix B.	
22	Appendix D does not show the PID readings collected at all depths. Explain how the screening intervals were selected and why not all measurements were recorded (including readings of 0 ppm). Provide this information in the revised Report and in the boring logs.	See response to Comment 10. All PID readings collected are provided in the Boring Logs and no change is required.	Section 3.1.2 and Appendix B
23	Remove Appendix E (Risk Assessment) from the Report because it is not appropriate for such a small portion of a SWMU.	Permittee respectfully disagrees with this comment and requests that the NMED provide a regulatory basis for this comment and for determining the size of area for which a Risk Assessment may or may not be appropriate. The Risk Assessment was performed because impacts were present above the default screening levels and further evaluation was appropriate to determine whether actual risks to human health or the environment are present. Based on this, WSMR believes that performing a risk assessment is the most appropriate response and is consistent with the regulations and with Army policy for waste minimization and sustainability.	No change required.

List of Acronyms

AST	Above Ground Storage Tank
ASTM	American Society for Testing and Materials
BERA	Baseline Ecological Risk Assessment
BTEX	benzene, toluene, ethylbenzene, and xylenes
COPC	constituents of potential concern
COPEC	constituents of potential ecological concern
DoD	Department of Defense
DQO	data quality objectives
ELAP	Environmental Laboratory Accreditation Program
ELCR	Excess Lifetime Cancer Risk
eV	Electron Volt
ft bgs	Feet Below Ground Surface
GPR	Ground Penetrating Radar
GRO	Gasoline Range Organics
HHRA	human health risk assessment
HI	hazard index
HWB	Hazardous Waste Bureau
IDW	Investigation derived waste
mg/L	Milligrams per Liter
mg/kg	Milligrams per Kilogram
NELAC	National Environmental Laboratory Accreditation Conference
NMED	New Mexico Environmental Department
NOAA	National Oceanographic and Atmospheric Administration
NOD	Notice of Disapproval
PID	photoionization detector
POL	Petroleum, Oil, and Lubricant

PPE	personal protective equipment
ppm	Parts Per Million
PSTB	Petroleum Storage Tank Bureau
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RSL	Regional Screening Levels
SLERA	Screening Level Ecological Risk Assessment
SSL	soil screening levels
SVOC	semi-volatile organic compound
SWMU	Solid Waste Management Unit
TPH	Total Petroleum Hydrocarbons
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
VOC	volatile organic compounds
WMC	waste management center
WSMR	White Sands Missile Range

1. Introduction

This Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report was written on behalf of White Sands Missile Range (WSMR) pursuant to requirements of WSMR's Hazardous Waste Permit (No. NM2750211235) dated December 2009. This RFI Report describes activities conducted to characterize soil and groundwater conditions at the Main Post Petroleum, Oil, and Lubricant (POL) Aboveground Storage Tank (AST) Release Site (the Site), where a fuel spill of approximately 1,370 gallons of gasoline occurred in December 2005. The Site is listed as Solid Waste Management Unit (SWMU) 219 in the WSMR Permit under Table 4-1 requiring corrective action.

A brief chronology describing the corrective action activities related to this Site follows:

- December 2005, a release of approximately 1,370 gallons of gasoline occurred at the AST.
- December 2009 – Permit No. NM2750211235 was issued. Table 4-1 of the Permit lists SWMU 219 as a site requiring corrective action. The comment in the table specifies the AST Release Site.
- August 2009 – the RCRA Facility Investigation (RFI) Work Plan for the Site was submitted to the NMED.
- November 2009 – the NMED issued a Notice of Disapproval (NOD) of the August 2009 RFI Work Plan.
- February 2010 – WSMR submitted the Revised RFI Work Plan to the NMED. The Revised Work Plan addressed the comments from the November 2009 NOD and included a table summarizing WSMR's response to the comments.
- January through April 2010 – field activities were conducted and data collected according to the February 2010 Revised RFI Work Plan.
- May 2010 – the NMED issued a NOD for the February 2010 Revised RFI Work Plan.
- July 2010 – WSMR sent a letter to the NMED requesting a 60-day extension to respond to the NOD and notifying the NMED that they intended to implement the

RFI Work Plan and respond to the May 2010 NOD in the RFI Report rather than submit a second revised RFI Work Plan.

- August 2010 – the NMED approved the request for a schedule extension and acknowledged WSMR's notification that they would respond to the comments in the RFI Report. October 2010 – WSMR submitted the RFI Report. The RFI Report included responses to the NMED's May 2010 NOD for the RFI Work Plan.

- February 2011 – the NMED issued a NOD for the October 2010 RFI Report.

This Revised RFI Report represents a revision to the original October 2010 RFI Report and includes responses to the NMED's February 2011 NOD. Several of the comments contained in the February 2011 NOD pertain to what constitutes SWMU 219 and request that the entire POL Area, not just the AST Release Site, be included in the RFI. Appendix 4, Table 4-1 of the Permit identifies SWMU 219 as Main Post POL AST Release Site. No other releases have been identified at the Main Post POL and SWMU 219 was identified and listed as a SWMU because of the reported gasoline spill. Based on this information, investigation of areas outside the AST Release Site is not warranted and is not required by the Permit.

The primary objectives of the RFI were: 1) to determine whether the spill resulted in a release to the surrounding soils or groundwater; 2) to characterize the nature and extent of affected soils and groundwater; and 3) to evaluate potential risks to human and ecological receptors exposed to the affected media.

The work conducted as part of this RFI included the following specific tasks.

- Collection of soil samples to characterize subsurface conditions and complete lateral and vertical delineation of affected soils to the NMED residential soil screening levels (SSLs).

- Identification of whether subsurface soil impacts could potentially affect the underlying groundwater.

- Screening of potential risks to human health and ecological receptors.

These activities are described in more detail in the following sections.

2. Background Information

2.1 Operational History

The Site is located at the WSMR Main Post (Figure 1), within the Main Post POL Storage Area. The POL Storage Area provides storage and a fueling point for the Main Post official vehicles and consists of a number of ASTs, underground piping, and a filling station.

The POL Storage Area has been in service since the 1960s. Currently, there are eight fuel pumps located at the fueling island. Two of the eight pumps are used to dispense diesel fuel while the remaining six pumps dispense gasoline. As shown in Figure 2, there are three 6,000 gallon diesel ASTs located to the northwest of the fueling island and three 6,000 gallon gasoline ASTs located to the west of the fueling island. On the east side of Wesson Street, there are three 25,000 gallon diesel ASTs and three 25,000 gallon gasoline ASTs. The ASTs are located within containment areas which are constructed of concrete walls with a concrete floor. The ASTs are elevated on saddles within the containment to allow for routine inspection.

Underground lines convey diesel from the 25,000 gallon diesel ASTs to the 6,000 gallon diesel ASTs and from the 6,000 gallon diesel ASTs to the diesel fuel pumps. Likewise, underground lines convey gasoline from the 25,000 gallon gasoline ASTs to the 6,000 gallon gasoline ASTs and from the 6,000 gallon gasoline ASTs to the gasoline fuel pumps. The approximate locations of these underground lines are shown in Figure 2.

2.2 Regulatory History

On December 7, 2005, a release of approximately 1,370 gallons of gasoline occurred while transferring gasoline between one of the 25,000 gallon gasoline ASTs to the 6,000 gallon gasoline ASTs. The 6,000 gallon ASTs are filled simultaneously at an even rate by the transfer system. According to WSMR personnel knowledgeable about the release, one of the tanks was overtopped during the transfer and gasoline was released to the concrete secondary containment. The identification of the actual tank that overtopped was not recorded. The concrete walls of the containment prevented the release of the gasoline to the surrounding ground surface. However, a crack in the southeastern corner of the floor of the concrete containment allowed fuel to escape and be released to the subsurface below. According to base personnel, some of the gasoline was pumped out of the containment following the release, but the volume of

gasoline recovered was not recorded. The release was verbally reported to the Petroleum Storage Tank Bureau (PSTB) and the NMED HWB in December of 2005. Following this incident, the concrete containment was repaired to prevent a similar release in the future.

2.3 Surface Conditions (Topography)

WSMR lies within the Mexican Highland Section of the Basin and Range Province. This province is characterized by a series of tilted fault blocks forming longitudinal, asymmetric ridges, or mountains, and broad intervening basins (BAE Systems, 2004). Very little surface water exists at WSMR due to low annual precipitation, high evapotranspiration rates, and high infiltration characteristics of the soils (BAE Systems, 2004).

The POL AST Release Site is covered with concrete and the surrounding area is relatively flat and covered with either asphalt or concrete. As shown in Figure 2, there is an asphalt-lined ditch located immediately west of the MP POL AST Release Site. Stormwater runoff from areas immediately outside of and surrounding the MP POL AST Release Site containment structure flows into this ditch and flows northward into a culvert under Aberdeen Avenue, then into a concrete lined ditch located on the north side of Aberdeen Avenue, which drains stormwater to the east.

2.4 Geology

The geology of WSMR is dominated by the Tularosa Basin and surrounding mountain ranges. The San Andres Mountains, San Augustin, and Oscura Mountains border the Tularosa Basin on the west while the Sacramento Mountains form the eastern border. A narrow region of north-south-trending, large-displacement normal faulting separates the mountains from the basin, resulting in the change in relief across the missile range. The average elevation of the Tularosa Basin is 4,000 feet above mean sea level. The majority of WSMR property, including most test facilities, is located within the Tularosa Basin (IT, 1992). The Tularosa Basin contains thick sequences of Tertiary and Quaternary age alluvial and bolson-fill deposits. These sediments, more than 5,000 feet thick in some areas, consist mainly of silt, sand, gypsum and clay weathered from the surrounding mountain ranges. The average elevation of the basin floor is 4,000 feet above mean sea level and surface features consist of flat sandy areas, sand dunes, basalt flows, and playas (dry lake beds).

The nature of the bolson-fill deposits varies both laterally and vertically throughout the Tularosa Basin. Coarse-grained, poorly sorted sediments deposited near mountain fronts grade into fine-grained, well sorted sediments towards the center of the basin (Kelly, 1973). Sediments further from the mountain fronts also contain a greater percentage of clay and gypsum. Vertically, the sediments are reported to become finer-grained and more consolidated until reaching a laterally continuous clay unit at about 1,000 feet below ground surface (ft bgs) (Kelly and Hearne, 1976). In general, the stratigraphy is represented by unconsolidated to partially consolidated, fine to medium-grained sand with subordinate amounts of clay. Caliche is present as discrete layers and nodules throughout the stratigraphic section.

2.5 Hydrogeology

The WSMR Main Post obtains its potable water supply from an aquifer in the upper bolson deposits. The majority of the groundwater recharge to this bolson aquifer occurs through the coarse, unconsolidated Tertiary/Quaternary alluvial fan deposits and arroyos along the eastern flank of the Organ, San Augustin and San Andres Mountains. This aquifer consists of a wedge-shaped belt of potable water more than 30 miles long from north to south, and 3 to 5 miles east from the mountain front (BAE Systems, 2004). The closest production wells for the Main Post are approximately 6 miles to the northwest of the Site.

Groundwater in the vicinity of the Main Post is of sufficient quality (less than 1,000-milligrams per liter (mg/L) total dissolved solids) for human consumption. This freshwater zone is assumed to extend down to about 1,800 feet bgs. Recharge to the regional aquifer is from precipitation falling on the mountain ranges and alluvial fans. This precipitation infiltrates the unconsolidated, relatively coarse deposits of the alluvial fans, and the resultant groundwater flows toward the center of the Tularosa Basin, generally to the east-southeast. To the east, groundwater becomes more mineralized, primarily with sulfate and chloride, most likely due to the slow lateral migration rate of groundwater from recharge to discharge areas in the presence of readily soluble minerals in the bolson sediments (BAE Systems, 2004).

The nearest groundwater monitoring wells are located between 1,600 to 2,200 feet to the southwest of the Main Post POL AST Release Site, as shown in Figure 1. One test well is located approximately one mile west of the Main Post POL AST Release Site. Depth to groundwater in the monitoring wells ranges from 335 to 341 ft bgs, as shown in Table 1, while depth to groundwater in the test well is between 236 to 238 ft bgs. It is expected that the depth to groundwater beneath the Main Post POL area is at a similar

depth to that of the monitoring wells located to the southwest and is expected to be greater than 300 ft bgs.

2.6 Climate

The elevation of the WSMR Main Post is approximately 4,000 feet above mean sea level. Snowfall is infrequent, although heavy snows have occurred. With an average annual rainfall of only 10.8 inches, mostly occurring during late summer as thunderstorms, often accompanied by hail, the area is considered semi-arid. Intense localized thunderstorms are capable of causing flash flooding (WTS, 2006).

The average summer high temperature is 92°F with lows of about 65°F. During the winter months (December, January, and February), the average high is 57°F, with lows of about 36°F. Average annual humidity readings are approximately 37 percent. Westerly winds can reach approximately 40 miles per hour, and wind is a climatic factor from February to about May (WTS, 2006).

Precipitation records were reviewed for the month of December 2005 for available weather stations from the National Oceanographic and Atmospheric Administration (NOAA) website. Data were available from 12 different reporting stations within a 100 mile radius of the Site. No significant precipitation was reported during the month, with only one recorded value of 0.10 inches of precipitation recorded on December 13, 2005 at the Sacramento reporting station, which is located approximately 60 miles to the northeast. No recordable precipitation was noted at the 3 stations within 25 miles of the Site.

3. Scope of Activities

Activities performed to complete the field sample collection effort and data evaluation are described in this section. All sample collection and screening procedures were conducted in general accordance with Appendix 5, specifically Section 5.2, of the Permit. Specific activities conducted are described in the following subsections.

3.1 Field Activities

3.1.1 Utility Clearance

Zia Engineering and Environmental Consultants (Zia) performed a utility clearance prior to the start of sample collection activities, as per Appendix 5, Section 5.2.2.a of

the Permit. Zia marked the proposed boring locations at the Site and obtained WSMR clearance for the proposed soil sampling locations. On January 8, 2010, Ground Penetrating Radar (GPR) was used to field verify the locations of underground utilities at the Site. The GPR technician marked the locations of utility lines using fluorescent paint. The proposed boring locations were altered slightly to ensure that underground piping was not damaged by the proposed drilling activities. The actual locations of the borings are shown in Figure 3 and a copy of the GPR report is provided in Appendix A.

WSMR personnel inspected the Site and viewed the GPR markings as well as the proposed boring locations on January 14, 2010. WSMR personnel approved the locations for drilling.

3.1.2 Soil Sample Collection and Field Screening Procedures

Soil samples were collected and screened following the general guidance of Sections 5.2.2.b and 5.2.2.d of Appendix 5 of the Permit.

Soil samples were collected from locations SB-001 through SB-006 (Figure 3) using a mobile drilling rig equipped with hollow stem augers on January 18 and 19, 2010. Hollow stem auger drilling was chosen due to the potential presence of volatile organic compounds (VOCs). The drilling and sample collection procedures were supervised by a qualified geologist.

Soil was qualitatively screened for visual and olfactory presence of hydrocarbons. Quantitative screening of soil was conducted using a photoionization detector (PID) to obtain a heated headspace reading of VOCs. The PID used was a MultiRAE Plus Monitor with a 10.6 electron Volt (eV) lamp, with a detection range of 0 to 2000 parts per million (ppm) and a 0.1 ppm resolution. The PID was calibrated daily using the “fresh air calibration”, which zeroes the unit, followed by a single sensor calibration for VOCs using 100 ppm isobutylene.

The lead auger was used to drill through the asphalt at locations SB-001 through SB-005 and to drill through the concrete floor of the containment area at location SB-006. A hand auger was used to remove the upper 3 feet of soil at each location to verify that no utility lines were located in vicinity of the borings. Soil was observed for lithology and for visual or olfactory indications of the potential presence of hydrocarbons every 6 inches throughout the upper 3 feet of soil. When visual or olfactory indications of hydrocarbons were present or at pre-determined intervals, soil was collected from the bottom of the auger, at the cutting blades, for PID screening or for laboratory sample

collection. Information from the upper 3 feet of soil was recorded on the boring logs in Appendix B.

Beneath the hand-augered portion of each boring, soil samples were collected by advancing core barrels ahead of the hollow stem augers. Soil cores were collected continuously to the total depth drilled at each location. The soil cores were examined visually and described according to the Unified Soil Classification System (USCS), American Society for Testing and Materials (ASTM) Standard D 2487-83 (ASTM, 1985). A copy of the USCS chart summarizing the classification system is provided in Appendix B. The sampling tools used, depth of the soil core, amount of soil recovered, soil classification, and other visual observations were recorded on a lithologic log for each sampling location. The boring logs are provided for each boring in Appendix B.

Aliquots of the soil from each soil core were placed into glass sample jars and covered with aluminum foil. The jars were placed into the heated cab of the truck and allowed to equilibrate for approximately 10 minutes. The foil was then pierced with the probe portion of the PID and the highest PID measurement from each aliquot of soil was recorded on the boring logs, along with the depth from which the aliquot was obtained. This heated headspace screening was performed on aliquots of soil from each of the pre-determined sample intervals, at intervals where visual or olfactory indications of potential hydrocarbons were present, and at other routine intervals throughout each boring. All heated headspace readings obtained are provided on each soil boring log. The ambient air temperature was also recorded on the boring log.

Soil samples were planned to be collected from each boring at depths of 4 to 5 feet, 9 to 10 feet, 14 to 15 feet, and 19 to 20 feet, unless field observations indicated that a different interval should be sampled. Actual depths of samples collected are shown in Table 2 and are also indicated on the boring logs in Appendix B.

Soil samples were collected from two additional borings in April 2010 to provide additional lateral delineation of the Total Petroleum Hydrocarbons (TPH) GRO concentrations detected in shallow soil samples from Boring SB006 (discussed later in Section 5.2). The additional borings, SB-007 and SB-008, were located immediately adjacent to the western and northern walls of the AST containment area. These soil samples were collected using a hand auger. The soil borings were advanced with the hand auger in approximately 1 foot increments. The soil was inspected and observations recorded on boring logs. Headspace analyses were performed in the same manner as described for the January 2010 sampling event. The boring logs for these sample locations are also provided in Appendix B.

3.1.3 Decontamination Procedures

All field equipment, including hand augers, core barrels, knives and other non-disposable equipment was decontaminated between each sample and each location, and in accordance with Section 5.2.3 of Appendix 5 of the Permit. The flight augers were decontaminated between each sampling location. Decontamination of large equipment, such as the flight augers and other down-hole equipment, was performed using a high-pressure washer to wash off the equipment over a portable stock tank. Wash water collected in the stock tank was allowed to evaporate in order to minimize waste requiring disposal. Decontamination of smaller equipment, such as the hand augers and knives, included washing the equipment with a solution of potable water and laboratory-grade detergent, scrubbing with a brush, rinsing with potable water, rinsing with distilled water, then allowed to air dry. Any soil that collected in the bottom of the stock tank was placed into the waste soil container, as discussed in Section 3.1.8. The decontamination procedures used during the RFI were consistent with the Standard Practices for Decontamination of Field Equipment Used at Non-Radioactive Waste Sites (ASTM 05088-02).

During the January 2010 event, decontamination water that did not evaporate was collected and stored in a closed-top 55-gallon drum, labeled and disposed of as discussed in Section 3.1.8.

During the April 2010 event, decontamination water was stored in spray bottles and as a result, very little decontamination water was generated. The liquids generated were collected in a 5-gallon open-top bucket and allowed to evaporate in order to minimize the waste generated.

3.1.4 Field Quality Control Samples

Field quality control (QC) samples were collected to evaluate the data quality, according to the work plan, and in accordance with Section 5.2.2.e of Appendix 5 of the Permit. Field QC samples included a total of two equipment rinsate blanks, three field blanks, three trip blanks, and three field duplicate samples.

The equipment rinsate blanks were collected by pouring distilled water over a piece of previously decontaminated sampling equipment (such as the hand auger) and catching the rinsate in a laboratory container. The equipment rinsate blanks were analyzed for the same parameters as the primary soil samples.

The field blanks samples were collected by pouring distilled water directly into sample containers, while working at the Site. The field blank is intended to detect any airborne constituents that might affect sampling results. The field blank was analyzed for the same parameters as the primary soil samples.

One trip blank was included with each laboratory cooler that included VOC samples. The trip blanks were analyzed for the same VOC parameters as the primary samples.

Field duplicates were obtained by collecting an aliquot of soil from the same portion of the soil core as the corresponding primary sample. No field compositing of soil was performed prior to collection of the field duplicate samples. The field duplicate samples were analyzed for the same parameters as the parent sample.

3.1.5 Sampling Handling and Shipping

Sample handling was performed in general accordance with Section 5.2.2.j and 5.2.6.b of Appendix 5 of the Permit. Samples were handled with new disposable gloves that were replaced prior to use with each sample. After each sample was placed into the appropriate container and labeled, it was placed into a cooler with ice. The ice was double-bagged using plastic zipper bags. Each sample was recorded on a chain-of-custody form with the requested analyses for that sample. The chain-of-custody form was sealed inside the cooler prior to shipment to the laboratory. A copy of the chain-of-custody forms is provided in Appendix D.

Shipping containers were sealed with a custody seal and shipped to the laboratory via overnight courier. None of the custody seals had been broken upon receipt at the laboratory. Copies of the container custody seals and the shipping labels are provided in the final laboratory reports in Appendix D.

3.1.6 Analytical Tests Requested

The samples were submitted to DHL Analytical of Austin Texas, a laboratory accredited by the National Environmental Laboratory Accreditation Conference (NELAC) and Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP). DHL Analytical performed analyses of the samples using the most current approved methods, in general accordance with Section 5.3 of Appendix 5 of the Permit. Appendix D of this report contains a copy of the analytical laboratory reports.

All of the soil samples collected in January 2010 from soil borings at the Main Post POL AST Release Site were submitted to the laboratory under proper chain-of-custody for the following analyses:

- TPH GRO by United States Environmental Protection Agency (USEPA) Method 8015 Modified;
- BTEX by USEPA Method 8021B; and
- Lead by USEPA Method 6020.

All of the soil samples collected in April 2010 from Borings SB-007 and SB-008 were submitted to the laboratory under proper chain-of-custody for the following analyses:

- TPH GRO by USEPA Method 8015 Modified; and
- BTEX by USEPA Method 8021B.

None of the April samples were analyzed for lead because no additional delineation of lead was required based on the results of the January 2010 sampling event.

3.1.7 Abandonment of Soil Borings

Boring abandonment was performed in general accordance with Section 6.4 of Appendix 6 of the Permit. All of the soil borings were filled with slurry composed of Type II Portland Cement, quick gel bentonite, and potable water. This slurry was placed into each hole to the surface. An asphalt patch was placed over the borings where asphalt had been removed in order to advance the borings. After the boring inside the concrete containment was abandoned, the concrete floor of the containment was patched with a concrete patch.

3.1.8 Waste Handling

All wastes generated during the investigation described in this report were handled in general accordance with Section 5.2.2.b.iv of Appendix 5 of the Permit.

Miscellaneous trash (drinking water bottles, shipping boxes, paper trash, etc.) that did not come into contact with soil or decontamination equipment was containerized and disposed of as solid waste.

Investigation derived waste (IDW) generated during the sampling events included soil cuttings, decontamination fluids, disposable gloves, plastic sheeting, aluminum foil, and other materials that came into contact with either the soil or decontamination equipment and liquids. IDW soils generated during the January 2010 event were placed into one one-cubic yard pallet box, while decontamination liquids were placed into one 55-gallon closed-top drum. Other solid wastes that came into contact with soils, such as gloves and paper towels, were contained in one 5-gallon plastic bucket. The IDW generated during the April 2010 included soil and personal protective equipment (PPE) since the liquid was allowed to evaporate. The IDW from this event was placed into one 55-gallon open-top drum. Each container was labeled with the date, contents, and point of contact information and delivered to the WSMR waste management center (WMC) for storage pending waste characterization and disposal. A copy of the drum logs documenting delivery of the IDW to the WMC is provided in Appendix D.

To supplement the RFI data and provide additional data for waste characterization purposes, one soil sample collected during the January 2010 sampling event [MNPA-MPOL-SB-006-(3.0-4.0)] was analyzed for the full VOC list by USEPA Method 8260B and for the full semi-volatile organic compound (SVOC) list by USEPA Method 8270C. The analytical data were provided to the WMC and WSMR personnel determined that the waste was characterized as non-regulated. The waste was disposed of off-site by the WMC on April 28, 2010.

A separate composite sample (MP01-CS-001) of the IDW solids was collected during the April 2010 sampling event and this sample was submitted to the laboratory under a separate chain-of-custody for waste characterization analyses. The composite sample was collected by obtaining three aliquots of soil from the drum using a clean stainless steel auger. The aliquots were obtained from near the top of the drum, near the center of the drum and near the bottom of the drum. The three aliquots of soil were placed in a clean stainless steel bowl and mixed with a clean trowel to composite the soil. The sample was submitted to the laboratory for specific waste characterization analyses. The drum of IDW generated during the April 2010 event was transported to the WMC on April 13, 2010. The laboratory report for the composite waste characterization sample was provided to WSMR personnel on May 18, 2010. According to subsequent communication with WMC personnel, the IDW was classified as non-regulated and was disposed off-site in July 2010.

3.1.9 Survey

In accordance with Section 5.2.2.f of Appendix 5 of the Permit, following completion of each field effort, the physical coordinates and ground surface elevation was measured at each boring. The first six borings at the Site were surveyed on February 12, 2010. The additional two borings installed in April 2010 were surveyed on April 28, 2010.

All of the locations were surveyed in relation to a control point. Northing and easting data were measured to the nearest 0.001 meter and elevation was measured to the nearest 0.001 foot. A copy of the survey data is provided in Appendix C.

3.2 Data Evaluation

3.2.1 Regulatory Criteria

Data developed during the RFI were evaluated according to the NMED risk-based soil screening guidance document *Technical Background Document for Development of Soil Screening Levels Revision 5.0* (NMED, 2009). SSLs are presented in Table A-1 of that document (SSG Table A-1) for various exposure scenarios.

Additional screening values were obtained from the combined USEPA Regional Screening Levels (RSLs), found on the USEPA website, which is located on the internet at http://www.epa.gov/region09/superfund/prg/index.html. The RSL summary table includes soil screening values for both Residential Soil and for Industrial Soil.

The NMED guidance document for evaluation of TPH (NMED, 2006) provides several screening levels for TPH, depending on the source of the petroleum product. The source of potential impacts at the Site is gasoline. No screening level is provided for TPH GRO in the NMED guidance document.

The Site is located within the Main Post of WSMR and access to the Site is limited to personnel approved to enter the area. Although this would imply that an industrial/occupational exposure would be appropriate, the Residential SSLs were used in order to provide a conservative evaluation of potential impacts.

In addition to the Residential SSLs, the SSL for protection of groundwater due to leaching was used to screen the samples. Because the samples were not saturated, depth to groundwater in the vicinity is greater than 300 ft bgs, and the source area is

less than 0.5 acres, a Dilution Attenuation Factor of 20 (DAF 20) was used to evaluate leaching potential.

3.2.2 Data Quality Evaluation

The primary data quality objectives (DQOs) for this investigation were to provide representative data usable to characterize site conditions, delineate the nature and extent of affected media (if present), and to support corrective action decisions as appropriate. Analytical data reports were reviewed and evaluated in accordance with Appendix 5 of the Permit and in accordance with applicable USEPA SW-846 method requirements as described in the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA, October 1999), USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA, July 2002) and the site-specific requirements defined in the *White Sands Missile Range Site-Wide Quality Assurance Project Plan* (ARCADIS, 2009).

The analytical data were validated using Level II quality assurance (QA) and quality control (QC) criteria. A copy of the analytical data reports and the data validation summary reports are provided in Appendix D. The data validation results indicated that all the data are usable and meet the project's data quality objectives.

3.2.3 Risk Assessments

Human health and ecological risk assessments were performed using data collected during both the January and April 2010 sampling events.

The human health risk assessment (HHRA) was performed to evaluate potential risks associated with human exposure to constituents of potential concern (COPCs) at the Site. The HHRA was conducted following the approach provided in the NMED guidance and USEPA guidance for risk assessments (see Appendix E for references). Both a screening level ecological risk assessment (SLERA) and a baseline ecological risk assessment (BERA) were performed for the Site. These assessments evaluated potential risks associated with ecological receptors that may be exposed to constituents of potential ecological concern (COPECs). The SLERA and BERA were performed using an approach based on NMED and USEPA guidance (see Appendix E for references).

For purposes of the risk assessment, the soil data were divided by sample depth interval based on the exposure pathways identified for the Site. In brief, the soil data were categorized as follows:

- Surface soil data, including soil samples collected from depths of 0 to 2 ft bgs, were used to evaluate potential exposure of human (current/future site worker; hypothetical future resident) and ecological receptors;

- Surface and subsurface soil data (0 to 10 ft bgs) were used to evaluate potential exposure of human (future construction worker) and ecological receptors that could be exposed to subsurface soil (e.g., burrowing wildlife); and

- Total soil data (vadose zone) were used to evaluate potential exposure of human receptors through the vapor intrusion exposure pathway.

The detailed procedures followed for the risk assessments are described in Appendix E.

4. Investigation Results

Results of the field investigation and data evaluation activities are discussed in this section.

4.1 Subsurface Conditions

The boring logs (Appendix B) indicate that the upper 2 to 3 feet of soils consist of well-graded sand that extends across the area investigated. A clay layer was encountered in all but one boring (SB-001) from depths of 2 to 3 ft bgs and was approximately 3 to 4 feet in thickness. This clay layer was underlain by well-graded to poorly graded sand to a depth of 20 ft bgs. None of the borings extended more than 20 ft bgs.

As shown in the boring logs, the soils were moist throughout the depth of the investigation, but no saturated soil was encountered.

4.2 Soil Sampling Field Screening Results

The PID measurements collected during field screening are presented in the soil boring logs (Appendix B). The only soil samples that contained organic vapors as measured by the PID were from the 4 to 5 ft bgs interval at Boring SB-002 and several

samples from Boring SB-006. The PID measurements recorded from samples collected at Boring SB-006 declined significantly with depth, with a recording of 308 ppm immediately below the concrete to 10 ppm at a depth of 9 ft bgs. No measureable organic vapors were recorded from the samples collected deeper than 9 ft bgs at location SB-006.

4.3 Soil Sampling Analytical Results

The analytical results for soil samples collected during the RFI are provided in Table 3. Analytical reports from the laboratory are provided in Appendix D along with the data validation summary.

The reported concentrations in samples collected from the upper 10 ft bgs were compared to the Residential SSL for each constituent. The reported concentrations in all samples were compared to the DAF 20 SSL. Both the Residential SSL and the DAF 20 SSL, where available, are provided for each constituent analyzed in Table 3.

4.3.1 Gasoline Range Organics

The NMED guidance document for evaluation of TPH (NMED, 2006) does not provide an SSL for gasoline; thus no SSL is available for GRO.

GRO was reported at a concentration of 1.04 milligrams per kilogram (mg/kg) in the sample collected from 4 to 5 ft bgs from location SB-002. The samples collected from deeper intervals in this boring did not contain detectable GRO.

GRO was reported at a concentration of 511 mg/kg in the sample collected from immediately below the concrete at location SB-006. Samples from surrounding borings (SB-001 through SB-005, SB-007 and SB-008) provide lateral delineation of the TPH GRO. The deeper samples from SB-006 did not contain detectable amounts of TPH GRO, providing vertical delineation of the TPH GRO. The distribution of TPH GRO concentrations in the soils is shown on Figure 4. The data are summarized in Table 3.

4.3.2 Volatile Organic Compounds

The sample collected from immediately below the concrete at location SB-006 contained benzene, ethylbenzene and xylenes at concentrations above the DAF 20 SSL but below their respective Residential SSLs. Samples from surrounding borings (SB-001 through SB-005, SB-007 and SB-008) provide lateral delineation of the BTEX

concentrations in SB-006. The deeper samples from SB-006 did not contain detectable amounts of BTEX, providing vertical delineation of the BTEX. The distribution of BTEX concentrations in the soils is shown on Figure 4. The data are summarized in Table 3.

4.3.3 Lead

Lead was reported in the samples collected from SB-001 through SB-006 at concentrations ranging from 4.9 to 47.5 mg/kg, all of which are below the Residential SSL. No DAF value is available for lead.

4.3.4 Waste Characterization Analytical Results

Table 4 contains a summary of the waste characterization sample analytical results. The analytical data were provided to the WMC, as discussed in Section 3.1.8.

4.4 Risk Assessment Screening

4.4.1 Human Health Risk Assessment Screening

A HHRA was conducted to evaluate exposure to COPCs in surface soil (0 to 2 ft bgs), combined surface and subsurface soil (0 to 10 ft bgs), and total soil (0 to 20 ft bgs) for site workers under current and future land use conditions, and construction workers and residents (adult and child) under hypothetical future land use conditions. Appendix E provides additional details of the procedures and results of the HHRA, which are summarized in this subsection.

In accordance with NMED guidance (NMED, 2009), constituent concentrations in surface soil and in combined surface and subsurface soil were compared to health-based screening levels and the calculated ratios summed. The ratios were multiplied by $1x10^{-5}$ for carcinogens and by 1 for non-carcinogens. The results of this data screening process indicate that after comparison to health-based SSLs for industrial worker exposure, residential exposure, and construction worker exposure, no COPCs were selected for surface soil or for combined surface and subsurface soil at the Site. This demonstrates that the constituent concentrations in surface soil and in combined surface and subsurface soil at the Site are unlikely to result in adverse health impacts to current or future site workers, current or future construction workers or future residents via direct contact exposure (i.e., ingestion, inhalation of vapor/dust, dermal).

All the VOCs detected in total soil were selected as COPCs for the vapor intrusion evaluation. The total cumulative Excess Lifetime Cancer Risk (ELCR) for a hypothetical future resident exposed to indoor air at the Site is 9×10^{-5}, which is within the acceptable target risk range of 1×10^{-6} to 1×10^{-4}. The total cumulative hazard index (HI) for a hypothetical future child resident is 26, which is above the benchmark of 1. Xylenes were identified as the primary contributor to the calculated hazard.

A closer examination of the detected and non-detected concentrations and their spatial extent indicates that it is unlikely that xylenes would represent a significant exposure risk to hypothetical future site worker or resident receptors. Xylenes were detected in only 1 of 29 samples, with a maximum concentration of 66 mg/kg. This sample was reported for sample location MPOL-SB-006 and was collected from 0.5 to 1 ft bgs, underneath the concrete pavement area adjacent to the 6,000 gallon gasoline ASTs where the release occurred. Of the 29 total samples that were collected from surface and shallow soil (i.e., from 0 to 20 bgs) at the Site, xylenes were not detected in any other sample, including the four samples collected at 4 ft bgs, 10 ft bgs, 15 ft bgs , and 20 ft bgs from MPOL-SB-006. Xylenes are considered unlikely to represent a significant future exposure concern because of the following reasons:

- The evaluated scenarios (i.e., hypothetical future worker and residential exposure via vapor intrusion) are unlikely because they would involve a significant land use change in the future (i.e., from an operating military installation to commercial/industrial or a single-family residential development); and

- Elevated xylenes concentration was only detected at 0.5 to 1 ft bgs underneath concrete pavement at the release area. In the event that future redevelopment at the Site involves construction of a building over soil containing xylenes, xylenes concentration in surface soil will significantly decrease due to volatilization into ambient air during reconstruction. Given the extremely low frequency of detection (i.e., 3 percent), and that the one detection was limited to surface soil (i.e., 1 ft bgs) from a single sample obtained from underneath concrete pavement, it is unlikely that this detection represents a significant source of vapors that could migrate into an overlying structure at some point in the future.

Based on this evaluation, xylenes are unlikely to represent a significant exposure risk via vapor intrusion under future land use conditions.

4.4.2 Ecological Risk Assessment Results

A SLERA and BERA were completed for the Site to evaluate whether ecological receptors may be adversely impacted by exposure to site-related constituents detected in surface soil and subsurface soil, and to conduct food chain modeling for the COPECs identified as bioaccumulative. Appendix E provides additional details of the procedures and results of the SLERA and BERA, which are summarized in this subsection.

The results of the SLERA and BERA for direct contact exposure and for food chain modeling indicate that adverse impacts are unlikely to occur for ecological receptors potentially exposed to constituents in soil. Therefore, no further ecological evaluation of the Site is warranted.

5. Conclusions

A RFI of the Site was performed in order to evaluate whether the reported release of gasoline resulted in impacts to soil and if the potential exists for impacts to groundwater. The investigation was performed according to the requirements of the WSMR Permit. Soil samples were collected from eight borings within the Site. The analytical reports were reviewed and the data were determined to meet the data quality objectives.

The evaluations of data performed for this RFI have resulted in the following conclusions:

- Based on both the PID and analytical results, limited impacts appear to be present immediately below the southeast corner of the concrete containment area.

- The vertical extent of the impacted soil is defined by the soil samples collected during this RFI and is limited to approximately 2 to 3 ft bgs. The lateral extent of the impacted soil has also been defined and is limited to the area beneath and immediately adjacent to the southeast corner of the containment area.

- A human health risk assessment screening was conducted using the analytical results and most recent screening levels. The impacted soil does not pose a current or future risk to human health.

- An evaluation of the data was performed to determine whether the affected soils represent a risk of potential future leaching to groundwater. Benzene, ethylbenzene and total xylenes are present at concentrations above the respective DAF 20 values. The only reported concentrations of the COPCs above the DAF 20 value were contained in the sample collected from immediately below the concrete (0.5 to 1 ft bgs) in boring SB-006. The samples collected from deeper intervals (4-5', 9-10', 14-15' and 19-20') in this same boring did not contain detectable COPCs and the detection limits were an order of magnitude lower than the respective DAF 20 values. In fact, no other sample collected contained any detectable concentrations of these COPCs. Based on the very shallow exceedances of DAF 20 in SB-006 (0.5-1') relative to the very deep occurrence of groundwater (greater than 300 feet), there is little or no risk that the COPCs in the shallow soils represents a threat to the groundwater. This is further supported by the fact that surface water infiltration depths in the area do not exceed about 15 feet because of the very high evapotranspiration rates (ARCADIS, 2010). In addition, the area is covered with asphalt, which should minimize infiltration of surface water and further reduce the potential for leaching to occur.

- The results of the SLERA and BERA for direct contact exposure and for food chain modeling indicate that adverse impacts are unlikely to occur for ecological receptors potentially exposed to constituents in soil. Therefore, no further ecological evaluation of the Site is warranted.

6. Recommendations

The RFI for the Site was successfully completed and meets the RFI requirements described in the Permit. No further investigation is recommended.

7. References

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Tables

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Table 1. Depth to Groundwater in Nearby Wells (revised)
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Well	Location of Well	Date Measured	Depth to Groundwater (ft bgs)
0064-MW01	approximately 1800 feet south of Site	8/10/2000	339.81
		4/25/2001	339.87
		8/14/2001	340.04
		4/8/2002	340.24
		8/28/2002	341.12
0064-MW02	approximately 1700 feet south-southwest of MP POL	8/10/2000	335.51
OS 12	approximately 7700 feet west-northwest of Site	8/10/2000	236.09
		3/14/2001	236.09
		8/22/2001	237.05
		4/5/2002	237.90
		8/23/2002	238.87

Notes:
ft bgs = feet below ground surface

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Table 2. Soil Sample Locations and Depth Intervals (revised)
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Location	Sample Interval (ft bgs)	PID Reading (ppm)	Analyses Requested
SB-001	5 - 6	0	GRO, BTEX, Pb
	9 - 10	0	GRO, BTEX, Pb
	14 - 15	0	GRO, BTEX, Pb
	19 - 20	0	GRO, BTEX, Pb
SB-002	4 - 5	11.6	GRO, BTEX, Pb
	9 - 10	0	GRO, BTEX, Pb
	14 - 15	0	GRO, BTEX, Pb
	19 - 20	0	GRO, BTEX, Pb
SB-003	4 - 5	0	GRO, BTEX, Pb
	9 - 10	0	GRO, BTEX, Pb
	14 - 15	0	GRO, BTEX, Pb
	19 - 20	0	GRO, BTEX, Pb
SB-004	4 - 5	0	GRO, BTEX, Pb
	9 - 10	0	GRO, BTEX, Pb
	14 - 15	0	GRO, BTEX, Pb
	19 - 20	0	GRO, BTEX, Pb
SB-005	4 - 5	0	GRO, BTEX, Pb
	9 - 10	0	GRO, BTEX, Pb
	14 - 15	0	GRO, BTEX, Pb
	19 - 20	0	GRO, BTEX, Pb
SB-006	0.5 - 1	308	GRO, BTEX, Pb
	3 - 4	31.1	GRO, BTEX, Pb
	9 - 10	10	GRO, BTEX, Pb
	14 - 15	0	GRO, BTEX, Pb
	19 - 20	0	GRO, BTEX, Pb
SB-007	0.5 - 1	0	GRO, BTEX
	4.5 - 5	0	GRO, BTEX
SB-008	0.5 - 1	0	GRO, BTEX
	4.5 - 5	0.2	GRO, BTEX

Abbreviations

BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

ft bgs: feet below ground surface

GRO: Total Petroleum Hydrocarbons, Gasoline Range Organics

Pb: Lead

PID: Photoionization Detector

ppm: parts per million

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Table 3. Summary of Soil Sample Analytical Results
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Residential Soil SSL	DAF20	Units	MPOL-SB-001 5 - 6 01/18/10 MNPA-MPOL-SB-001-(5.0-6.0)	MPOL-SB-001 9 - 10 01/18/10 MNPA-MPOL-SB-001-(9.0-10.0)	MPOL-SB-001 14 - 15 01/18/10 MNPA-MPOL-SB-001-(14.0-15.0)	MPOL-SB-001 19 - 20 01/18/10 MNPA-MPOL-SB-001-(19.0-20.0)
TPHs							
Gasoline Range Organics	- -	- -	mg/kg	<0.208	<0.203	<0.203	<0.203
VOCs							
Benzene	15.5 {NMED}	0.037	mg/kg	<0.00521	<0.00519	<0.00476	<0.00491
Ethylbenzene	69.7 {NMED}	0.291	mg/kg	<0.0156	<0.0156	<0.0143	<0.0147
Toluene	5,570 {NMED}	27.7	mg/kg	<0.0156	<0.0156	<0.0143	<0.0147
Xylenes	1,090 {NMED}	3.52	mg/kg	<0.0156	<0.0156	<0.0143	<0.0147
Metals							
Lead	400 {NMED}	- -	mg/kg	10.4	9.24	5.08	13.1

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Table 3. Summary of Soil Sample Analytical Results
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Residential Soil SSL	DAF20	Units	MPOL-SB-002 4 - 5 01/18/10 MNPA-MPOL-SB-002-(4.0-5.0)	MPOL-SB-002 9 - 10 01/18/10 MNPA-MPOL-SB-002-(9.0-10.0)	MPOL-SB-002 14 - 15 01/18/10 MNPA-MPOL-SB-002-(14.0-15.0)	MPOL-SB-002 19 - 20 01/18/10 MNPA-MPOL-SB-002-(19.0-20.0)
TPHs							
Gasoline Range Organics	- -	- -	mg/kg	1.04	<0.205	<0.2	<0.196 [<0.197]
VOCs							
Benzene	15.5 {NMED}	0.037	mg/kg	<0.00521	<0.00488	<0.00505	<0.00484 [<0.0051]
Ethylbenzene	69.7 {NMED}	0.291	mg/kg	<0.0156	<0.0146	<0.0151	<0.0145 [<0.0153]
Toluene	5,570 {NMED}	27.7	mg/kg	<0.0156	<0.0146	<0.0151	<0.0145 [<0.0153]
Xylenes	1,090 {NMED}	3.52	mg/kg	<0.0156	<0.0146	<0.0151	<0.0145 [<0.0153]
Metals							
Lead	400 {NMED}	- -	mg/kg	47.5	6.69	7.6	6.97 [8.51]

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Table 3. Summary of Soil Sample Analytical Results
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Residential Soil SSL	DAF20	Units	MPOL-SB-003 4 - 5 01/18/10 MNPA-MPOL-SB-003-(4.0-5.0)	MPOL-SB-003 9 - 10 01/18/10 MNPA-MPOL-SB-003-(9.0-10.0)	MPOL-SB-003 14 - 15 01/18/10 MNPA-MPOL-SB-003-(14.0-15.0)	MPOL-SB-003 19 - 20 01/18/10 MNPA-MPOL-SB-003-(19.0-20.0)
TPHs							
Gasoline Range Organics	- -	- -	mg/kg	<0.216	<0.19	<0.2	<0.194
VOCs							
Benzene	15.5 {NMED}	0.037	mg/kg	<0.00498	<0.00483	<0.00481	<0.00495
Ethylbenzene	69.7 {NMED}	0.291	mg/kg	<0.0149	<0.0145	<0.0144	<0.0148
Toluene	5,570 {NMED}	27.7	mg/kg	<0.0149	<0.0145	<0.0144	<0.0148
Xylenes	1,090 {NMED}	3.52	mg/kg	<0.0149	<0.0145	<0.0144	<0.0148
Metals							
Lead	400 {NMED}	- -	mg/kg	18.4	4.9	5.96	6.28

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Table 3. Summary of Soil Sample Analytical Results
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Residential Soil SSL	DAF20	Units	MPOL-SB-004 4 - 5 01/18/10 MNPA-MPOL-SB-004-(4.0-5.0)	MPOL-SB-004 9 - 10 01/18/10 MNPA-MPOL-SB-004-(9.0-10.0)	MPOL-SB-004 14 - 15 01/18/10 MNPA-MPOL-SB-004-(14.0-15.0)	MPOL-SB-004 19 - 20 01/18/10 MNPA-MPOL-SB-004-(19.0-20.0)
TPHs							
Gasoline Range Organics	- -	- -	mg/kg	<0.2	<0.217	<0.205	<0.216 [<0.208]
VOCs							
Benzene	15.5 {NMED}	0.037	mg/kg	<0.00532	<0.00493	<0.00522	<0.00512 [<0.00525
Ethylbenzene	69.7 {NMED}	0.291	mg/kg	<0.016	<0.0148	<0.0157	<0.0154 [<0.0157]
Toluene	5,570 {NMED}	27.7	mg/kg	<0.016	<0.0148	<0.0157	<0.0154 [<0.0157]
Xylenes	1,090 {NMED}	3.52	mg/kg	<0.016	<0.0148	<0.0157	<0.0154 [<0.0157]
Metals							
Lead	400 {NMED}	- -	mg/kg	7.54	8.77	8.05	10.7 [10.1]

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Table 3. Summary of Soil Sample Analytical Results
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Residential Soil SSL	DAF20	Units	MPOL-SB-005 4 - 5 01/19/10 MNPA-MPOL-SB-005-(4.0-5.0)	MPOL-SB-005 9 - 10 01/19/10 MNPA-MPOL-SB-005-(9.0-10.0)	MPOL-SB-005 14 - 15 01/19/10 MNPA-MPOL-SB-005-(14.0-15.0)	MPOL-SB-005 19 - 20 01/19/10 MNPA-MPOL-SB-005-(19.0-20.0)
TPHs							
Gasoline Range Organics	- -	- -	mg/kg	<0.198	<0.198	<0.199	<0.208
VOCs							
Benzene	15.5 {NMED}	0.037	mg/kg	<0.00502	<0.00512	<0.00482	<0.00548
Ethylbenzene	69.7 {NMED}	0.291	mg/kg	<0.0151	<0.0154	<0.0144	<0.0164
Toluene	5,570 {NMED}	27.7	mg/kg	<0.0151	<0.0154	<0.0144	<0.0164
Xylenes	1,090 {NMED}	3.52	mg/kg	<0.0151	<0.0154	<0.0144	<0.0164
Metals							
Lead	400 {NMED}	- -	mg/kg	15.7	6.89	6.34	11.4

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Table 3. Summary of Soil Sample Analytical Results
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Residential Soil SSL	DAF20	Units	MPOL-SB-006 0.5 - 1 01/19/10 MNPA-MPOL-SB-006-(0.5-1.0)	MPOL-SB-006 3 - 4 01/19/10 MNPA-MPOL-SB-006-(3.0-4.0)	MPOL-SB-006 9 - 10 01/19/10 MNPA-MPOL-SB-006-(9.0-10.0)	MPOL-SB-006 14 - 15 01/19/10 MNPA-MPOL-SB-006-(14.0-15.0)
TPHs							
Gasoline Range Organics	- -	- -	mg/kg	511	<0.217	<0.194	<0.204
VOCs							
Benzene	15.5 {NMED}	0.037	mg/kg	*0.487*	<0.00556	<0.00484	<0.00463
Ethylbenzene	69.7 {NMED}	0.291	mg/kg	*9.68*	<0.00556	<0.0145	<0.0139
Toluene	5,570 {NMED}	27.7	mg/kg	17	<0.00556	<0.0145	<0.0139
Xylenes	1,090 {NMED}	3.52	mg/kg	*66*	<0.00556	<0.0145	<0.0139
Metals							
Lead	400 {NMED}	- -	mg/kg	8.09	12.9	7.99	5

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Table 3. Summary of Soil Sample Analytical Results
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Residential Soil SSL	DAF20	Units	MPOL-SB-006 19 - 20 01/19/10 MNPA-MPOL-SB-006-(19.0-20.0)	MPOL-SB-007 0.5 - 1 04/06/10 MNPA-MPOL-SB-007-(0.5-1.0)	MPOL-SB-007 4.5 - 5 04/06/10 MNPA-MPOL-SB-007-(4.5-5.0)	MPOL-SB-008 0.5 - 1 04/06/10 MNPA-MPOL-SB-008-(0.5-1.0)
TPHs							
Gasoline Range Organics	- -	- -	mg/kg	<0.191 [<0.202]	<0.197	<0.199	<0.21
VOCs							
Benzene	15.5 {NMED}	0.037	mg/kg	<0.00487 [<0.0048]	<0.00483	<0.00514	<0.00487
Ethylbenzene	69.7 {NMED}	0.291	mg/kg	<0.0146 [<0.0144]	<0.0145	<0.0154	<0.0146
Toluene	5,570 {NMED}	27.7	mg/kg	<0.0146 [<0.0144]	<0.0145	<0.0154	<0.0146
Xylenes	1,090 {NMED}	3.52	mg/kg	<0.0146 [<0.0144]	<0.0145	<0.0154	<0.0146
Metals							
Lead	400 {NMED}	- -	mg/kg	5.96 [6.31]	NA	NA	NA

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Table 3. Summary of Soil Sample Analytical Results
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Residential Soil SSL	DAF20	Units	MPOL-SB-008 4.5 - 5 04/06/10 MNPA-MPOL-SB-008-(4.5-5.0)
TPHs				
Gasoline Range Organics	- -	- -	mg/kg	<0.202 [<0.196]
VOCs				
Benzene	15.5 {NMED}	0.037	mg/kg	<0.00522 [<0.00508]
Ethylbenzene	69.7 {NMED}	0.291	mg/kg	<0.0157 [<0.0152]
Toluene	5,570 {NMED}	27.7	mg/kg	<0.0157 [<0.0152]
Xylenes	1,090 {NMED}	3.52	mg/kg	<0.0157 [<0.0152]
Metals				
Lead	400 {NMED}	- -	mg/kg	NA

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Table 3. Summary of Soil Sample Analytical Results
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Acronym/Note	Description
--	No SSL available for this constituent.
0.487	Italics indicates that the reported result exceeds the NMED DAF 20 SSL.
DAF 20	NMED Dilution Attenuation Factor from Table A-1, December 2009 Update to *Technical Background Document for Development of Soil Screening Levels, Revision 5.0* NMED Hazardous Waste Bureau and Ground Water Quality Bureau, Voluntary Remediation Program, August 2009. DAF 20 indicates a Dilution Attenuation Factor of 20 was used.
mg/kg	Milligram per kilogram.
NA	The sample was not tested for this constituent.
NMED	New Mexico Environment Department.
NMED TPH Guidance	NMED TPH Screening Level from October 2006 NMED TPH Screening Guidelines document.
SSL	Soil Screening Level
TPH	Total Petroleum Hydrocarbons
VOC	Volatile Organic Compounds

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Table 4. Waste Characterization Samples Analytical Data Summary (revised)
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Chemical Name	Location ID Sample Date Sample ID Matrix Unit	MPOL-SB-006 1/19/2010 MNPA-MPOL-SB-006-(3.0-4.0) Soil	MPOL-CS-001 4/13/2010 MNPA-MPOL-CS-001 Soil
TPH			
Gasoline Range Organics	mg/kg	<0.217	< 0.204
Metals			
Arsenic	mg/kg	NA	2.43
Barium	mg/kg	NA	81.6
Cadmium	mg/kg	NA	0.323
Chromium	mg/kg	NA	9.13
Lead	mg/kg	12.9	27.3
Mercury	mg/kg	NA	< 0.047
Selenium	mg/kg	NA	2.3
Silver	mg/kg	NA	< 0.186
Other			
Ignitability	^{o}C	NA	0
VOCs			
1,1,1,2-Tetrachloroethane	mg/kg	<0.152	< 0.00475
1,1,1-Trichloroethane	mg/kg	<0.152	< 0.00475
1,1,2,2-Tetrachloroethane	mg/kg	<0.152	< 0.00475
1,1,2-Trichloroethane	mg/kg	<0.152	< 0.00475
1,1-Dichloroethane	mg/kg	<0.152	< 0.00475
1,1-Dichloroethylene	mg/kg	<0.152	< 0.00475
1,1-Dichloropropene	mg/kg	<0.152	< 0.00475
1,2,3-Trichlorobenzene	mg/kg	<0.152	< 0.00475
1,2,3-Trichloropropane	mg/kg	<0.152	< 0.00475
1,2,4-Trimethylbenzene	mg/kg	<0.152	< 0.00475
1,2-Dibromo-3-Chloropropane (DBCP)	mg/kg	<0.152	< 0.00475
1,2-Dibromoethane (ethylene dibromide)	mg/kg	<0.152	< 0.00475
1,2-Dichloroethane	mg/kg	<0.152	< 0.00475
1,2-Dichloropropane	mg/kg	<0.152	< 0.00475
1,3,5-Trimethylbenzene	mg/kg	<0.152	< 0.00475
1,3-Dichloropropane	mg/kg	<0.152	< 0.00475
2,2-Dichloropropane	mg/kg	<0.152	< 0.00475
2-Butanone	mg/kg	<0.152	< 0.0143
2-Chloroethyl Vinyl Ether	mg/kg	<0.152	< 0.0143
2-Chlorotoluene	mg/kg	<0.152	< 0.00475

ARCADIS

Table 4. Waste Characterization Samples Analytical Data Summary (revised)
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

	Location ID	MPOL-SB-006	MPOL-CS-001
	Sample Date	1/19/2010	4/13/2010
	Sample ID	MNPA-MPOL-SB-006-(3.0-4.0)	MNPA-MPOL-CS-001
	Matrix	Soil	Soil
Chemical Name	Unit		
2-Phenylbutane	mg/kg	<0.152	< 0.00475
4-Chlorotoluene	mg/kg	<0.152	< 0.00475
4-Methyl-2-Pentanone(MIBK)	mg/kg	<0.152	< 0.0143
Acetone	mg/kg	<0.152	< 0.0475
Acrylonitrile	mg/kg	<0.152	< 0.0095
Benzene	mg/kg	<0.152	< 0.00475
Bromobenzene	mg/kg	<0.152	< 0.00475
Bromodichloromethane	mg/kg	<0.152	< 0.00475
Bromomethane	mg/kg	<0.152	< 0.00475
Carbon Disulfide	mg/kg	<0.152	< 0.00475
Carbon Tetrachloride	mg/kg	<0.152	< 0.00475
CFC-11 (Trichlorofluoromethane)	mg/kg	<0.152	< 0.0143
CFC-12 (Dichlorodifluoromethane)	mg/kg	<0.152	< 0.00475
Chlorobenzene	mg/kg	<0.152	< 0.00475
Chlorobromomethane	mg/kg	<0.152	< 0.00475
Chlorodibromomethane (Dibromochloromethane)	mg/kg	<0.152	< 0.00475
Chloroethane (Ethylchloride)	mg/kg	<0.152	< 0.00475
Chloroform	mg/kg	<0.152	< 0.00475
Chloromethane	mg/kg	<0.152	< 0.00475
cis-1,2-Dichloroethene	mg/kg	<0.152	< 0.00475
cis-1,3-Dichloropropene	mg/kg	<0.152	< 0.00475
Cymene	mg/kg	<0.152	< 0.00475
Dibromomethane (Methylene Dibromide)	mg/kg	<0.152	< 0.00475
Dichloromethane (Methylene Chloride)	mg/kg	<0.152	< 0.00475
Ethylbenzene	mg/kg	<0.152	< 0.00475
Iodomethane	mg/kg	<0.152	< 0.00475
Isopropylbenzene (Cumene)	mg/kg	<0.152	< 0.00475
m,p-Xylene (m-Xylene)	mg/kg	<0.152	< 0.00475
Methyl N-Butyl Ketone	mg/kg	<0.152	< 0.0143
Methylbenzene (Toluene)	mg/kg	<0.152	< 0.00475
MTBE	mg/kg	<0.152	< 0.00475
n-Butylbenzene	mg/kg	<0.152	< 0.00475
n-Propylbenzene	mg/kg	<0.152	< 0.00475
o-Xylene	mg/kg	<0.152	< 0.00475

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Table 4. Waste Characterization Samples Analytical Data Summary (revised)
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

	Location ID	MPOL-SB-006	MPOL-CS-001
	Sample Date	1/19/2010	4/13/2010
	Sample ID	MNPA-MPOL-SB-006-(3.0-4.0)	MNPA-MPOL-CS-001
	Matrix	Soil	Soil
Chemical Name	**Unit**		
Styrene (Monomer)	mg/kg	<0.152	< 0.00475
tert-Butylbenzene	mg/kg	<0.152	< 0.00475
Tetrachloroethene	mg/kg	<0.152	< 0.00475
Trans-1,2-Dichloroethene	mg/kg	<0.152	< 0.00475
Trans-1,3-Dichloropropene	mg/kg	<0.152	< 0.00475
Trans-1,4-Dichlorobutene	mg/kg	<0.152	< 0.00475
Tribromomethane (Bromoform)	mg/kg	<0.152	< 0.00475
Trichloroethylene	mg/kg	<0.152	< 0.00475
Vinyl Chloride	mg/kg	<0.152	< 0.00475
SVOCs			
1,2,4,5-Tetrachlorobenzene	mg/kg	<0.152	< 0.141
1,2,4-Trichlorobenzene	mg/kg	<0.152	< 0.141
1,2-Benzphenanthracene (Chrysene)	mg/kg	<0.152	0.0354 J
1,2-Dichlorobenzene	mg/kg	<0.152	< 0.00475
1,2-Dichlorobenzene	mg/kg	<0.152	< 0.141
1,2-Diphenylhydrazine	mg/kg	<0.152	< 0.141
1,4-Dichlorobenzene	mg/kg	<0.152	< 0.141
1-Chloronaphthalene	mg/kg	<0.152 N	< 0.141 N
1-Methylnaphthalene	mg/kg	<0.152 N	< 0.141 N
1-NAphthylamine	mg/kg	<0.152	< 0.141
2,4,5-Trichlorophenol	mg/kg	<0.152	< 0.141
2,4,6-Trichlorophenol	mg/kg	<0.152	< 0.141
2,4-Dichlorophenol	mg/kg	<0.152	< 0.141
2,4-Dimethylphenol	mg/kg	<0.152	< 0.141
2,4-Dinitrophenol	mg/kg	<0.152	< 0.701
2,4-Dinitrotoluene	mg/kg	<0.152	< 0.141
2,6-Dichlorophenol	mg/kg	<0.152	< 0.141
2,6-Dinitrotoluene	mg/kg	<0.152	< 0.141
2-Chloronaphthalene (b-)	mg/kg	<0.152	< 0.141
2-Chlorophenol	mg/kg	<0.152	< 0.141
2-Methyl Pyridine	mg/kg	<0.152	< 0.141
2-Methyl-4,6-Dinitrophenol (4,6-Dinitro-o-cresol)	mg/kg	<0.152	< 0.351
2-Methylnaphthalene	mg/kg	<0.152	< 0.141
2-Methylphenol (o-cresol)	mg/kg	<0.152	< 0.141

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Table 4. Waste Characterization Samples Analytical Data Summary (revised)
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

	Location ID	MPOL-SB-006	MPOL-CS-001
	Sample Date	1/19/2010	4/13/2010
	Sample ID	MNPA-MPOL-SB-006-(3.0-4.0)	MNPA-MPOL-CS-001
	Matrix	Soil	Soil
Chemical Name	Unit		
2-Naphthylamine	mg/kg	<0.152	< 0.141
2-Nitroaniline	mg/kg	<0.152	< 0.141
2-Nitrophenol	mg/kg	<0.152	< 0.141
3,3-Dichlorobenzidine	mg/kg	<0.152	< 0.141
3,5,5-Trimethyl-2-Cyclohexene-1-One (Isophorone)	mg/kg	<0.152	< 0.141
3-Methylchloranthrene	mg/kg	<0.152	< 0.141
3-Nitroaniline	mg/kg	<0.152	< 0.141
4-Aminobiphenyl	mg/kg	<0.152	< 0.141
4-Bromophenyl Phenyl Ether	mg/kg	<0.152	< 0.141
4-Chloro-3-Methylphenol	mg/kg	<0.152	< 0.141
4-Chlorophenyl Phenyl Ether	mg/kg	<0.152	< 0.141
4-Dimethylaminoazobenzene	mg/kg	<0.152	< 0.141
4-Methyl Phenol (p-cresol)	mg/kg	<0.152	< 0.141
4-Nitrophenol	mg/kg	<0.152	< 0.701
7,12-Dimethylbenz(a)Anthracene	mg/kg	<0.152	< 0.141
a,a-Dimethylphenethylamine	mg/kg	<0.152	< 0.141
Acenaphthene	mg/kg	<0.152	< 0.141
Acenaphthylene	mg/kg	<0.152	< 0.141
Acetophenone	mg/kg	<0.152	< 0.141
Aniline	mg/kg	<0.152	< 0.141
Anthracene	mg/kg	<0.152	< 0.141
Benzidine	mg/kg	<0.152	< 0.701
Benzo(a)Anthracene	mg/kg	<0.152	< 0.141
Benzo(a)Pyrene	mg/kg	<0.152	< 0.141
Benzo(b)Fluoranthene	mg/kg	<0.152	< 0.141
Benzo(g,h,i)Perylene	mg/kg	<0.152	< 0.141
Benzo(k)Fluoranthene	mg/kg	<0.152	< 0.141
Benzoic Acid	mg/kg	<0.152	< 0.701
Benzyl Alcohol	mg/kg	<0.152	< 0.351
Benzyl Butyl Phthalate (Butyl Benzyl Phthalate)	mg/kg	<0.152	< 0.351
Bis (2-Chloroethoxy) Methane	mg/kg	<0.152	< 0.141
Bis (2-Chloroisopropyl) Ether (bis-(2-chloro-1-methylethyl	mg/kg	<0.152	< 0.141
Bis(2-Chloroethyl) Ether	mg/kg	<0.152	< 0.141
Bis(2-Ethylhexyl)Phthalate (Di[2-ethylhexyl] phthalate)	mg/kg	<0.152	< 0.141

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Table 4. Waste Characterization Samples Analytical Data Summary (revised)
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

Chemical Name	Location ID Sample Date Sample ID Matrix Unit	MPOL-SB-006 1/19/2010 MNPA-MPOL-SB-006-(3.0-4.0) Soil	MPOL-CS-001 4/13/2010 MNPA-MPOL-CS-001 Soil
Carbazole	mg/kg	<0.152	< 0.141
Dibenz(a,h)Anthracene	mg/kg	<0.152	< 0.141
Dibenz(a,j)Acridine	mg/kg	<0.152 JN	< 0.141 N
Dibenzofuran	mg/kg	<0.152	< 0.141
Diethyl Phthalate	mg/kg	<0.152	< 0.351
Dimethyl Phthalate	mg/kg	<0.152	< 0.351
Di-n-Butyl Phthalate	mg/kg	<0.152	< 0.351
Di-n-Octyl Phthalate	mg/kg	<0.152	< 0.351
Diphenylamine	mg/kg	<0.152	< 0.141
Ethyl Methanesulfonate	mg/kg	<0.152	< 0.141
Fluoranthene	mg/kg	<0.152	0.0638 J
Fluorene	mg/kg	<0.152	< 0.141
Hexachloro-1,3-Butadiene	mg/kg	<0.152	< 0.00475
Hexachloro-1,3-Butadiene	mg/kg	<0.152	< 0.141
Hexachlorobenzene	mg/kg	<0.152	< 0.141
Hexachlorocyclopentadiene	mg/kg	<0.152	< 0.351
Hexachloroethane	mg/kg	<0.152	< 0.141
Indeno(1,2,3-cd)Pyrene	mg/kg	<0.152	< 0.141
m-Dichlorobenzene	mg/kg	<0.152	< 0.00475
m-Dichlorobenzene	mg/kg	<0.152	< 0.141
Methanamine, N-Methyl-N-Nitroso	mg/kg	<0.152	< 0.141
Methyl Methanesulfonate	mg/kg	<0.152	< 0.141
Naphthalene	mg/kg	<0.152	< 0.0143
Naphthalene	mg/kg	<0.152	< 0.141
Nitrobenzene	mg/kg	<0.152	< 0.141
N-Nitrosodi-N-Propylamine	mg/kg	<0.152	< 0.141
N-Nitrosodiphenylamine	mg/kg	<0.152	< 0.141
N-Nitrosopiperidine	mg/kg	<0.152	< 0.141
p-Chloroaniline	mg/kg	<0.152	< 0.351
Pentachlorobenzene	mg/kg	<0.152	< 0.141
Pentachloronitrobenzene	mg/kg	<0.152	< 0.141
Pentachlorophenol	mg/kg	<0.152	< 0.141
Phenacetin	mg/kg	<0.152	< 0.141
Phenanthrene	mg/kg	<0.152	0.0425 J

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Table 4. Waste Characterization Samples Analytical Data Summary (revised)
Main Post POL AST Release Site SWMU 219 (CCWS-77)
White Sands Missile Range, New Mexico

	Location ID	MPOL-SB-006	MPOL-CS-001
	Sample Date	1/19/2010	4/13/2010
	Sample ID	MNPA-MPOL-SB-006-(3.0-4.0)	MNPA-MPOL-CS-001
	Matrix	Soil	Soil
Chemical Name	Unit		
Phenol	mg/kg	<0.152	< 0.141
p-Nitroaniline	mg/kg	<0.152	< 0.141
Propyzamide (Kerb)	mg/kg	<0.152	< 0.141
Pyrene	mg/kg	<0.152	0.0496 J
Pyridine	mg/kg	<0.152	< 0.701

Acronym/Note

^{o}C - degree Celsius

J - Analyte detected between Method Detection Limit and Reporting Limit

mg/kg - milligrams per kilogram

N - Parameter not NELAC certified

NA - Not analyzed. Waste Management Center did not request these parameters at this time.

NELAC - National Environmental Laboratory Accreditation Conference

SVOC - Semi-Volatile Organic Compounds

VOC - Volatile Organic Compounds

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Figures

LEGEND

- Test Well
- Monitoring Well
- SWMU Boundary

NOTES:
*: RCRA FACILITY INVESTIGATION (REVISION 1 - MAY 2011)
SOURCE:
BASE MAP PROVIDED BY ZIA, OCTOBER 2008.
AERIAL PHOTOGRAPH IS NAIP IMAGERY OBTAINED FROM THE USDA-FSA AERIAL PHOTOGRAPHY FIELD OFFICE, DATED AUGUST 2009.

N

0 600 1,200 2,400
Feet

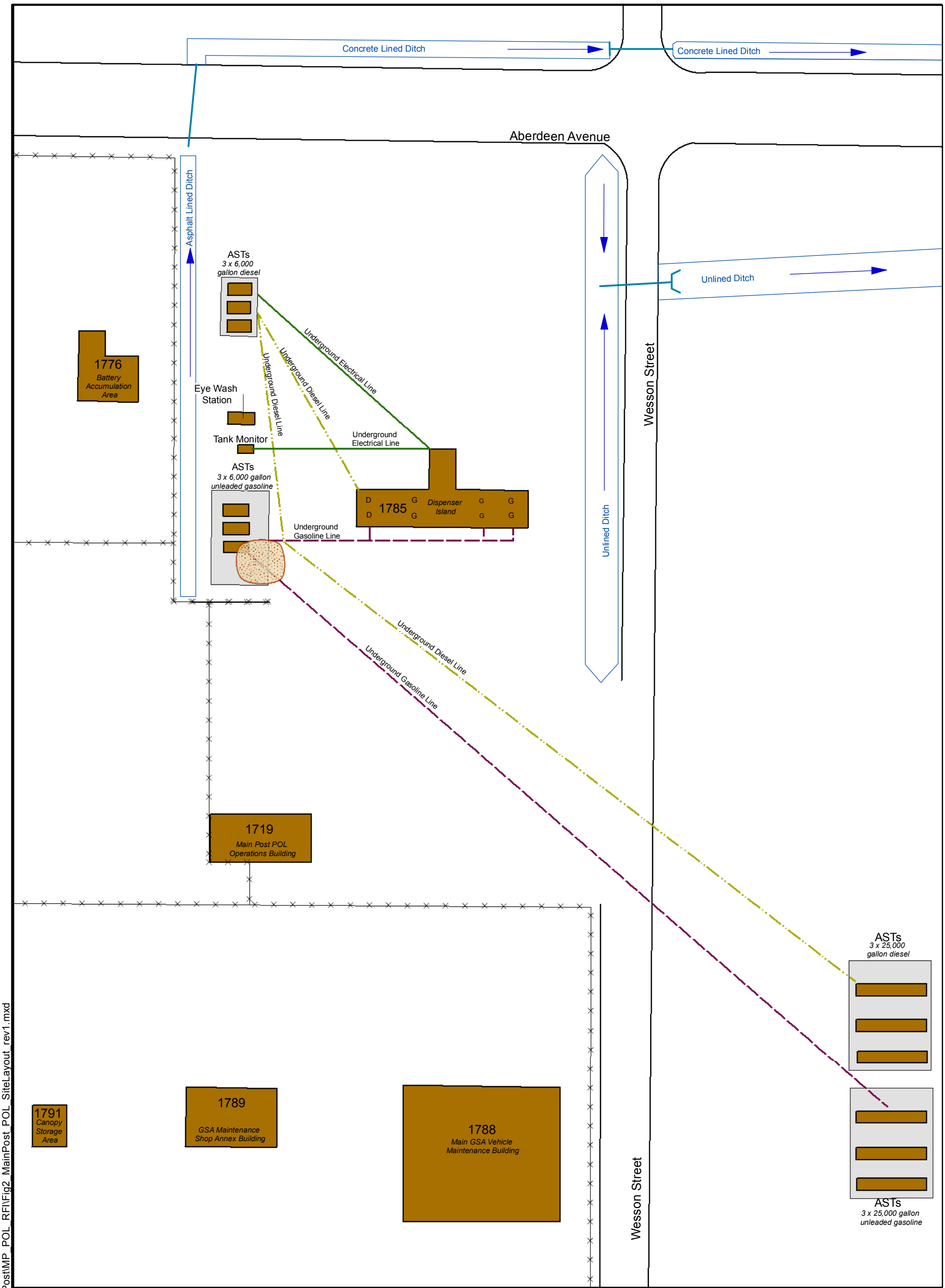
WHITE SANDS MISSILE RANGE
NEW MEXICO
MAIN POST POL AST RELEASE SITE
RCRA FACILITY INVESTIGATION *

SITE MAP

ARCADIS

FIGURE
1

I:\WhiteSands\GIS\ArcMap_MXD\MainPost\MP_POL_RFI\Fig1_MainPost_SiteMap.mxd_rev1.mxd



LEGEND

- APPROXIMATE AREA OF SPILL
- BUILDINGS
- CONTAINMENT AREAS
- WATER FLOW DIRECTION
- CULVERT
- STREETS
- FENCE

NOTES:
*: RCRA FACILITY INVESTIGATION (REVISION 1 - MAY 2011)
SOURCE: BASE MAP PROVIDED BY ZIA, OCTOBER 2008.
GSA: GENERAL SERVICES ADMINISTRATION
G: GASOLINE DISPENSER
D: DIESEL DISPENSER
AST: ABOVEGROUND STORAGE TANK

N

0 30 60 120
Feet

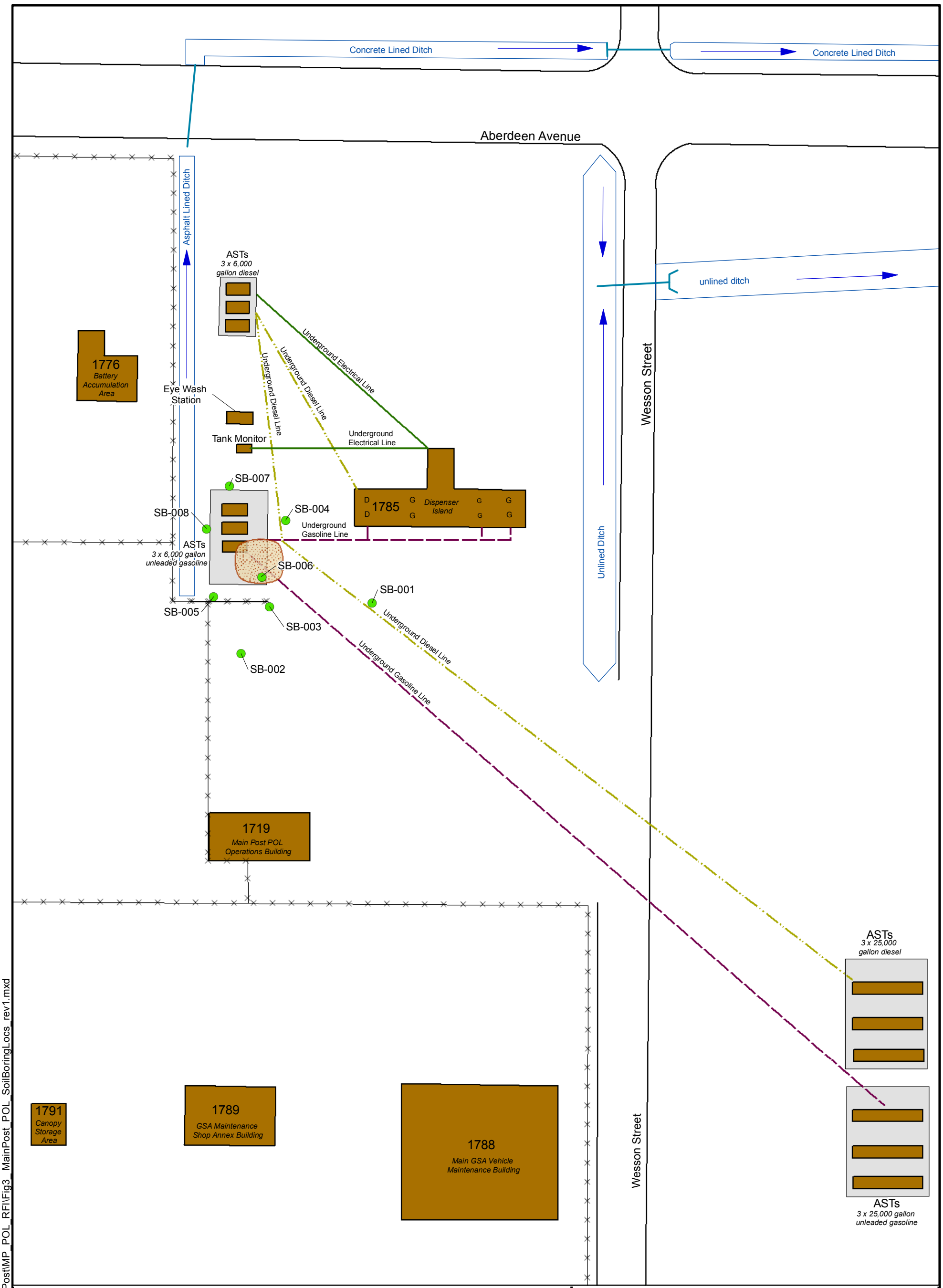
WHITE SANDS MISSILE RANGE
NEW MEXICO
MAIN POST POL AST RELEASE SITE
RCRA FACILITY INVESTIGATION *

SITE LAYOUT

ARCADIS

FIGURE
2

I:\WhiteSands\GIS\ArcMap_MXD\MainPost\MP_POL_RFI\Fig2_MainPost_POL_SiteLayout_rev1.mxd



LEGEND

- SOIL SAMPLE LOCATION
- APPROXIMATE AREA OF SPILL
- BUILDINGS
- CONTAINMENT AREAS
- WATER FLOW DIRECTION
- CULVERTS
- STREETS
- FENCE

NOTES:
*: RCRA FACILITY INVESTIGATION (REVISION 1 - MAY 2011)
SOURCE: BASE MAP PROVIDED BY ZIA, OCTOBER 2008.
GSA: GENERAL SERVICES ADMINISTRATION
G: GASOLINE DISPENSER
D: DIESEL DISPENSER
AST: ABOVEGROUND STORAGE TANK

N

0 30 60 120
Feet

WHITE SANDS MISSILE RANGE
NEW MEXICO
MAIN POST POL AST RELEASE SITE
RCRA FACILITY INVESTIGATION *

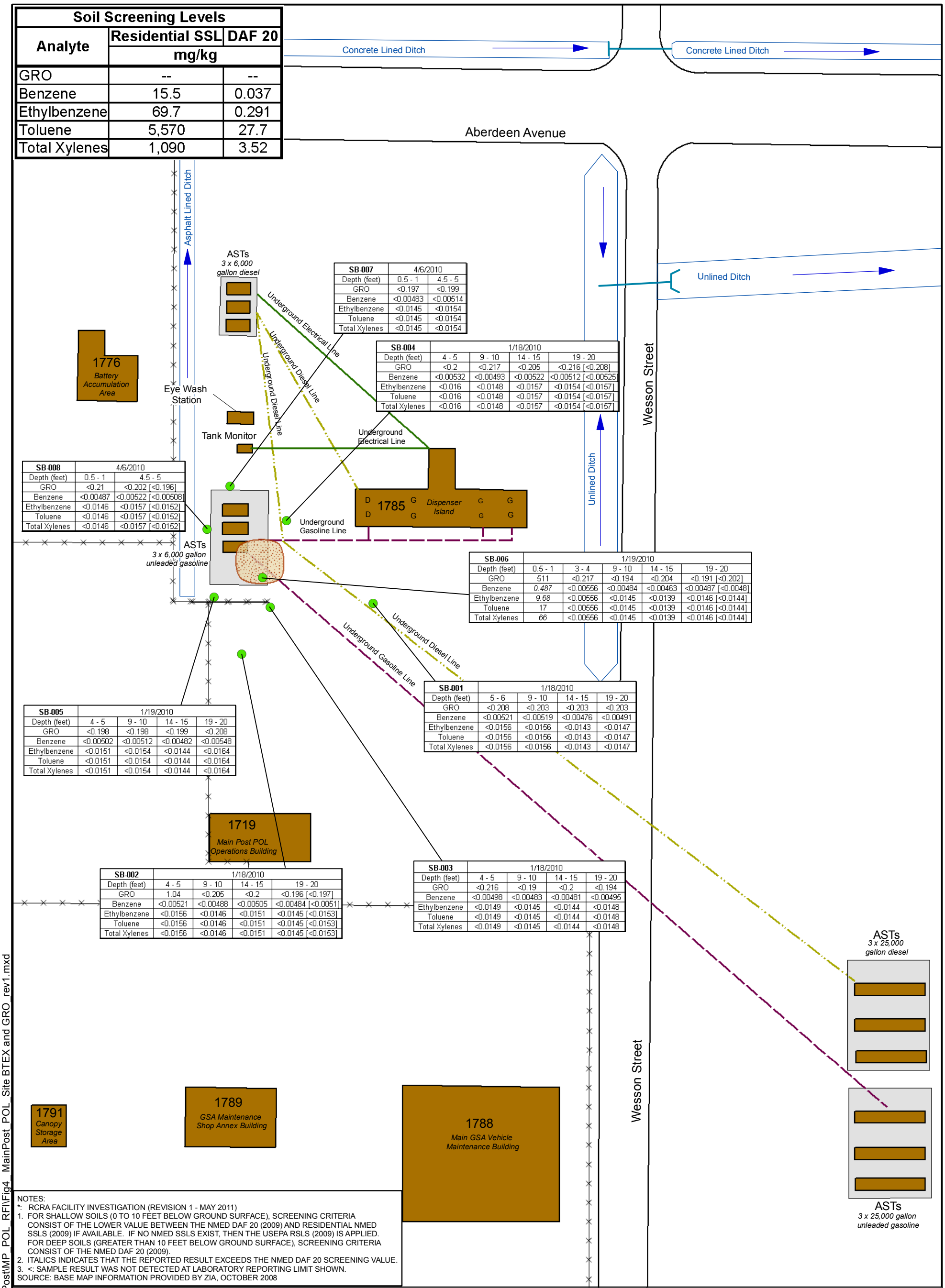
SOIL BORING LOCATIONS

ARCADIS

FIGURE
3

I:\WhiteSands\GIS\ArcMap_MXD\MainPost\MP_POL_RFI\Fig3_MainPost_POL_SoilBoringLocs_rev1.mxd

Soil Screening Levels		
Analyte	Residential SSL	DAF 20
	mg/kg	
GRO	--	--
Benzene	15.5	0.037
Ethylbenzene	69.7	0.291
Toluene	5,570	27.7
Total Xylenes	1,090	3.52



SB-007	4/6/2010	
Depth (feet)	0.5 - 1	4.5 - 5
GRO	<0.197	<0.199
Benzene	<0.00483	<0.00514
Ethylbenzene	<0.0145	<0.0154
Toluene	<0.0145	<0.0154
Total Xylenes	<0.0145	<0.0154

SB-004	1/18/2010			
Depth (feet)	4 - 5	9 - 10	14 - 15	19 - 20
GRO	<0.2	<0.217	<0.205	<0.216 [<0.208]
Benzene	<0.00532	<0.00493	<0.00522	<0.00512 [<0.00525]
Ethylbenzene	<0.016	<0.0148	<0.0157	<0.0154 [<0.0157]
Toluene	<0.016	<0.0148	<0.0157	<0.0154 [<0.0157]
Total Xylenes	<0.016	<0.0148	<0.0157	<0.0154 [<0.0157]

SB-008	4/6/2010	
Depth (feet)	0.5 - 1	4.5 - 5
GRO	<0.21	<0.202 [<0.196]
Benzene	<0.00487	<0.00522 [<0.00508]
Ethylbenzene	<0.0146	<0.0157 [<0.0152]
Toluene	<0.0146	<0.0157 [<0.0152]
Total Xylenes	<0.0146	<0.0157 [<0.0152]

SB-006	1/19/2010				
Depth (feet)	0.5 - 1	3 - 4	9 - 10	14 - 15	19 - 20
GRO	511	<0.217	<0.194	<0.204	<0.191 [<0.202]
Benzene	*0.487*	<0.00556	<0.00484	<0.00463	<0.00487 [<0.0048]
Ethylbenzene	*9.68*	<0.00556	<0.0145	<0.0139	<0.0146 [<0.0144]
Toluene	*17*	<0.00556	<0.0145	<0.0139	<0.0146 [<0.0144]
Total Xylenes	*66*	<0.00556	<0.0145	<0.0139	<0.0146 [<0.0144]

SB-001	1/18/2010			
Depth (feet)	5 - 6	9 - 10	14 - 15	19 - 20
GRO	<0.208	<0.203	<0.203	<0.203
Benzene	<0.00521	<0.00519	<0.00476	<0.00491
Ethylbenzene	<0.0156	<0.0156	<0.0143	<0.0147
Toluene	<0.0156	<0.0156	<0.0143	<0.0147
Total Xylenes	<0.0156	<0.0156	<0.0143	<0.0147

SB-005	1/19/2010			
Depth (feet)	4 - 5	9 - 10	14 - 15	19 - 20
GRO	<0.198	<0.198	<0.199	<0.208
Benzene	<0.00502	<0.00512	<0.00482	<0.00548
Ethylbenzene	<0.0151	<0.0154	<0.0144	<0.0164
Toluene	<0.0151	<0.0154	<0.0144	<0.0164
Total Xylenes	<0.0151	<0.0154	<0.0144	<0.0164

SB-002	1/18/2010			
Depth (feet)	4 - 5	9 - 10	14 - 15	19 - 20
GRO	1.04	<0.205	<0.2	<0.196 [<0.197]
Benzene	<0.00521	<0.00488	<0.00505	<0.00484 [<0.0051]
Ethylbenzene	<0.0156	<0.0146	<0.0151	<0.0145 [<0.0153]
Toluene	<0.0156	<0.0146	<0.0151	<0.0145 [<0.0153]
Total Xylenes	<0.0156	<0.0146	<0.0151	<0.0145 [<0.0153]

SB-003	1/18/2010			
Depth (feet)	4 - 5	9 - 10	14 - 15	19 - 20
GRO	<0.216	<0.19	<0.2	<0.194
Benzene	<0.00498	<0.00483	<0.00481	<0.00495
Ethylbenzene	<0.0149	<0.0145	<0.0144	<0.0148
Toluene	<0.0149	<0.0145	<0.0144	<0.0148
Total Xylenes	<0.0149	<0.0145	<0.0144	<0.0148

NOTES:
*: RCRA FACILITY INVESTIGATION (REVISION 1 - MAY 2011)
1. FOR SHALLOW SOILS (0 TO 10 FEET BELOW GROUND SURFACE), SCREENING CRITERIA CONSIST OF THE LOWER VALUE BETWEEN THE NMED DAF 20 (2009) AND RESIDENTIAL NMED SSLS (2009) IF AVAILABLE. IF NO NMED SSLS EXIST, THEN THE USEPA RSLS (2009) IS APPLIED. FOR DEEP SOILS (GREATER THAN 10 FEET BELOW GROUND SURFACE), SCREENING CRITERIA CONSIST OF THE NMED DAF 20 (2009).
2. ITALICS INDICATES THAT THE REPORTED RESULT EXCEEDS THE NMED DAF 20 SCREENING VALUE.
3. <: SAMPLE RESULT WAS NOT DETECTED AT LABORATORY REPORTING LIMIT SHOWN.
SOURCE: BASE MAP INFORMATION PROVIDED BY ZIA, OCTOBER 2008

LEGEND
- SOIL SAMPLE LOCATION
- APPROXIMATE AREA OF SPILL
- BUILDINGS
- CONTAINMENT AREAS
- WATER FLOW DIRECTION
- CULVERTS
- STREETS
- FENCE

USEPA: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NMED: NEW MEXICO ENVIRONMENT DEPARTMENT
RSL: REGIONAL SCREENING LEVEL
SSL: SOIL SCREENING LEVEL
DAF: DILUTION ATTENUATION FACTOR
GRO: GASOLINE RANGE ORGANICS
ALL SOIL RESULTS ARE REPORTED IN MG/KG (MILLIGRAM PER KILOGRAM)
DEPTHS ARE MEASURED IN FEET
BRACKETS INDICATE THAT THE RESULT SHOWN IS FROM A DUPLICATE FIELD SAMPLE.
- -: NO SSL AVAILABLE FOR THIS CONSTITUENT
GSA: GENERAL SERVICES ADMINISTRATION
AST: ABOVEGROUND STORAGE TANK
G: GASOLINE DISPENSER
D: DIESEL DISPENSER

N
0 30 60 120
Feet

WHITE SANDS MISSILE RANGE
NEW MEXICO
MAIN POST POL AST RELEASE SITE
RCRA FACILITY INVESTIGATION *

BTEX AND GRO CONCENTRATIONS

ARCADIS

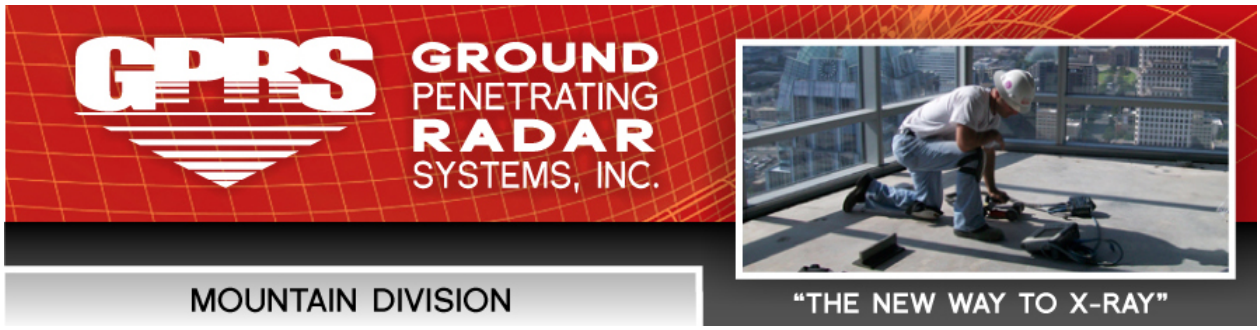
FIGURE
4

I:\WhiteSands\GIS\ArcMap_MXD\MainPost\MP_POL_RFI\Fig4_MainPost_POL_Site BTEX and GRO_rev1.mxd

Appendices

Appendix A

GPR Report



January 8, 2010

ZIA Engineering and Environmental
Attn: Brad Davis
755 S. Telshore
F-201
Las Cruces, NM
80241

Subject: Ground Penetrating Radar (GPR) survey to locate Underground Storage Tanks and Utilities at the WSMR in New Mexico.

Table of Contents

1. Overview of GPR
2. Equipment & Capabilities
3. Site Description
4. Summary
5. Images
6. Qualifications
7. Closing

1. Overview of GPR

Ground Penetrating Radar (GPR), also known as surface penetrating radar, is a technology that sends radar pulses into the surface and reflects back off of anomalies below. As the radar pulses pass through differing materials, the radar reflects back to the surface off of anomalies. The anomalies can be interpreted as steel pipes, PVC conduits, underground storage tanks, voids, etc. One of the many advantages of the technology is the ability to locate non-metallic objects as well as determining depth to the object. GPR data acquisition is very fast with immediate results. It is common for an experienced technician to survey a very large area in a day. Although sometimes confused with X-Ray, GPR uses no radiation emissions and is perfectly safe to work with human presence in close proximity.

Figure 1 - GSSI 400 MHz antenna

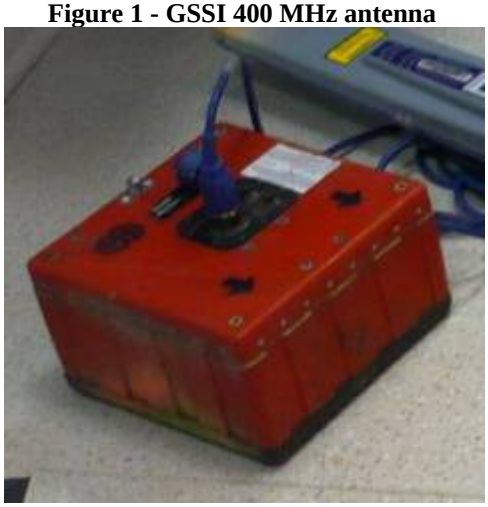


Figure 2 - GSSI SIR-3000 GPR

2. Equipment and Capabilities

Ground Penetrating Radar (GPR)

- **GSSI SIR – 3000 (fig. 2)**
  - We use a Geophysical Survey Systems Inc (GSSI) SIR-3000 Radar unit. This is the most advanced GPR available. It allows for onsite interpretation, as well as stores data for later processing. This equipment is self-calibrating (see figure 3), allowing more precise depth and location measurements.
  - GSSI is a leading GPR designer and manufacturer. Information can be found at www.geophysical.com
- **400 MHz GSSI antenna (fig. 1)**
  - For this project, we used a 400 MHz antenna with the GPR. This antenna allows data collection to depths of 8'in the Athens, Georgia area. The signal reflects on all objects which are a different conductivity from the substrate (dirt). This reflection is what allows us to "see" objects.

15 May 2006

To Whom It May Concern:

GSSI Radar Controller units and Antennas do not require factory calibration. There are no calibration certificates available. These units have been designed to self-calibrate automatically each time the unit is turned on.

GSSI recommends that Radar Controller units and Antennas be tested every three years to ensure that they meet published performance specifications. To ensure safe and accurate testing, a certified GSSI test system must be used.

Scott Ratté
Field Service & Rental Manager

Geophysical Survey Systems, Inc.

12 Industrial Way
Salem, NH 03079

Tel 603.893.1109 • Fax 603-889-3984
www.geophysical.com • sales@geophysical.com

Figure 3

3. Site Description

Site: WSMR
New Mexico

Date: January 8, 2010

Time: Morning-Early Afternoon

Weather: Cool, Sunny, No Precipitation

Scanning conditions: Excellent

4. Summary

The purpose of this Ground Penetrating Radar (GPR) survey was to determine the existence and location of any Underground Storage Tanks (USTs) or Utilities on two WSMR sites in New Mexico prior to boring. All utilities located are noted in Figures 4 and 5, marked in the field, and were discussed with the onsite representative.

As noted in Figure 4 below three of the locations at the Las Cruces site had utilities located near or in the location for boring. One area was located that contained excessive moisture. It was discussed in the field as well as shown in figure 4.

The GPR scan continued on the WSMR Stallion Range. Although no typical utilities were located in this scan, two of the areas were found to have debris. As noted in figure 5 one area contained a pipe or related item and could be avoided by slightly moving the boring location. A second area was found with high amounts of unknown debris that was also noted in figure 5.

5. Images

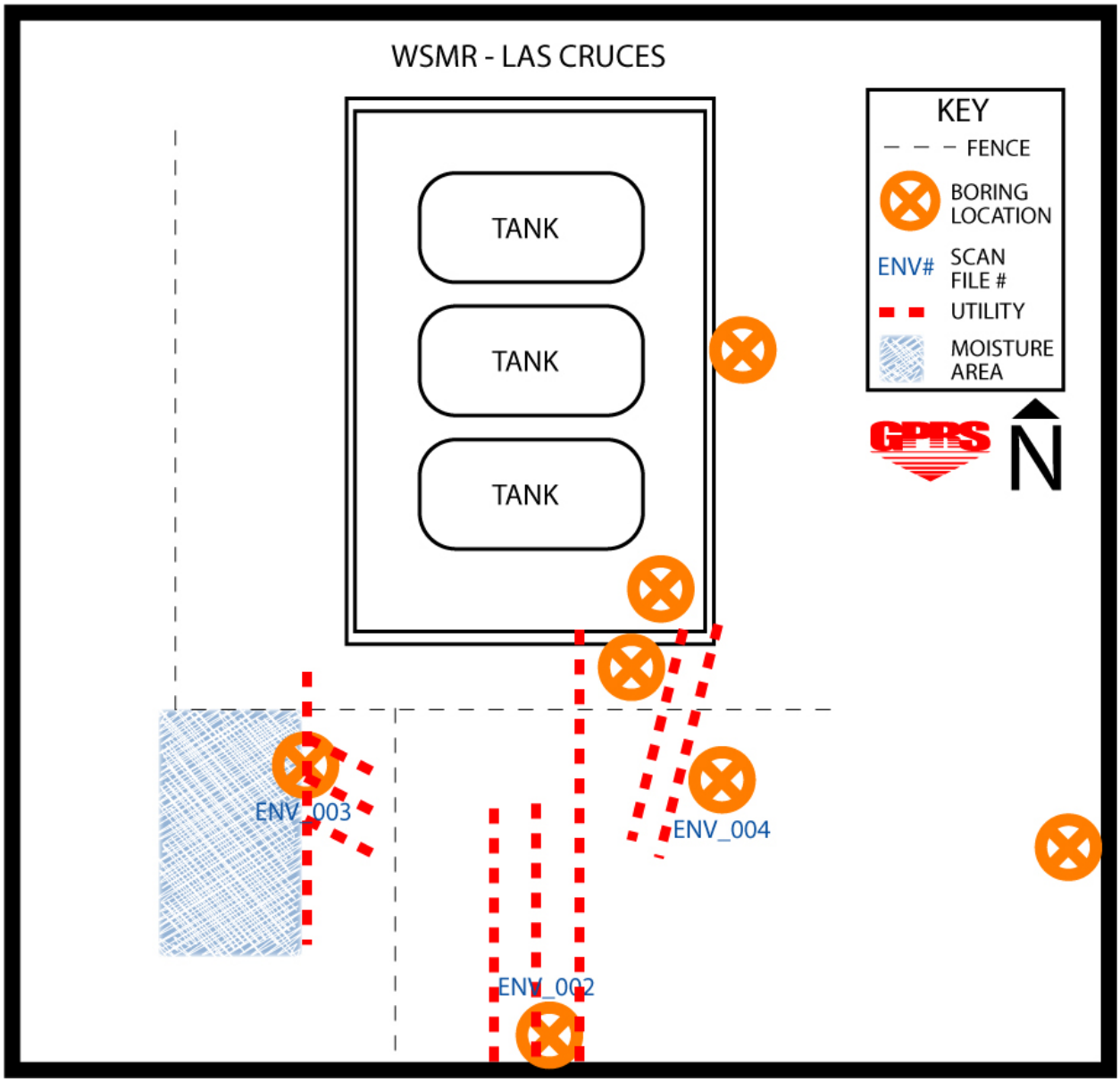


Figure 4 – Diagram of First Scanning site near Las Cruces

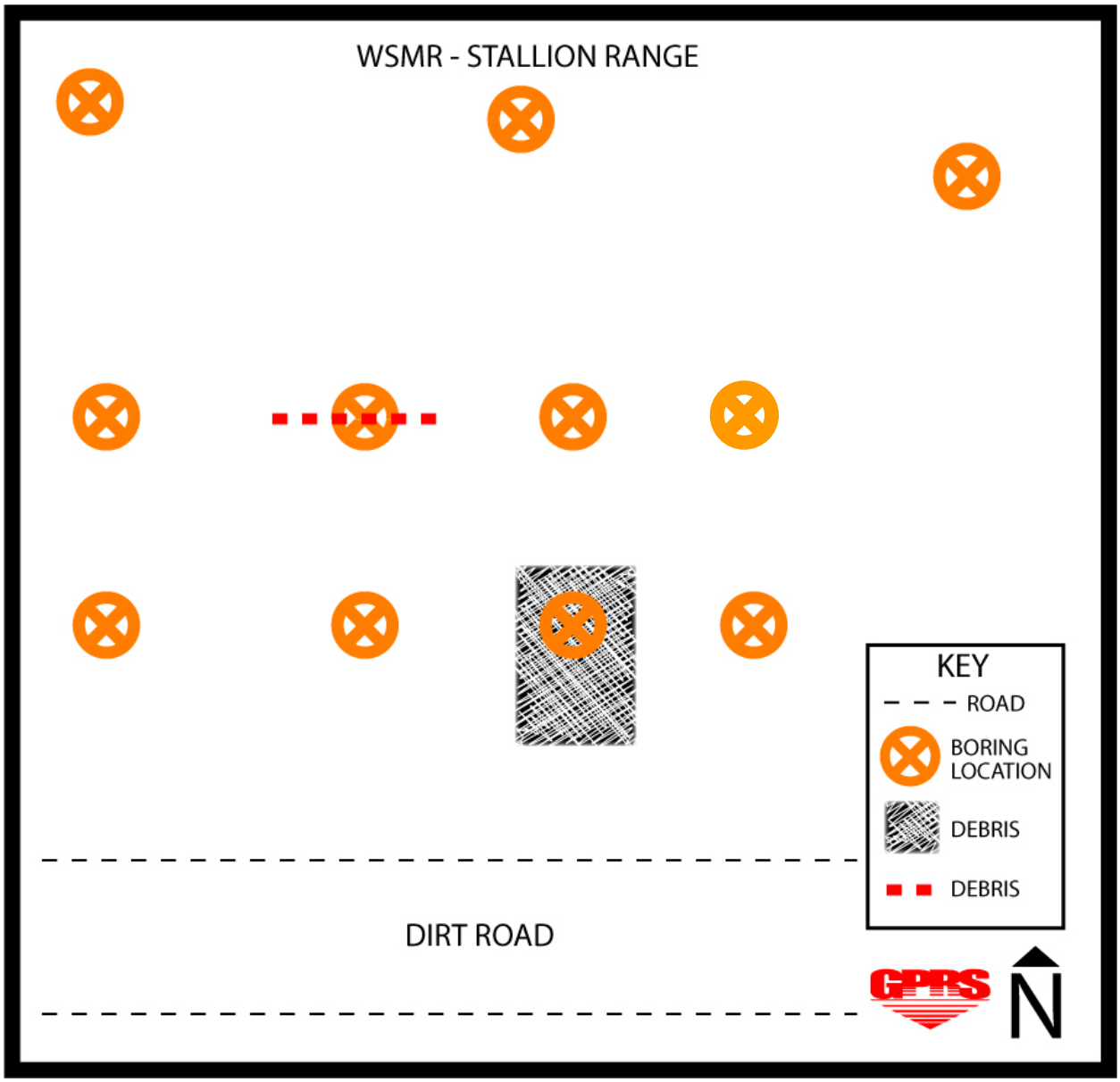


Figure 5 – Diagram of Second Scanning site at Stallion Range

Figure 6 – Photo of First Scanning site near Las Cruces.

Figure 7 – Photo of Second Scanning site, Stallion Range.

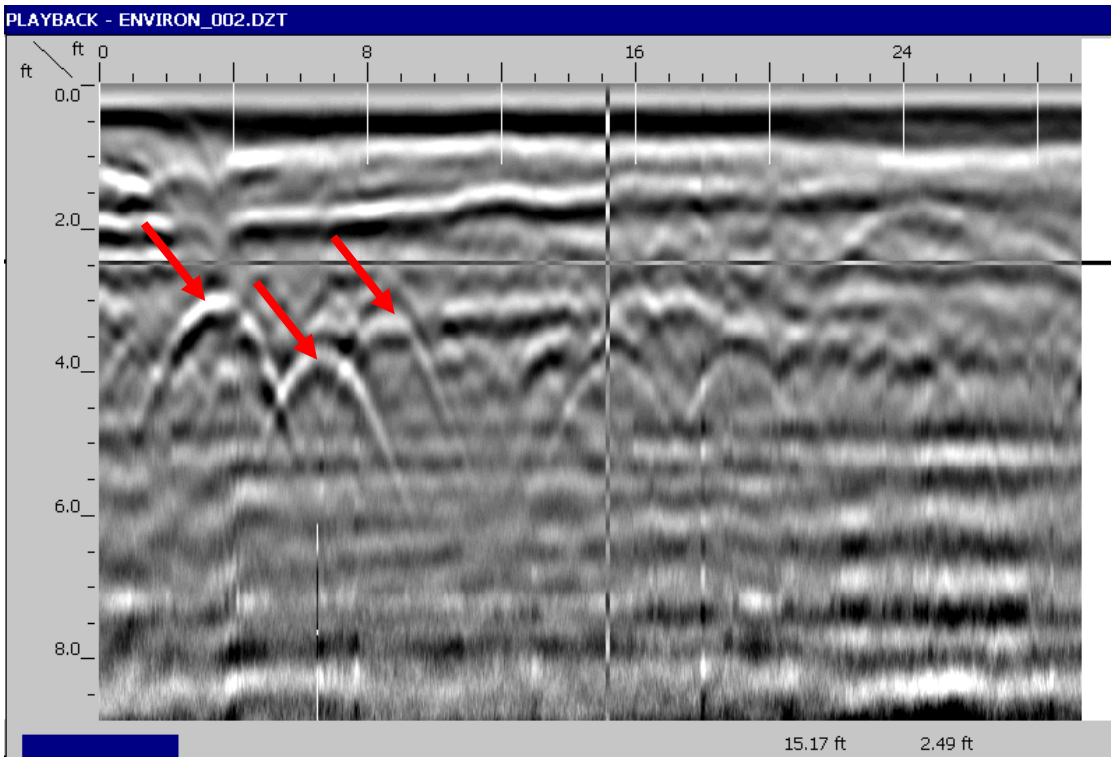


Figure 8 – GPR Data (ENV_002) Pipes noted by red arrows.

Figure 9 – Photo of (ENV_002)

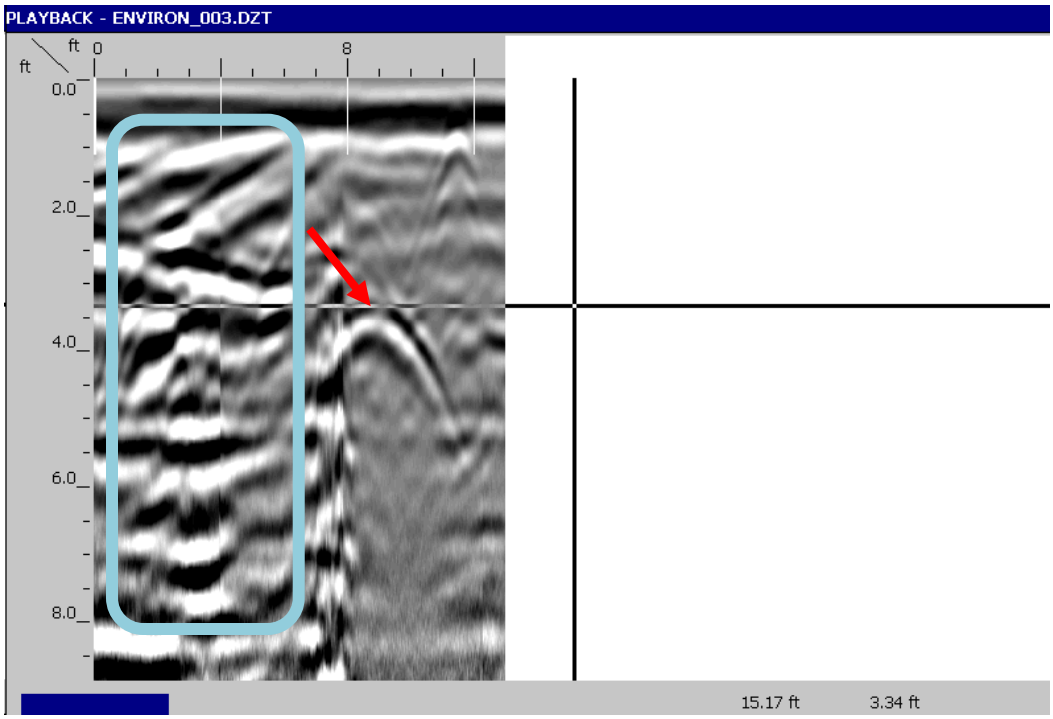


Figure 10 – GPR Data (ENV_003) Pipes noted by red arrows area of moisture in blue square

Figure 11 – Photo of (ENV_003)

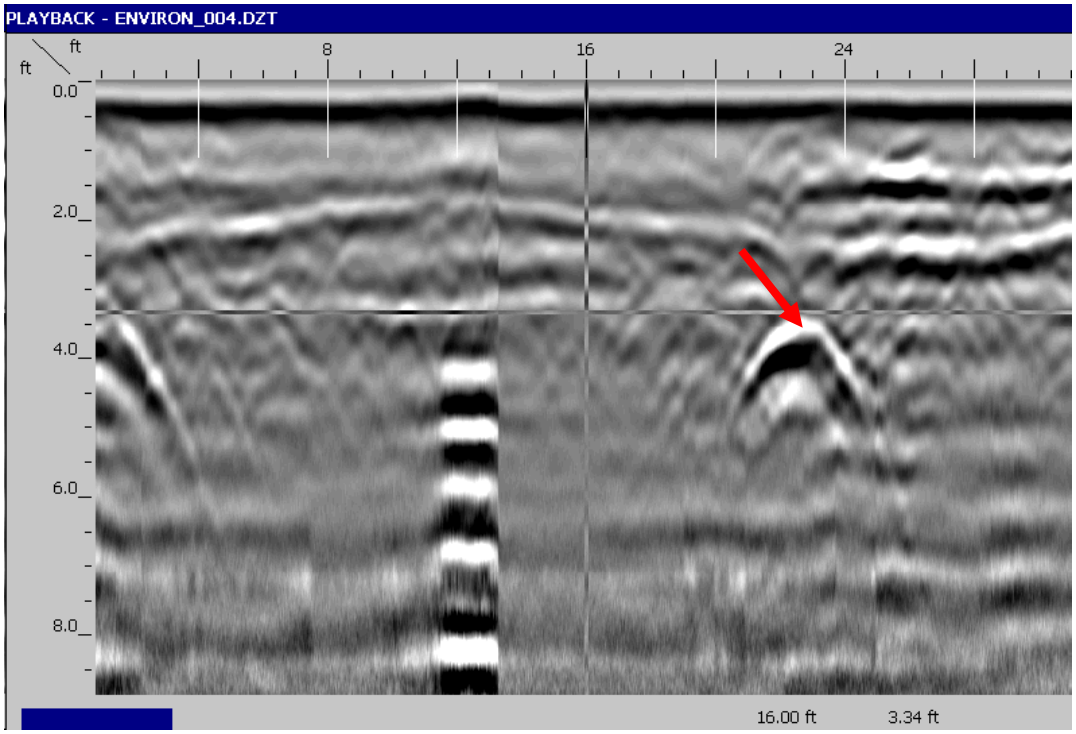


Figure 12 – GPR Data (ENV_004) Pipes noted by red arrow.

Figure 13 – Photo of (ENV_004)

6. Qualifications

Ground Penetrating Radar Systems, Inc. (GPRS) was started in October 2001, by Matt Aston. The original intention in starting this business was to give contractors a reliable way to "see" into concrete slabs in order to avoid cutting embedded electrical conduits and critical reinforcing steel. While GPRS performs this work on a regular basis, there are many other applications in which we use Ground Penetrating Radar to benefit our customer base.

In the past seven years, GPRS has completed over 3,500 jobs as a company. In 2008, 89% of the work GPRS performed was either repeat business or business that we were referred by one of our customers. We are proud of this number and believe it speaks to the level of satisfaction our customers have with the type of service we perform.

All of our technicians are GPR certified by GSSI and have gone through extensive training with a GPRS senior technician. Our technicians also are PTI Level 1 certified.

7. Closing

Thank you for the opportunity to serve you on this project. I hope this report has answered all the questions you had regarding this survey. However if there is anything you have questions about or feel was omitted, please do not hesitate to call.

Thank you,

Jason Schaff
303.945.5415
Jason.Schaff@gp-radar.com

Appendix B

Boring Logs (revised)

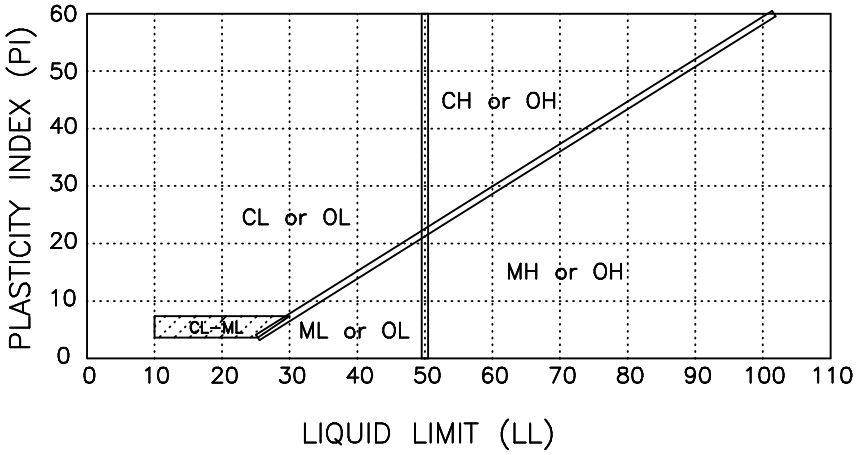
UNIFIED SOIL CLASSIFICATION SYSTEM

Soils are visually classified by the United Soil Classification System (USCS) on the boring logs presented in this report. Grain size analysis and Atterberg limits tests are often performed on selected samples to aid in classification. The classification system is briefly outlined on this chart. For a more detailed description of the system, see "The Unified Soil Classification System" Corps of Engineers, US Army Technical Memorandum No. 3–357 (Revised April 1960) or ASTM Designation: D2487–66T.

MAJOR DIVISIONS				GROUP SYMBOL	TYPICAL NAMES
COARSE – GRAINED SOILS (Less than 50% passes No. 200 sieve)	GRAVELS (50% or less of coarse fraction passes No. 4 sieve)	CLEAN GRAVELS (Less than 5% passes No. 200 sieve)		GW	Well graded gravels, gravel–sand mixtures, or sand–gravel–cobble mixtures.
				GP	Poorly graded gravels, gravel–sand mixtures, or sand–gravel–cobble mixtures.
		GRAVELS WITH FINES (More than 12% passes No. 200 sieve)	Limits plot below the "A" line & hatched zone on plasticity chart	GM	Silty gravels, gravel–sand–silt mixtures.
			Limits plot above the "A" line & hatched zone on plasticity chart	GC	Clayey gravels, gravel–sand–clay mixtures.
	SANDS (More than 50% of coarse fraction passes No. 4 sieve)	CLEAN SANDS (Less than 5% passes No. 200 sieve)		SW	Well graded sands, gravelly sands.
				SP	Poorly graded sands, gravelly sands.
		SANDS WITH FINES (More than 12% passes No. 200 sieve)	Limits plot below the "A" line & hatched zone on plasticity chart	SM	Silty sands, sand–silt mixtures.
			Limits plot above the "A" line & hatched zone on plasticity chart	SC	Clayey sands, sand–clay mixtures.
FINE – GRAINED SOILS (50% or more passes No. 200 sieve)	SILTS (Limits Plot Below "A" Line & hatched Zone on Plasticity Chart)	SILTS OF LOW PLASTICITY (Liquid Limit Less Than 50)		ML	Inorganic silts, non–plastic or slightly plastic.
		SILTS OF HIGH PLASTICITY (Liquid Limit More Than 50)		MH	Inorganic silts, micaceous or diatomaceous silty soils, elastic silts.
	CLAYS (Limits Plot Above "A" Line & hatched Zone on Plasticity Chart)	CLAYS OF LOW PLASTICITY (Liquid Limit Less Than 50)		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		CLAYS OF HIGH PLASTICITY (Liquid Limit More Than 50)		CH	Inorganic clays of high plasticity, fat clays, sandy clays of high plasticity.

NOTE:
Coarse grained soils with between 5% & 12% passing the No. 200 sieve and fine grained soils with Atterberg limits plotting in the hatched zone on the plasticity chart shall have dual symbol. In Arizona, local streams contain sand, gravel & cobble type material, which are locally known as SGC or riverrun material. The USCS is not used to divide and symbolize this material.

PLASTICITY CHART



DEFINITIONS OF SOIL FRACTIONS

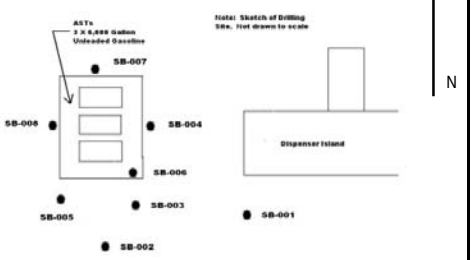
SOIL COMPONENT	PARTICLE SIZE RANGE
Cobbles	Above 3 in.
Gravel	3 in. to No. 4 sieve
Coarse gravel	3 in. to 3/4 in.
Fine gravel	3/4 in. to No. 4 sieve
Sand	No. 4 to No. 200
Coarse	No. 4 to No. 10
Medium	No. 10 to No. 40
Fine	No. 40 to No. 200
Fines (silt & clay)	Below No. 200 sieve
Clay	Smaller than 2 microns
Colloid	Smaller than 5 microns

ARCADIS
Boring/Well Construction Log

JOB NUMBER	CLIENT	LOCATION	BORING/WELL ID	PAGE ___1___
17	WSMR	Main Post POL AST Release Site	SB-001	OF ___1___

DRILLING METHOD	HOLLOW STEM AUGER		SAMPLING METHOD	CORE BARREL	
DRILLING	START	1-18-10 1032	DEVELOP	START	N/A
	FINISH	1-18-10 1218		FINISH	N/A
STATIC	DTW	N/A TIME	DRILLED BY	RABA KISTNER	
	DTP	N/A DATE		MANNY DUENEZ	
ELEV.	GROUND	N/A	LOGGED BY	BRADLEY DAVIS using the USCS	
	TOC	N/A		Zia Engineering and Environmental Consultants	

BORING/ WELL LOCATION



Drilling and/or Sample Method	DEPTH FEET	USCS Symbol	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS	MOISTURE	SAMPLING DEVICE	BLOW COUNT	PERCENT RECOVER	OVM/PID (PPM)	AIR TEMP (°F)	SAMPLE NO	Depth of Analytical Sample
HA	1	SW	Well graded sand	Mod brn 5yr 3/4	Fine to coarse grained sand w/gravel - cobbles	D	HA	N/A	N/A	0	87	N	N/A
HA	2	SW	Well graded sand	Mod brn 5yr 3/4	Fine to coarse grained sand w/gravel - cobbles	D	HA	N/A	N/A	N/A	N/A	N	N/A
CORE	3				No Recovery								
CORE	4				No Recovery								
CORE	5	SW	Well graded sand	Mod brn 5yr 3/4	Fine to coarse sand	D	CB	N/A	N/A	0	88	Y	5-6
CORE	6	SW	Well graded sand	Mod brown	Fine to coarse sand	D	CB	N/A	N/A	N/A	N/A	N	N/A
CORE	7	SW	Well graded sand	Mod brn 5yr 4/4	fine to coarse sand w/pebbles <10mm subangular	D	CB	N/A	100	0	80	N	N/A
CORE	8	SW	Well graded sand	Mod brn 5yr 4/4	fine to coarse sand w/minor silt <10mm pebbles granules	D	CB	N/A	N/A	N/A	N/A	N	N/A
CORE	9	SW	Well graded sand	Mod brn 5yr 4/4	fine to coarse sand w/minor silt	D	CB	N/A	N/A	N/A	N/A	N	N/A
CORE	10	SW	Well graded sand	Mod yellow brn 10yr 5/4	Fine to coarse sand, fine pebbles 5-10mm	D	CB	N/A	100	0	108	Y	9-10
CORE	11				No Recovery								
CORE	12				No Recovery								
CORE	13				No Recovery								
CORE	14	SW	Well graded sand	Mod yellow brn 10yr 5/4	Fine to coarse sand to granules, little gravel, little silt	D	CB	N/A	40	0	108	Y	14-15
CORE	15	SW	Well graded sand w/gravel	Mod yellow brn 10yr 5/4	Gravel up to 30mm, fine to coarse sand subang gravel	D	CB	N/A	40	N/A	N/A	N	N/A
CORE	16				No Recovery								
CORE	17				No Recovery								
CORE	18				No Recovery								
CORE	19	SW	Well graded sand	Dk yellowish orange 10yr 6/6	Fine to coarse sand, little granules	D	CB	N/A	40	0	109	Y	19-20
CORE	20	SW	Well graded sand w/gravel	Lt brn 5yr 6/4	Fine to coarse sand, granules to gravel <10mm	D	CB	N/A	40	0	108	N/A	N/A
					TD = 20 feet								

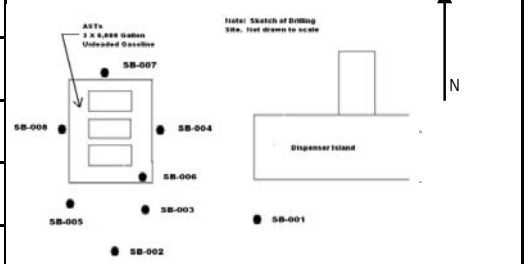
Please refer to the notes page at the end of Appendix B for details and definitions

ARCADIS
Boring/Well Construction Log

JOB NUMBER	CLIENT	LOCATION	BORING/WELL ID	PAGE ___1___
17	WSMR	Main Post POL AST Release Site	SB-002	OF ___1___

DRILLING METHOD	HOLLOW STEM AUGER		SAMPLING METHOD		
DRILLING	START	1-18-10 1335	DEVELOP	START	N/A
	FINISH	1-18-10 1435		FINISH	N/A
STATIC	DTW	N/A TIME	DRILLED BY	RABA KISTNER	
	DTO	N/A DATE		MANNY DUENEZ	
ELEV.	GROUND	N/A	LOGGED BY	BRADLEY DAVIS using the USCS	
	TOC	N/A		Zia Engineering and Environmental Consultants	

BORING/ WELL LOCATION



Drilling and/or Sample Method	DEPTH FEET	USCS Symbol	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS	MOISTURE	SAMPLING DEVICE	BLOW COUNT	PERCENT RECOVER	OVM/PID (PPM)	AIR TEMP (°F)	SAMPLE NO	Depth of Analytical Sample
HA	1	SW	Well graded sand	Mod yellow brn 10yr 5/4	Fine to coarse sand, granules to pebbles up to 40mm	M	HA	N/A	N/A	0	130	N	N/A
HA	2	SW-SC	Well graded sand w/clay	Lt brn 5yr 5/6	Fine to coarse sand w/clay	M	HA	N/A	N/A	N/A	N/A	N	N/A
HA	3	CL	Lean clay w/sand	Mod brn 5yr 4/4	Plastic clay w/sand to pebbles - 10mm	M	HA	N/A	100	0	134	N	N/A
CORE	4	CL	Lean clay w/sand	Mod brn 5yr 4/4	Plastic clay w/sand to pebbles - 10mm, faint hydrocarbon odor	D	CB	N/A	100	11.6	136	Y	4-5
CORE	5	CL	Lean clay w/sand	Mod brn 5yr 4/4	Plastic clay w/sand to pebbles - 10mm	D	CB	N/A	100	N/A	N/A	N	N/A
CORE	6				No Recovery								
CORE	7				No Recovery								
CORE	8	SW	Well graded sand	Mod brn 5yr 4/4	Fine sand, little granules, fine to coarse sand	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	9	SW	Well graded sand	Mod yellow brn 10yr 5/4	Fine to coarse sand, little/few granules	D	CB	N/A	60	0	131	Y	9-10
CORE	10	SW	Well graded sand	Mod yellow brn 10yr 5/4	Fine to coarse sand, little/few granules, granules increasing	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	11				No Recovery								
CORE	12				No Recovery								
CORE	13	SW	Well graded sand	Mod yellow brn 10yr 5/4	Fine to coarse sand w/granules & little/few pebbles to 15mm	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	14	SW	Well graded sand	Mod yellow brn 10yr 5/4	Gravel decreasing fine to coarse sand w/granules	D	CB	N/A	60	0	133	Y	14-15
CORE	15	SW	Well graded sand	Mod yellow brn 10yr 5/4	Fine to coarse grained, few granules	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	16				No Recovery								
CORE	17				No Recovery								
CORE	18	SW	Well graded sand	Lt brn 5yr 6/4	fine to medium grained little coarse sand	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	19	SW	Well graded sand	Dk yellowish orange 10yr 6/6	Fine to coarse sand, little granules	D	CB	N/A	60	0	136	Y	19-20
CORE	20	SW	Well graded sand w/gravel	Lt brn 5yr 6/4	Fine to coarse sand, granules to gravel <10mm	D	CB	N/A	60	N/A	N/A	N	N/A
					TD = 20 feet								

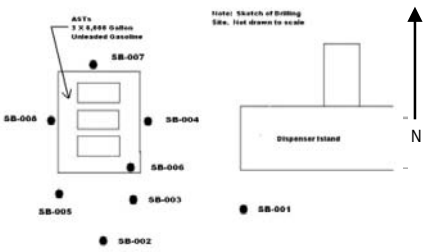
Please refer to the notes page at the end of Appendix B for details and definitions

ARCADIS
Boring/Well Construction Log

JOB NUMBER	CLIENT	LOCATION	BORING/WELL ID	PAGE ___1___
17	WSMR	Main Post POL AST Release Site	SB-003	OF ____1__

DRILLING METHOD	HOLLOW STEM AUGER		SAMPLING METHOD		
DRILLING	START	1-18-10 1500	DEVELOP	START	N/A
	FINISH	1-18-10 1546		FINISH	N/A
STATIC	DTW	N/A TIME	DRILLED BY	RABA KISTNER	
	DTO	N/A DATE		MANNY DUENEZ	
ELEV.	GROUND	N/A	LOGGED BY	BRADLEY DAVIS using the USCS	
	TOC	N/A		Zia Engineering and Environmental Consultants	

BORING/ WELL LOCATION



Drilling and/or Sample Method	DEPTH FEET	USCS Symbol	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS	MOISTURE	SAMPLING DEVICE	BLOW COUNT	PERCENT RECOVER	OVM/PID (PPM)	AIR TEMP	SAMPLE NO	DEPTH
											(^{0}F)		
HA	1	SW	Well graded sand	Mod yellow brn 10yr 5/4	Fine to coarse sand, granules to pebbles up to 40mm	M	HA	N/A	N/A	0	128	N	N/A
HA	2	SW-SC	Well graded sand w/clay	Mod brn 5yr 4/4	Fine to coarse sand w/clay	M	HA	N/A	N/A	N/A	N/A	N	N/A
CORE	3	CL	Lean clay w/sand	Mod brn 5yr 4/4	Lean clay with fine to coarse sand	M	HA	N/A	100	0	133	N	N/A
CORE	4	CL	Lean clay w/sand	Mod brn 5yr 4/4	Lean clay with fine to coarse sand	M	CB	N/A	100	0	134	Y	4-5
CORE	5	CL	Lean clay w/sand	Lt brn 5yr 5/6	Plastic clay w/fine to coarse sand	M	CB	N/A	100	N/A	N/A	N	N/A
CORE	6				No Recovery								
CORE	7				No Recovery								
CORE	8	SW	Well graded sand	Lt brn 5yr 5/6	Fine to med sand, little coarse sand	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	9	SW	Well graded sand		fine to coarse sand, granules increasing	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	10	SW	Well graded sand	Lt brn 5yr 6/4	Fine to coarse w/granules subangular	D	CB	N/A	60	0	134	Y	9-10
CORE	11				No Recovery								
CORE	12				No Recovery								
CORE	13	SW	Well graded sand		Fine to coarse sand w/granules	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	14	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse sand w/granules up to 5mm subang	D	CB	N/A	60	0	139	Y	14-15
CORE	15	SW	Well graded sand	Pale yellow brn 10yr 6/2	Fine to coarse sand w/granules	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	16				No Recovery								
CORE	17	SW	Well graded sand	Mod brn 5yr 4/4	Fine to coarse sand w/granules	D	CB	N/A	80	0	138	N	N/A
CORE	18	SW	Well graded sand	Lt brn 5yr 6/4	fine to medium grained little coarse sand	D	CB	N/A	80	N/A	N/A	N	N/A
CORE	19	SW	Well graded sand	Lt brn 5yr 6/4	Fine to coarse sand w/granules	D	CB	N/A	80	0	125	Y	19-20
CORE	20	SW	Well graded sand	Lt brn 5yr 6/4	Fine to coarse sand w/granules	D	CB	N/A	80	N/A	N/A	N	N/A
					TD = 20 feet								

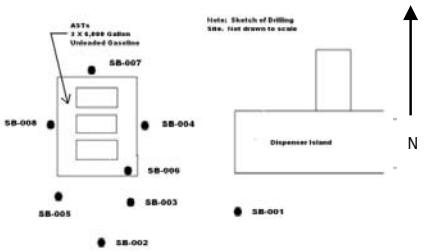
Please refer to the notes page at the end of Appendix B for details and definitions

ARCADIS
Boring/Well Construction Log

JOB NUMBER	CLIENT	LOCATION	BORING/WELL ID	PAGE ___1___
17	WSMR	Main Post POL AST Release Site	SB-004	OF ___1___

DRILLING METHOD	HOLLOW STEM AUGER		SAMPLING METHOD		
DRILLING	START	1-18-10 1615	DEVELOP	START	N/A
	FINISH	1-18-10 1650		FINISH	N/A
STATIC	DTW	N/A TIME	DRILLED BY	RABA KISTNER	
	DTO	N/A DATE		MANNY DUENEZ	
ELEV.	GROUND	N/A	LOGGED BY	BRADLEY DAVIS using the USCS	
	TOC	N/A		Zia Engineering and Environmental Consultants	

BORING/ WELL LOCATION



Drilling and/or Sample Method	DEPTH FEET	USCS Symbol	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS	MOISTURE	SAMPLING DEVICE	BLOW COUNT	PERCENT RECOVER	OVM/PID (PPM)	AIR TEMP (°F)	SAMPLE NO	Depth of Analytical Sample
HA	1	SW	Well graded sand	Mod yellow	Fine to coarse sand, granules to pebbles up to 40mm	M	HA	N/A	N/A	0	125	N	N/A
	2	SW-SC	Well graded sand w/clay	Mod brn 5yr 4/4	Fine to coarse sand w/clay few granules	M	HA	N/A	N/A	0	135	N	N/A
CORE	3	SW-SC	Well graded sand	Mod brn 5yr 4/4	Fine to med sand w/little silt & clay	M	CB	N/A	100	N/A	N/A	N	N/A
	4	SW-SC	Well graded sand	Lt brn 5yr 5/6	Fine to medium little silt & clay	M	CB	N/A	100	0	119	Y	4-5
	5	SW-SC	Well graded sand w/clay	Lt brn 5yr 5/6	Fine to coarse sand w/clay & little granules	M	CB	N/A	100	N/A	N/A	N	N/A
CORE	6				No Recovery								
	7	SW-SC	Well graded sand w/clay	Lt brn 5yr 5/6	Well grained sand w/clay fine to coarse-granlues	M	CB	N/A	80	N/A	N/A	N	N/A
	8	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse sand, little silt & clay	M	CB	N/A	80	N/A	N/A	N	N/A
	9	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse sand little silt & clay	M	CB	N/A	80	0	120	Y	9-10
	10	CL TO SW-SC	Lean Clay	Mod brn 5yr 4/4	Lean clay w/sand, fine to coarse plastic	D	CB	N/A	80	N/A	N/A	N	N/A
CORE	11				No Recovery								
	12				No Recovery								
	13	SP	Poorly graded sand	pale reddish brn 10R 5/4	Fine sand w/silt, few coarse sand	D	CB	N/A	60	N/A	N/A	N	N/A
	14	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse sand w/silt granules subang	D	CB	N/A	60	0	125	Y	14-15
	15	SW	Well graded sand	Light brown	Fine to coarse sand w/silt granules subang	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	16				No Recovery								
	17	SW	Well graded sand	Light brown	Fine to coarse grained sand, little/few granules	D	CB	N/A	80	0	126	N	N/A
	18	SW	Well graded sand	Light brown	Fine to coarse sand w/granules	D	CB	N/A	80	N/A	N/A	N	N/A
	19	SW	Well graded sand	Light brown	Fine to coarse sand	D	CB	N/A	80	0	125	Y	19-20
	20	SW	Well graded sand	Mod brown	Fine to coarse - mostly fine sand	D	CB	N/A	80	N/A	N/A	N	N/A
					TD = 20 feet								

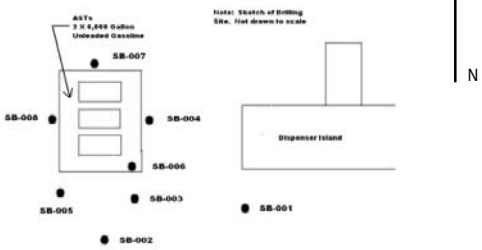
Please refer to the notes page at the end of Appendix B for details and definitions

ARCADIS
Boring/Well Construction Log

JOB NUMBER	CLIENT	LOCATION	BORING/WELL ID	PAGE
17	WSMR	Main Post POL AST Release Site	SB-005	1 OF 1

DRILLING METHOD	HOLLOW STEM AUGER	SAMPLING METHOD	CORE BARREL
DRILLING START	1-19-10 0805	DEVELOP START	N/A
DRILLING FINISH	1-19-10 0923	DEVELOP FINISH	N/A
STATIC DTW	N/A TIME	DRILLED BY	RABA KISTNER
STATIC DTO	N/A DATE		MANNY DUENEZ
ELEV. GROUND	N/A	LOGGED BY	BRADLEY DAVIS using the USCS
ELEV. TOC	N/A		Zia Engineering and Environmental Consultants

BORING/ WELL LOCATION



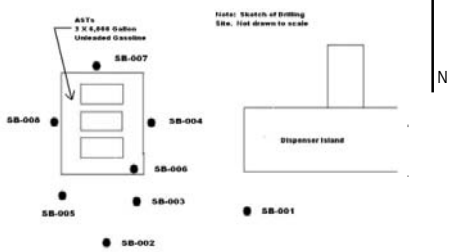
Drilling and/or Sample Method	DEPTH FEET	USCS Symbol	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS	MOISTURE	SAMPLING DEVICE	BLOW COUNT	PERCENT RECOVERY	OVM/PID (PPM)	AIR TEMP (^{0}F)	SAMPLE NO	Depth of Analytical Sample
HA	1	SW	Well graded sand	Mod yellow	Fine to coarse sand, granules to pebbles up to 40mm	M	HA	N/A	N/A	0	125	N	N/A
	2	SW-SC	Well graded sand w/clay	Mod brn 5yr 4/4	Fine to coarse sand w/clay few granules	M	HA	N/A	N/A	0	135	N	N/A
CORE	3	SW-SC	Well graded sand w/clay	Mod brn 5yr 4/4	Fine to coarse sand & clay	M	CB	N/A	100	N/A	N/A	N	N/A
	4	SW-SC	Well graded sand w/clay & silt	Lt brn 5yr 5/6	Fine to coarse sand w/silt & clay	M	CB	N/A	100	0	99	Y	4-5
	5	SW	Well graded sand	Lt brn 5yr 6/4	Fine to coarse sand w/silt & clay	D	CB	N/A	100	N/A	N/A	N	N/A
CORE	6				No Recovery								
	7	SW	Well graded sand	Light brown	Fine to coarse sand w/granules & pebbles <10mm	D	CB	N/A	80	0	120	N	N/A
	8	SP	Poorly graded sand	Gray orange 10yr 7/4	Fine grained sand minor granules	D	CB	N/A	80	N/A	N/A	N	N/A
	9	SW	Well graded sand	Light brown	fine to coarse sand w/granules & few pebbles. Subangular	D	CB	N/A	80	0	122	Y	9-10
	10	SW	Well graded sand	Light brown	fine to cse sand w/granules & few pebbles. Granules increasing	D	CB	N/A	80	N/A	N/A	N	N/A
CORE	11				No Recovery								
	12				No Recovery								
	13	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse sand w/granules, subang <5mm	D	CB	N/A	60	N/A	N/A	N	N/A
	14	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse sand w/granules & pebbles <10mm	D	CB	N/A	60	0	126	Y	14-15
	15	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse sand w/granules & pebbles <10mm	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	16				No Recovery								
	17				No Recovery								
	18	SW	Well graded sand	Mod yellow/brn	Fine to medium grained sand w/silt	D	CB	N/A	60	N/A	N/A	N	N/A
	19	SW	Well graded sand	Lt brn 5yr 5/6	Fine to medium grained sand w/silt	D	CB	N/A	60	0	123	Y	19-20
	20	SW	Well graded sand	Lt brn 5yr 6/4	Fine to coarse sand w/granules & pebbles	D	CB	N/A	60	N/A	N/A	N	N/A
					TD = 20 feet								

Please refer to the notes page at the end of Appendix B for details and definitions

ARCADIS
Boring/Well Construction Log

JOB NUMBER 17	CLIENT WSMR	LOCATION Main Post POL AST Release Site	BORING/WELL ID SB-006	PAGE ___1___ OF ____1__
DRILLING METHOD	HOLLOW STEM AUGER	SAMPLING METHOD	CORE BARREL	
DRILLING START	1-19-10 0945	DEVELOP START	N/A	
FINISH	1-19-10 1043	FINISH	N/A	
STATIC DTW	N/A TIME	DRILLED BY	RABA KISTNER	
DTO	N/A DATE		MANNY DUENEZ	
ELEV. GROUND	N/A	LOGGED BY	BRADLEY DAVIS using the USCS	
TOC	N/A		Zia Engineering and Environmental Consultants	

BORING/ WELL LOCATION



Drilling and/or Sample Method	DEPTH FEET	USCS Symbol	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS	MOISTURE	SAMPLING DEVICE	BLOW COUNT	PERCENT RECOVER	OVM/PID (PPM)	AIR TEMP	SAMPLE NO	Depth of Analytical Sample
		SW	Well graded sand	Mod brn 5yr 4/4	Fine to coarse grained, moist to wet, strong hydrocarbon smell	M	HA	N/A	N/A	308	117	N	0-1
	1	SW	Well graded sand	Mod brn 5yr 4/4	Fine to coarse grained, moist to wet, strong hydrocarbon smell	M	HA	N/A	N/A	N/A	N/A	N	N/A
HA													
	2	SW	Well graded sand	Mod brn 5yr 4/4	Fine to coarse sand few granules	M	HA	N/A	N/A	N/A	N/A	N	N/A
CORE	3	CL	Lean clay w/sand	Mod brn 5yr 4/4	Lean clay plastic-moderate fine to coarse sand	M	CB	N/A	100	31.1	120	Y	3-4
	4	CL	Lean clay w/sand	Mod brn 5yr 4/4	lean clay w/ fine to coarse sand (decreasing clay)	M	CB	N/A	100	N/A	N/A	N	N/A
	5	SW-SC	Well graded sand w/ clay	Mod brn 5yr 4/4	Fine to coarse sand, mostly med grained w/clay	M	CB	N/A	100	8.9	120	N	N/A
CORE	6				No Recovery								
	7				No Recovery								
	8	SW	Well graded sand	Lt brn 5yr 5/6	Fine to med. grained, few granules w/clay	M	CB	N/A	60	N/A	N/A	N	N/A
	9	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse sand little silt & clay	M	CB	N/A	60	10	144	Y	9-10
	10	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse grained sand w/silt & clay	D	CB	N/A	60	N/A	N/A	N	N/A
CORE	11				No Recovery								
	12	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse grained sand, minor silt, minor granules	D	CB	N/A	80	0	146	N	N/A
	13	SW	Well graded sand	Lt brn 5yr 5/6	fine to coarse gr sand, granules increasing, few pebbles	D	CB	N/A	80	N/A	N/A	N	N/A
	14	SW	Well graded sand		Fine to coarse sand w/granules, few pebbles	D	CB	N/A	80	0	148	Y	14-15
	15	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse sand w/granules, minor pebbles to 12mm	D	CB	N/A	80	N/A	N/A	N	N/A
CORE	16				No Recovery								
	17	SW	Well graded sand w/gravel	Lt brn 5yr 5/6	Fine to coarse sand w/gravel up to 20mm	D	CB	N/A	80	N/A	N/A	N	N/A
	18	SW	Well graded sand w/gravel	Lt brn 5yr 5/6	Fine to coarse sand, gravel decreasing	D	CB	N/A	80	0	N/A	N	N/A
	19	SW	Well graded sand	Lt brn 5yr 5/6	Fine to coarse sand	D	CB	N/A	80	0	145	Y	19-20
	20	SW	Well graded sand w/clay	Lt brn 5yr 5/6	Fine to coarse sand w/clay	D	CB	N/A	80	N/A	N/A	N	N/A
					TD = 20 feet								

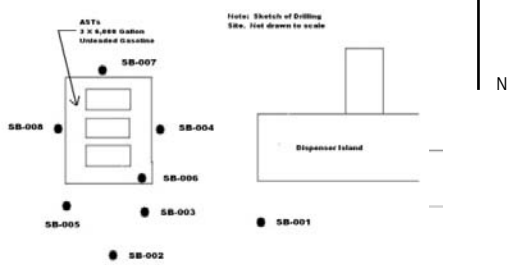
Please refer to the notes page at the end of Appendix B for details and definitions

ARCADIS
Boring/Well Construction Log

JOB NUMBER	CLIENT	LOCATION	BORING/WELL ID	PAGE ___1___
23	WSMR	Main Post POL AST Release Site	SB-007	OF ___1___

DRILLING METHOD	Hand Auger	SAMPLING METHOD	Hand auger bucket
DRILLING START	4-6-10 0847	DEVELOP START	N/A
DRILLING FINISH	4-6-10 0906	DEVELOP FINISH	N/A
STATIC DTW	N/A TIME	DRILLED BY	Gabriel Garcia (Hand Auger)
STATIC DTP	N/A DATE		
ELEV. GROUND	N/A	LOGGED BY	BRADLEY DAVIS using the USCS
ELEV. TOC	N/A		Zia Engineering and Environmental Consultants

BORING/ WELL LOCATION



Drilling and/or Sample Method	DEPTH FEET	USCS Symbol	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS	MOISTURE	SAMPLING DEVICE	BLOW COUNT	PERCENT RECOVER	OVM/PID (PPM)	AIR TEMP (^{0}F)	SAMPLE NO	DEPTH of Analytical Sample
HA	1	SW	Well graded sand	Mod yellow	Fine to coarse sand, granules to pebbles up to 25mm.	M	HA	N/A	N/A	0	100	Y	.5-1
					No evidence of hydrocarbon contamination. Asphalt piece at 1 ft.								
	2	SW-SC	Well graded sand w/clay	Mod brn 5yr 4/4	Fine to coarse sand w/clay few granules	M	HA	N/A	N/A	N/A	N/A	N	N/A
					No evidence of hydrocarbon contamination.								
	3	SW-SC	Well graded sand w/clay	Mod brn 5yr 4/4	Fine to med sand w/little silt & clay	M	HA	N/A	N/A	N/A	N/A	N	N/A
					No evidence of hydrocarbon contamination.								
	4	SW-SC	Well graded sand w/clay	Lt brn 5yr 5/6	Fine to medium little silt & clay	M	HA	N/A	N/A	0	110	N	N/A
					No evidence of hydrocarbon contamination.								
	5	SW-SC	Well graded sand w/clay	Lt brn 5yr 5/6	Fine to coarse sand w/clay & little granules	M	HA	N/A	N/A	0	115	Y	4.5-5
					No evidence of hydrocarbon contamination.								
	6				TD = 5 feet								
	7												
	8												
	9												
	10												
	11												
	12												
	13												
	14												
	15												
	16												
	17												
	18												
	19												
	20												

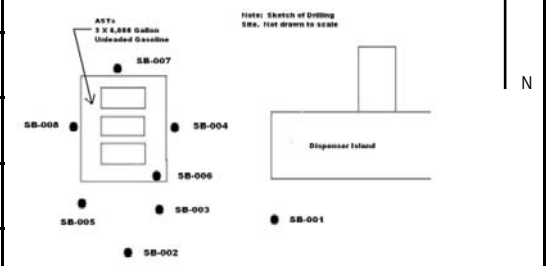
Please refer to the notes page at the end of Appendix B for details and definitions

ARCADIS
Boring/Well Construction Log

JOB NUMBER	CLIENT	LOCATION	BORING/WELL ID	PAGE
23	WSMR	Main Post POL AST Release Site	SB-008	___1___ OF ___1___

DRILLING METHOD	Hand Auger	SAMPLING METHOD	Hand auger bucket
DRILLING START	4-6-10 0910	DEVELOP START	N/A
FINISH	4-6-10 0940	FINISH	N/A
STATIC DTW	N/A TIME	DRILLED BY	Gabriel Garcia and Johnny Padilla (Hand Auger)
DTO	N/A DATE		
ELEV. GROUND	N/A	LOGGED BY	BRADLEY DAVIS using the USCS
TOC	N/A		Zia Engineering and Environmental Consultants

BORING/ WELL LOCATION



Drilling and/or Sample Method	DEPTH FEET	USCS Symbol	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS	MOISTURE	SAMPLING DEVICE	BLOW COUNT	PERCENT RECOVER	OVM/PID (PPM)	AIR TEMP	SAMPLE NO	Depth of Analytical Sample
											(^{0}F)		
HA	1	SW	Well graded sand	Mod yellow	Fine to coarse sand, granules to pebbles up to 30mm.	M	HA	N/A	N/A	0	120	Y	.5-1
					No evidence of hydrocarbon contamination. Thin layer of asphalt.								
	2	SW-SC	Well graded sand w/clay	Mod brn 5yr 4/4	Fine to coarse sand w/clay few granules	M	HA	N/A	N/A	N/A	N/A	N	N/A
					No evidence of hydrocarbon contamination.								
	3	SW-SC	Well graded sand w/clay	Mod brn 5yr 4/4	Fine to med sand w/little silt & clay	M	HA	N/A	N/A	N/A	N/A	N	N/A
					No evidence of hydrocarbon contamination.								
	4	SW-SC	Well graded sand w/clay	Lt brn 5yr 5/6	Fine to medium little silt & clay	M	HA	N/A	N/A	0	128	N	N/A
					No evidence of hydrocarbon contamination.								
	5	SW-SC	Well graded sand w/clay	Lt brn 5yr 5/6	Fine to coarse sand w/clay & little granules	M	HA	N/A	N/A	0.2	130	Y	4.5-5
					No evidence of hydrocarbon contamination.								
	6				TD = 5 feet								
	7												
	8												
	9												
	10												
	11												
	12												
	13												
	14												
	15												
	16												
	17												
	18												
	19												
	20												

Please refer to the notes page at the end of Appendix B for details and definitions

Notes:

Lithology classification was completed in accordance with the Unified Soil Classification System (USCS). All abbreviations are in accordance with the USCS.

Air temperature is in degrees Fahrenheit and was recorded from the heated truck cab where samples were placed for heated headspace analysis.

MultiRAE Plus PID Monitor with 10.6 eV lamp was used for PID measurement.

D - Dry
M - Moist
HA - Hand Auger
CB - Core Barrel
N/A - Not Applicable
Y - Yes, chem sample collected
N - No chem sample collected
TOC - Top of Casing
DTW - Depth to Water
DTP - Depth to Product
ELEV - elevation
WSMR - White Sands Missile Range
yr - yellow/red in the Munsell Color System

SW - Well Graded Sands, Gravelly Sands
SC - Clayey sands, Sand-Clay mixtures
Mod - moderate
Brn - brown
Lt - light
Dk - dark
ppm - parts per million
mm - millimeter
TD - total depth
USCS - Unified Soil Classification System
y - yellow in the Munsell Color System
^{o}F - degrees Fahrenheit

Appendix C

Survey

ZIA LC

MP POL 2010 BORES

12 February 2010

INPUT	OUTPUT
State Plane, NAD83	UTM, NAD83
3002 - New Mexico Central, U.S. Feet	13 - 108W to 102W, Meters
Vertical - NAVD88, U.S. Feet	Vertical - NAVD88, U.S. Feet

SB1

1/6

Northing/Y:	501670.3944	**Northing/Y:**	3583400.395
Easting/X:	1570791.705	**Easting/X:**	361197.101
Elevation/Z:	4215.5958	**Elevation/Z:**	4215.596
Convergence:	-0 07 14.81076	**Convergence:**	-0 47 25.09020
Scale Factor:	0.999905552	**Scale Factor:**	0.999837584
Combined Factor:	0.999707664	**Combined Factor:**	0.999639710

Grid Shift (m.): X/Easting = -117581.2, Y/Northing = 3430491.0

SB2

2/6

Northing/Y:	501636.3741	**Northing/Y:**	3583390.331
Easting/X:	1570706.231	**Easting/X:**	361170.931
Elevation/Z:	4216.3073	**Elevation/Z:**	4216.307
Convergence:	-0 07 15.34298	**Convergence:**	-0 47 25.61642
Scale Factor:	0.999905565	**Scale Factor:**	0.999837674
Combined Factor:	0.999707644	**Combined Factor:**	0.999639766

Grid Shift (m.): X/Easting = -117581.3, Y/Northing = 3430491.3

SB3

3/6

Northing/Y:	501667.1296	**Northing/Y:**	3583399.621
Easting/X:	1570729.539	**Easting/X:**	361178.144
Elevation/Z:	4216.1022	**Elevation/Z:**	4216.102
Convergence:	-0 07 15.19884	**Convergence:**	-0 47 25.47783
Scale Factor:	0.999905562	**Scale Factor:**	0.999837649
Combined Factor:	0.999707650	**Combined Factor:**	0.999639751

Grid Shift (m.): X/Easting = -117581.2, Y/Northing = 3430491.2

SB4

4/6

Northing/Y:	501724.003	**Northing/Y:**	3583416.937
Easting/X:	1570734.374	**Easting/X:**	361179.820
Elevation/Z:	4216.1926	**Elevation/Z:**	4216.193
Convergence:	-0 07 15.17126	**Convergence:**	-0 47 25.46062
Scale Factor:	0.999905561	**Scale Factor:**	0.999837644
Combined Factor:	0.999707645	**Combined Factor:**	0.999639741

Grid Shift (m.): X/Easting = -117581.0, Y/Northing = 3430491.2

Remark:

ZIA LC

MP POL 2010 BORES

12 February 2010

INPUT	OUTPUT
State Plane, NAD83	UTM, NAD83
3002 - New Mexico Central, U.S. Feet	13 - 108W to 102W, Meters
Vertical - NAVD88, U.S. Feet	Vertical - NAVD88, U.S. Feet

SB5

5/6

Northing/Y:	501673.2145	**Northing/Y:**	3583401.624
Easting/X:	1570687.717	**Easting/X:**	361165.420
Elevation/Z:	4216.3968	**Elevation/Z:**	4216.397
Convergence:	-0 07 15.46030	**Convergence:**	-0 47 25.74051
Scale Factor:	0.999905568	**Scale Factor:**	0.999837693
Combined Factor:	0.999707642	**Combined Factor:**	0.999639780

Grid Shift (m.): X/Easting = -117581.2, Y/Northing = 3430491.3

SB6

6/6

Northing/Y:	501688.5727	**Northing/Y:**	3583406.167
Easting/X:	1570726.378	**Easting/X:**	361177.257
Elevation/Z:	4216.4124	**Elevation/Z:**	4216.412
Convergence:	-0 07 15.21957	**Convergence:**	-0 47 25.50248
Scale Factor:	0.999905562	**Scale Factor:**	0.999837652
Combined Factor:	0.999707636	**Combined Factor:**	0.999639739

Grid Shift (m.): X/Easting = -117581.1, Y/Northing = 3430491.2

Remark:

ZIA LC

MP POL BORES 4-28-10

28 April 2010

INPUT	OUTPUT
Geographic, NAD83	UTM, NAD83
Vertical - GRS80 (Geoid03), U.S. Feet	13 - 108W to 102W, Meters
	Vertical - NAVD88, U.S. Feet

SB7

1/6

Latitude: 32 22 45.04591N
Longitude: 106 28 33.04455W
Elevation/Z: 4139.0896

Northing/Y: 3583423.789
Easting/X: 361168.630
Elevation/Z: 4216.438
Convergence: -0 47 25.69667
Scale Factor: 0.999837682
Combined Factor: 0.999639767

SB8

2/6

Latitude: 32 22 44.76665N
Longitude: 106 28 33.21706W
Elevation/Z: 4138.791

Northing/Y: 3583415.251
Easting/X: 361164.003
Elevation/Z: 4216.139
Convergence: -0 47 25.78302
Scale Factor: 0.999837698
Combined Factor: 0.999639798

SW CORNER WALL

3/6

Latitude: 32 22 44.41198N
Longitude: 106 28 33.19009W
Elevation/Z: 4138.770

Northing/Y: 3583404.319
Easting/X: 361164.557
Elevation/Z: 4216.118
Convergence: -0 47 25.76086
Scale Factor: 0.999837696
Combined Factor: 0.999639797

SE CORNER WALL

4/6

Latitude: 32 22 44.41396N
Longitude: 106 28 32.75279W
Elevation/Z: 4138.638

Northing/Y: 3583404.222
Easting/X: 361175.986
Elevation/Z: 4215.988
Convergence: -0 47 25.52660
Scale Factor: 0.999837657
Combined Factor: 0.999639764

Remark:

ZIA LC

MP POL BORES 4-28-10

28 April 2010

INPUT	OUTPUT
Geographic, NAD83	UTM, NAD83
Vertical - GRS80 (Geoid03), U.S. Feet	13 - 108W to 102W, Meters
	Vertical - NAVD88, U.S. Feet

NE CORNER WALL

5/6

Latitude: 32 22 45.02127N
Longitude: 106 28 32.75588W
Elevation/Z: 4138.520

Northing/Y: 3583422.926
Easting/X: 361176.163
Elevation/Z: 4215.870
Convergence: -0 47 25.54147
Scale Factor: 0.999837656
Combined Factor: 0.999639769

NW CORNER WALL

6/6

Latitude: 32 22 45.02049N
Longitude: 106 28 33.19351W
Elevation/Z: 4138.671

Northing/Y: 3583423.060
Easting/X: 361164.726
Elevation/Z: 4216.019
Convergence: -0 47 25.77593
Scale Factor: 0.999837695
Combined Factor: 0.999639801

Remark:

Appendix D

Laboratory Analytical Report, Data Validation Summaries, and IDW Documentation (revised)

February 05, 2010

Brad Davis
Zia Engineering & Environmental
755 S Telshor Blvd Ste F-201
Las Cruces, NM 88011

Order No: 1001116

TEL: (575) 678-3397
FAX: (575) 532-1587

RE: Main Post POL

Dear Brad Davis:

DHL Analytical received 34 sample(s) on 1/20/2010 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of DoD QSM Ver 4.1 and NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. This report shall not be reproduced except in full without the written approval of DHL Analytical, Inc. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-09-1

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zia engineering & environmental consultants, llc
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Las Cruces, NM 88011
575-532-1526 u
575-532-1587 f

#1001116

CHAIN OF CUSTODY RECORD

PAGE 1 OF 3 BTD

PROJECT NO.: 17
PROJECT NAME: Main Post POL
SAMPLER'S SIGNATURE:

	DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	BTEX	GRO	Lead								REMARKS
01	1-18-10	1135	MNPA-MPOL-SB-001-(5.0-6.0)	Soil		2	X	X	X								
02	1-18-10	1146	MNPA-MPOL-SB-001-(9.0-10.0)	Soil		2	X	X	X								
03	1-18-10	1205	MNPA-MPOL-SB-001-(14.0-15.0)	Soil		2	X	X	X								
04	1-18-10	1220	MNPA-MPOL-SB-001-(19.0-20.0)	Soil		2	X	X	X								
05	1-18-10	1405	MNPA-MPOL-SB-002-(4.0-5.0)	Soil		2	X	X	X								
06	1-18-10	1418	MNPA-MPOL-SB-002-(9.0-10.0)	Soil		2	X	X	X								
07	1-18-10	1428	MNPA-MPOL-SB-002-(14.0-15.0)	Soil		2	X	X	X								
08	1-18-10	1430	MNPA-MPOL-FB-001-0110	Water		3	X	X									field blank
09	1-18-10	1440	MNPA-MPOL-SB-002-(19.0-20.0)	Soil		2	X	X	X								
10	1-18-10	1440	MNPA-MPOL-SB-102-(19.0-20.0)	Soil		2	X	X	X								
11	1-18-10	1517	MNPA-MPOL-SB-003-(4.0-5.0)	Soil		2	X	X	X								
12	1-18-10	1525	MNPA-MPOL-SB-003-(9.0-10.0)	Soil		2	X	X	X								
13	1-18-10	1535	MNPA-MPOL-SB-003-(14.0-15.0)	Soil		2	X	X	X								
14	1-18-10	1550	MNPA-MPOL-SB-003-(19.0-20.0)	Soil		2	X	X	X								
15	1-18-10	1555	MNPA-MPOL-RB-001-0110	Water		7	X	X	X								Equipment blank
16	1-18-10	1555	MNPA-MPOL-TB-001-0110	Water		2	X										Trip blank

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: Brad Davis	TOTAL NO. OF CONTAINERS	(PRINTED NAME)	(PRINTED NAME) Fed ex	(PRINTED NAME)
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE) Fed ex	RECEIVED BY: (SIGNATURE)	(COMPANY)
	GOOD CONDITION/CHILLED	(TIME/DATE)	(TIME/DATE) 1/20/10 10:20	(TIME/DATE)
VIA: Fed EX	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS/COMMENTS:		Demo 4.3.28 Therm #57

PLEASE USE BALL POINT PEN

DISTRIBUTION: WHITE - PROJECT FILES; YELLOW - LAB; PINK - FIELD COPY

Custody seals intact

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#1001116

CHAIN OF CUSTODY RECORD

BTP

PROJECT NO.: 17

PROJECT NAME: Main Post POL

SAMPLER'S SIGNATURE:

	DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	BTEX	GRO	Lead							REMARKS
17	1-18-10	1623	MNPA-MPOL-SB-004-(4.0-5.0)	Soil		2	X	X	X							
18	1-18-10	1631	MNPA-MPOL-SB-004-(9.0-10.0)	Soil		2	X	X	X							
19	1-18-10	1640	MNPA-MPOL-SB-004-(14.0-15.0)	Soil		2	X	X	X							
20	1-18-10	1652	MNPA-MPOL-SB-004-(19.0-20.0)	Soil		2	X	X	X							
21	1-18-10	1652	MNPA-MPOL-SB-104-(19.0-20.0)	Soil		2	X	X	X							

PROJECT INFORMATION		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: Brad Davis	SAMPLES RECEIVED			
	TOTAL NO. OF CONTAINERS	(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Fed ex	(PRINTED NAME)
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE) Fed ex	RECEIVED BY: (SIGNATURE)	(COMPANY)
	GOOD CONDITION/CHILLED	(TIME/DATE) 1-20-10	(TIME/DATE) 1/20/10 10:20	(TIME/DATE)
VIA: Fed EX	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS / COMMENTS: Temp 4.3°, 2.8 Therm #57 Custody seals intact		

PLEASE USE BALL POINT PEN

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CHAIN OF CUSTODY RECORD

#1001116

PROJECT NO.: 17
PROJECT NAME: Main Post POL
SAMPLER'S SIGNATURE: Brad T. Davis

B. Davis 1/20/10

	DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	BTEX	GRO	Lead	8260B	8270						REMARKS
22	1-19-10	0852	MNPA-MPOL-SB-005-(4.0-5.0)	Soil		2	X	X	X								
23	1-19-10	0900	MNPA-MPOL-SB-005-(9.0-10.0)	Soil		2	X	X	X								
24	1-19-10	0914	MNPA-MPOL-SB-005-(14.0-15.0)	Soil		2	X	X	X								
25	1-19-10	0925	MNPA-MPOL-SB-005-(19.0-20.0)	Soil		2	X	X	X								
26	1-19-10	1015	MNPA-MPOL-SB-006-~~(4.0-5.0)~~	Soil		2	X	X	X	X	X						(3.0-4.0)
27	1-19-10	1023	MNPA-MPOL-SB-006-(9.0-10.0)	Soil		2	X	X	X								
28	1-19-10	1033	MNPA-MPOL-SB-006-(14.0-15.0)	Soil		2	X	X	X								
29	1-19-10	1046	MNPA-MPOL-SB-006-(19.0-20.0)	Soil		2	X	X	X								
30	1-19-10	1046	MNPA-MPOL-SB-106-(19.0-20.0)	Soil		2	X	X	X								
31	1-19-10	1040	MNPA-MPOL-FB-002-0110	~~Soil~~ Water DID		3	X	X									Field Blank.
32	1-19-10	1120	MNPA-MPOL-SB-006-(0.5-1.0)	Soil		2	X	X	X								
33	1-19-10	1130	MNPA-MPOL-RB-002-0110	Water		7	X	X	X								Equipment Blank
34	1-18-10	1555	MNPA-MPOL-TB-001-0110	water		2	X										per Brad 1/20/10

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: Brad Davis	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Bradley T. Davis	(PRINTED NAME) Fed ex	(PRINTED NAME)
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Fed ex	RECEIVED BY: (SIGNATURE)	(COMPANY)
	GOOD CONDITION/CHILLED		(TIME/DATE)	(TIME/DATE) 1/20/10 10:20	(TIME/DATE)
VIA: FedEX	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS:	temp. 4.3, 2.8 Cooler #57 custody seals intact	

PLEASE USE BALL POINT PEN

DISTRIBUTION: WHITE - PROJECT FILES; YELLOW - LAB; PINK - FIELD COPY

FedEx Express USA Airbill 8326030631 99

0200 Form I.D. No. FedEx Retrieval C

1 From
Date 1-19-10 Sender's FedEx Account Number 4648944489
Sender's Name BRAD DAVIS Phone 575 678-3397
Company ZIA ENGINEERING & ENVIRONMENTAL
Address BLDG 126, 3RD FLOOR Dept./Floor/Suite/Room
City WSMR State NM ZIP 88002

2 Your Internal Billing Reference LCS09015 BG17

3 To
Recipient's Name JOHN DUPONT Phone 512 388-[illegible]
Company DHL ANALYTICAL
Address 2300 DOUBLE CREEK DR.
To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.
Dept./Floor/Suite/Room
City ROUND ROCK State TX ZIP 78664

8326 0306 3199

4a Express Package Service — Packages up to 1[illegible] lbs.
Delivery commitment may be later in some [illegible]
1 [X] FedEx Priority Overnight — Next business morning
5 [ ] FedEx Standard Overnight — Next business afternoon
6 [ ] FedEx First Overni[illegible] — Earliest next business morning delivery to select locations
3 [ ] FedEx 2Day — Second business day
20 [ ] FedEx Express Saver — Third business day
77 [ ] NEW FedEx Extra H[illegible] — Later drop-off with next busine[illegible] afternoon delivery for select lo[illegible]
FedEx Envelope rate not available. Minimum charge: One-pound rate

4b Express Freight Service — Packages over 150 [illegible]
Delivery commitment may be later in some [illegible]
7 [ ] FedEx 1Day Freight* — Next business day
8 [ ] FedEx 2Day Freight — Second business day
83 [ ] FedEx 3Day Freight — Third business day
* Call for Confirmation:

5 Packaging — * Declared value limit [illegible]
1 [ ] FedEx Envelope*
2 [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
1 [X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling — Include FedEx address in Section 3.
3 [ ] SATURDAY Delivery — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
1 [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
31 [ ] HOLD Saturday at FedEx Location — Available only for FedEx Priority Overnight and FedEx 2Day to select locations
Does this shipment contain dangerous goods? One box must be checked.
[X] No
4 [ ] Yes — As per attached Shipper's Declaration
[ ] Yes — Shipper's Declaration not required
6 [ ] Dry Ice — Dry Ice, 9, UN 1845
Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.
[ ] Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. [ ] Obtain Recip. Acct. No.
1 [X] Sender — Acct. No. in Section 1 will be billed.
2 [ ] Recipient
3 [ ] Third Party
4 [ ] Credit Card
5 [ ] Cash/Check
FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages | Total Weight X65 lbs | Total Charges | Credit Card Auth.

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

8 Release Signature — *Sign to authorize delivery without obtaining signature.*
By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

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CUSTODY SEAL
DATE 1-19-
SIGNATURE Brad

NEXT DAY DELIVERY
TO
Brad T. Davis
QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

FedEx Express — *USA Airbill*

FedEx Tracking Number 8326 0306 3203

0200 — Recipients Copy

1 From

Date 1-19-10

Sender's Name BRAD DAVIS Phone 575 678-3397

Company ZIA ENGINEERING + ENVIRONMENTAL

Address BLDG 126, 3RD FLOOR

Dept./Floor/Suite/Room

City WSMR State NM ZIP 88002

2 Your Internal Billing Reference LCS09015

3 To

Recipient's Name JOHN DUPONT Phone 88-8222

Company DHL ANALYTICAL

Address 2300 DOUBLE CREEK DR.

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

City ROUND ROCK State TX ZIP 78664

8326 0306 3203

4a Express Package Service — *Packages up to 150 lbs.* Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day — Second business day
- [ ] FedEx Express Saver — Third business day
- [ ] NEW FedEx Extra Hours — Later drop-off with next business afternoon delivery for select locations

FedEx Envelope rate not available. Minimum charge: One-pound rate

4b Express Freight Service — *Packages over 150 lbs.* Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation:

5 Packaging — * Declared value limit $500

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
- [X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling — Include FedEx address in Section 3.

- [ ] SATURDAY Delivery — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available only for FedEx Priority Overnight and FedEx 2Day to select locations

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

- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.

- [ ] Cargo Aircraft Only

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

- [X] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check
- [ ] Obtain Recip. Acct. No.

Total Packages	Total Weight	Total Declared Value†	Total Charges
	X 60 lbs	$ .00	Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See back for details.

8 Release Signature *Sign to authorize delivery without obtaining signature.*

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Visit our Web site at fedex.com or call 1.800.Go.FedEx® 800.463.3339.

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CUSTODY SEAL

DATE 1-19-10

SIGNATURE Brad T. Davis

QEC

Quality Environmental Containers

800-255-3950 • 304-255-3900

DHL Analytical

Sample Receipt Checklist

Client Name Zia Engineering & Environmental

Date Received: 1/20/2010

Work Order Number 1001116

Received by JB

Checklist completed by: [signature] 1/20/10 (Signature / Date)

Reviewed by SS 1-20-10 (Initials / Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.3 °C 2-8°
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Adjusted? ND Checked by FB

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

Manual Integrations Tracking Form - DoD QSM 4.1 Requirement

Instrument ID: **GCMS4**

DATA Folder: **GCMS#8-100202A**

Sample ID ICAL, ICV, and CCV QC and Field Samples	Analyte #1 Identification & Reason	Analyte #2 Identification & Reason	Analyte #3 Identification & Reason	Analyte #4 Identification & Reason
ICV-100202	MI for benzoic acid because of wrong retention time.	MI for benzo(b)fluoranthene because of wrong retention time. 02/24/10		
DCS1-39319	MI for benzoic acid because of wrong retention time.	MI for benzo(b)fluoranthene because of wrong retention time.		
LCS-39319	MI for benzoic acid because of wrong retention time.	MI for benzo(b)fluoranthene because of wrong retention time.		
100149-46C-MS	MI for benzoic acid because of wrong retention time.	MI for benzo(b)fluoranthene because of wrong retention time.		
100149-46C-MSD	MI for benzoic acid because of wrong retention time.			
MB-39319	N/A			
1001116-26B	N/A			
1001149-44C	N/A			
1001149-46C	N/A			

***Manually Integrated = MI**

D.O
Analyst

2/4/10
Date

2nd Level Review

2.4.2010
Date

Manual IntegrationsGCMSDATA2

Manual Integrations Tracking Form - DoD QSM 4.1 Requirement

Instrument ID: GCMS4

Calibration Folder: GCMS#4-SV100201 CAL.

Sample ID	Analyte #1 Identification & Reason	Analyte #2 Identification & Reason	Analyte #3 Identification & Reason	Analyte #4 Identification & Reason
CAL 1 0.04 ppm	M.I for benzo(k)fluoranthene because of poor resolution.			
CAL 2 0.2 ppm	M.I for benzoic acid because wrong peak was integrated.	M.I for benzo(b)fluoranthene because wrong peak was integrated.		
CAL 3 0.5 ppm	M.I for benzo(b)fluoranthene because wrong peak was integrated.			
CAL 4 1.0 ppm	M.I for benzo(b)fluoranthene because wrong peak was integrated.			
CAL 5 2.0 ppm	M.I for benzo(b)fluoranthene because wrong peak was integrated.			
CAL 6 3.0 ppm	N/A			
CAL 7 4.0 ppm	M.I for benzoic acid because wrong peak was integrated.	M.I for Dimethylphenethylamine because of poor resolution.		
CAL 8 5.0 ppm	M.I for benzoic acid because wrong peak was integrated.			
SSCV 2.0 ppm	M.I for benzoic acid because wrong peak was integrated.	M.I for benzo(b)fluoranthene because wrong peak was integrated.		

*Manually Integrated = MI

D.O — 2/5/10
Analyst — Date

[signature] — 2/5/10
2nd Level Review — Date

Manual IntegrationsGCMSCAL

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Lab Order: 1001116

CASE NARRATIVE

This case narrative describes abnormalities and deviations that may affect the results and summarizes all known issues that need to be highlighted for the data user to assess the results. This case narrative and the report contents are compliant with DoD QSM Ver 4.1 and NELAC.

Samples were analyzed using the methods outlined in the following references:

Method SW8021B - Volatile Organics by GC
Method SW8260B - Volatile Organics
Method SW8270C - Semivolatile Organics (The compounds 1-Methylnaphthalene, 1-Chloronaphthalene and Dibenz(a,j)acridine are not NELAC Certified)
Method SW6020 - Metals Analysis
Method M8015V - Modified 8015 Gasoline (GRO)
Method D2216 - Percent Moisture

LOG IN

Samples were received on and log-in performed on 1/20/2010. A total of 34 samples were received and all were analyzed. The samples arrived in good condition and were properly packaged.

GRO ANALYSIS

For GRO Analysis run on 1/26/2010, due to instrument error the ending CCV was unable to be run. An ICV and Method Blank were prepared and analysis continued.

Additionally, for GRO Analysis on Batch 39265, an MS/MSD was not performed on Trip Blanks and Equipment Blanks. An LCS/LCSD was analyzed instead.

TRACE METALS ANALYSIS

For Metals analysis, the response for Internal Standard Bismuth for the Post Digestion Spike, Matrix Spike (1001116-24 PDS and MS), Continuing Calibration Verifications (CCV6-100127 and CCV7-100127) was above the method control limits for DOD. The recovery of affected analyte, Lead, was within the method control limits for these QC samples. No further corrective actions were taken.

For Metals analysis a deviation from the SOP resulted in performing a one-point curve for analysis, on instrument ICPMS-3, which was verified by a second source and Low Level Initial Calibration Verification. This follows the method specifications.

For Metals analysis, on Batch 39110, an MS/MSD was not performed on Trip Blanks and Equipment Blanks. An LCS/LCSD was analyzed instead.

VOLATILE ORGANICS BY GC

For Volatile Organics by GC Analysis, the results for Toluene, Ethylbenzene and Total Xylenes for Sample MNPA-MPOL-SB-006-(0.5-1.0) were reported from Column B as per DOD requirements to report the highest results. All of the QC parameters for Column A and Column B were within control limits.

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Lab Order: 1001116

CASE NARRATIVE

SEMIVOLATILES BY GC/MS

For Semivolatiles analysis, the recovery of surrogate 2-Fluorophenol in Sample MNPA-MPOL-SB-006-(3.0-4.0), the Method Blank (MB-39319), Matrix Spike and Matrix Spike Duplicate (1001149-46C) was slightly below the method control limits. These are flagged in the Analytical Data Report and the QC Summary Report. The remaining surrogates were within control limits for these samples. No further corrective action was taken.

For Semivolatiles analysis, the recoveries of several compounds for the Matrix Spike and Matrix Spike Duplicate (1001149-46C MS/MSD) were outside of the method control limits. Additionally, the recovery of Dimethylphenethylaminine the Laboratory Control Spike (LCS-39319) was below the method control limits. These are flagged accordingly in the QC Summary Report. The associated ICV (ICV-100202) was within control limits for these compounds. No further corrective action was taken.

For Semivolatiles analysis, some samples/standards were manually integrated. Please refer to the table on page 9 and 10 of this report for the full list of samples, standards, and the compounds that were manually integrated.

VOLATILES BY GC/MS

For Volatiles analysis, the recovery of Acetone for the Initial Calibration Verifications (ICV-100125 and ICV-100126) was slightly above the method control limits. Additionally, the recoveries of several compounds in the Matrix Spike and Matrix Spike Duplicate (1001149-14 MS/MSD) were outside the method control limits. The RPD of a few of these compounds are above the method control limits. These are flagged in the QC Summary Report. The associated LCS (LCS-39319) was within control limits for these compounds. No further corrective action was taken.

A summary of project communication follows:

DHL Analytical received the Project RFQ from the client on 12/29/09. Completed RFQ returned to client via email on 1/07/2010. Purchase Order/Terms and Conditions received and signed and approved by both parties on 01/25/2010.
Brad Davis of ZIA Requested a bottle kit from Jennifer Barker of DHL: via email on 01/13/2010.
Kit sent on 1/13/2010 via Lonestar Overnight, arrive on 01/15/2010.
This sample delivery group arrives at DHL Analytical 1/20/2010. Sample summary sent via email from Log-in to client on 1/27/2010.

DHL Project Manager/QA staff discussed with client the following issues:
RFQ questions answered vial email on 1/4/2010.
DHL Insurance Certification sent 1/26/2010.

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Lab Order: 1001116

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recv'd
1001116-01	MNPA-MPOL-SB-001-(5.0-6.0)		01/18/10 11:35 AM	01/20/10
1001116-02	MNPA-MPOL-SB-001-(9.0-10.0)		01/18/10 11:46 AM	01/20/10
1001116-03	MNPA-MPOL-SB-001-(14.0-15.0)		01/18/10 12:05 PM	01/20/10
1001116-04	MNPA-MPOL-SB-001-(19.0-20.0)		01/18/10 12:20 PM	01/20/10
1001116-05	MNPA-MPOL-SB-002-(4.0-5.0)		01/18/10 02:05 PM	01/20/10
1001116-06	MNPA-MPOL-SB-002-(9.0-10.0)		01/18/10 02:18 PM	01/20/10
1001116-07	MNPA-MPOL-SB-002-(14.0-15.0)		01/18/10 02:28 PM	01/20/10
1001116-08	MNPA-MPOL-FB-001-0110		01/18/10 02:30 PM	01/20/10
1001116-09	MNPA-MPOL-SB-002-(19.0-20.0)		01/18/10 02:40 PM	01/20/10
1001116-10	MNPA-MPOL-SB-102-(19.0-20.0)		01/18/10 02:40 PM	01/20/10
1001116-11	MNPA-MPOL-SB-003-(4.0-5.0)		01/18/10 03:17 PM	01/20/10
1001116-12	MNPA-MPOL-SB-003-(9.0-10.0)		01/18/10 03:25 PM	01/20/10
1001116-13	MNPA-MPOL-SB-003-(14.0-15.0)		01/18/10 03:35 PM	01/20/10
1001116-14	MNPA-MPOL-SB-003-(19.0-20.0)		01/18/10 03:50 PM	01/20/10
1001116-15	MNPA-MPOL-RB-001-0110		01/18/10 03:55 PM	01/20/10
1001116-16	MNPA-MPOL-TB-002-0110		01/18/10 03:55 PM	01/20/10
1001116-17	MNPA-MPOL-SB-004-(4.0-5.0)		01/18/10 04:23 PM	01/20/10
1001116-18	MNPA-MPOL-SB-004-(9.0-10.0)		01/18/10 04:31 PM	01/20/10
1001116-19	MNPA-MPOL-SB-004-(14.0-15.0)		01/18/10 04:40 PM	01/20/10
1001116-20	MNPA-MPOL-SB-004-(19.0-20.0)		01/18/10 04:52 PM	01/20/10
1001116-21	MNPA-MPOL-SB-104-(19.0-20.0)		01/18/10 04:52 PM	01/20/10
1001116-22	MNPA-MPOL-SB-005-(4.0-5.0)		01/19/10 08:52 AM	01/20/10
1001116-23	MNPA-MPOL-SB-005-(9.0-10.0)		01/19/10 09:00 AM	01/20/10
1001116-24	MNPA-MPOL-SB-005-(14.0-15.0)		01/19/10 09:14 AM	01/20/10
1001116-25	MNPA-MPOL-SB-005-(19.0-20.0)		01/19/10 09:25 AM	01/20/10
1001116-26	MNPA-MPOL-SB-006-(3.0-4.0)		01/19/10 10:15 AM	01/20/10
1001116-27	MNPA-MPOL-SB-006-(9.0-10.0)		01/19/10 10:23 AM	01/20/10
1001116-28	MNPA-MPOL-SB-006-(14.0-15.0)		01/19/10 10:33 AM	01/20/10
1001116-29	MNPA-MPOL-SB-006-(19.0-20.0)		01/19/10 10:46 AM	01/20/10
1001116-30	MNPA-MPOL-SB-106-(19.0-20.0)		01/19/10 10:46 AM	01/20/10
1001116-31	MNPA-MPOL-FB-002-0110		01/19/10 10:40 AM	01/20/10
1001116-32	MNPA-MPOL-SB-006-(0.5-1.0)		01/19/10 11:20 AM	01/20/10
1001116-33	MNPA-MPOL-RB-002-0110		01/19/10 11:30 AM	01/20/10
1001116-34	MNPA-MPOL-TB-001-0110		01/18/10 03:55 PM	01/20/10

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1001116-01A	MNPA-MPOL-SB-001-(5.0-6.0)	01/18/10 11:35 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-001-(5.0-6.0)	01/18/10 11:35 AM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-01B	MNPA-MPOL-SB-001-(5.0-6.0)	01/18/10 11:35 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-001-(5.0-6.0)	01/18/10 11:35 AM	Soil	D2216	Moisture Preparation	01/21/10 10:15 AM	39117
1001116-02A	MNPA-MPOL-SB-001-(9.0-10.0)	01/18/10 11:46 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-001-(9.0-10.0)	01/18/10 11:46 AM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-02B	MNPA-MPOL-SB-001-(9.0-10.0)	01/18/10 11:46 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-001-(9.0-10.0)	01/18/10 11:46 AM	Soil	D2216	Moisture Preparation	01/21/10 10:15 AM	39117
1001116-03A	MNPA-MPOL-SB-001-(14.0-15.0)	01/18/10 12:05 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-001-(14.0-15.0)	01/18/10 12:05 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-03B	MNPA-MPOL-SB-001-(14.0-15.0)	01/18/10 12:05 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-001-(14.0-15.0)	01/18/10 12:05 PM	Soil	D2216	Moisture Preparation	01/21/10 10:15 AM	39117
1001116-04A	MNPA-MPOL-SB-001-(19.0-20.0)	01/18/10 12:20 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-001-(19.0-20.0)	01/18/10 12:20 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
	MNPA-MPOL-SB-001-(19.0-20.0)	01/18/10 12:20 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-04B	MNPA-MPOL-SB-001-(19.0-20.0)	01/18/10 12:20 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-001-(19.0-20.0)	01/18/10 12:20 PM	Soil	D2216	Moisture Preparation	01/21/10 10:15 AM	39117
1001116-05A	MNPA-MPOL-SB-002-(4.0-5.0)	01/18/10 02:05 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-002-(4.0-5.0)	01/18/10 02:05 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
	MNPA-MPOL-SB-002-(4.0-5.0)	01/18/10 02:05 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-05B	MNPA-MPOL-SB-002-(4.0-5.0)	01/18/10 02:05 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-002-(4.0-5.0)	01/18/10 02:05 PM	Soil	D2216	Moisture Preparation	01/21/10 10:15 AM	39117
1001116-06A	MNPA-MPOL-SB-002-(9.0-10.0)	01/18/10 02:18 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-002-(9.0-10.0)	01/18/10 02:18 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-06B	MNPA-MPOL-SB-002-(9.0-10.0)	01/18/10 02:18 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-002-(9.0-10.0)	01/18/10 02:18 PM	Soil	D2216	Moisture Preparation	01/21/10 10:15 AM	39117
1001116-07A	MNPA-MPOL-SB-002-(14.0-15.0)	01/18/10 02:28 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-002-(14.0-15.0)	01/18/10 02:28 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-07B	MNPA-MPOL-SB-002-(14.0-15.0)	01/18/10 02:28 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-002-(14.0-15.0)	01/18/10 02:28 PM	Soil	D2216	Moisture Preparation	01/21/10 10:15 AM	39117
1001116-08A	MNPA-MPOL-FB-001-0110	01/18/10 02:30 PM	Field Blank	SW5030B	Purge and Trap Water GC	01/22/10 05:08 PM	39115
1001116-08B	MNPA-MPOL-FB-001-0110	01/18/10 02:30 PM	Field Blank	SW5030B	Purge and Trap Water GC-Gas	01/28/10 01:58 PM	39265
1001116-09A	MNPA-MPOL-SB-002-(19.0-20.0)	01/18/10 02:40 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
	MNPA-MPOL-SB-002-(19.0-20.0)	01/18/10 02:40 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-09B	MNPA-MPOL-SB-002-(19.0-20.0)	01/18/10 02:40 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-002-(19.0-20.0)	01/18/10 02:40 PM	Soil	D2216	Moisture Preparation	01/21/10 10:15 AM	39117
1001116-10A	MNPA-MPOL-SB-102-(19.0-20.0)	01/18/10 02:40 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-102-(19.0-20.0)	01/18/10 02:40 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-10B	MNPA-MPOL-SB-102-(19.0-20.0)	01/18/10 02:40 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-102-(19.0-20.0)	01/18/10 02:40 PM	Soil	D2216	Moisture Preparation	01/21/10 10:15 AM	39117
1001116-11A	MNPA-MPOL-SB-003-(4.0-5.0)	01/18/10 03:17 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-003-(4.0-5.0)	01/18/10 03:17 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
	MNPA-MPOL-SB-003-(4.0-5.0)	01/18/10 03:17 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-11B	MNPA-MPOL-SB-003-(4.0-5.0)	01/18/10 03:17 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-003-(4.0-5.0)	01/18/10 03:17 PM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-12A	MNPA-MPOL-SB-003-(9.0-10.0)	01/18/10 03:25 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-003-(9.0-10.0)	01/18/10 03:25 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-12B	MNPA-MPOL-SB-003-(9.0-10.0)	01/18/10 03:25 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-003-(9.0-10.0)	01/18/10 03:25 PM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-13A	MNPA-MPOL-SB-003-(14.0-15.0)	01/18/10 03:35 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-003-(14.0-15.0)	01/18/10 03:35 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-13B	MNPA-MPOL-SB-003-(14.0-15.0)	01/18/10 03:35 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-003-(14.0-15.0)	01/18/10 03:35 PM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-14A	MNPA-MPOL-SB-003-(19.0-20.0)	01/18/10 03:50 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-003-(19.0-20.0)	01/18/10 03:50 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-14B	MNPA-MPOL-SB-003-(19.0-20.0)	01/18/10 03:50 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-003-(19.0-20.0)	01/18/10 03:50 PM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-15A	MNPA-MPOL-RB-001-0110	01/18/10 03:55 PM	Equip Blank	SW5030B	Purge and Trap Water GC	01/22/10 05:08 PM	39115
1001116-15B	MNPA-MPOL-RB-001-0110	01/18/10 03:55 PM	Equip Blank	SW5030B	Purge and Trap Water GC-Gas	01/28/10 01:58 PM	39265
1001116-15C	MNPA-MPOL-RB-001-0110	01/18/10 03:55 PM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	01/21/10 08:39 AM	39110
1001116-16A	MNPA-MPOL-TB-002-0110	01/18/10 03:55 PM	Trip Blank	SW5030B	Purge and Trap Water GC	01/22/10 05:08 PM	39115
1001116-17A	MNPA-MPOL-SB-004-(4.0-5.0)	01/18/10 04:23 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-004-(4.0-5.0)	01/18/10 04:23 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
	MNPA-MPOL-SB-004-(4.0-5.0)	01/18/10 04:23 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-17B	MNPA-MPOL-SB-004-(4.0-5.0)	01/18/10 04:23 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-004-(4.0-5.0)	01/18/10 04:23 PM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1001116-18A	MNPA-MPOL-SB-004-(9.0-10.0)	01/18/10 04:31 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-004-(9.0-10.0)	01/18/10 04:31 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-18B	MNPA-MPOL-SB-004-(9.0-10.0)	01/18/10 04:31 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-004-(9.0-10.0)	01/18/10 04:31 PM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-19A	MNPA-MPOL-SB-004-(14.0-15.0)	01/18/10 04:40 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-004-(14.0-15.0)	01/18/10 04:40 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-19B	MNPA-MPOL-SB-004-(14.0-15.0)	01/18/10 04:40 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-004-(14.0-15.0)	01/18/10 04:40 PM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-20A	MNPA-MPOL-SB-004-(19.0-20.0)	01/18/10 04:52 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-004-(19.0-20.0)	01/18/10 04:52 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-20B	MNPA-MPOL-SB-004-(19.0-20.0)	01/18/10 04:52 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/21/10 09:00 AM	39104
	MNPA-MPOL-SB-004-(19.0-20.0)	01/18/10 04:52 PM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-21A	MNPA-MPOL-SB-104-(19.0-20.0)	01/18/10 04:52 PM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-104-(19.0-20.0)	01/18/10 04:52 PM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-21B	MNPA-MPOL-SB-104-(19.0-20.0)	01/18/10 04:52 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-104-(19.0-20.0)	01/18/10 04:52 PM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-22A	MNPA-MPOL-SB-005-(4.0-5.0)	01/19/10 08:52 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-005-(4.0-5.0)	01/19/10 08:52 AM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-22B	MNPA-MPOL-SB-005-(4.0-5.0)	01/19/10 08:52 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-005-(4.0-5.0)	01/19/10 08:52 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-005-(4.0-5.0)	01/19/10 08:52 AM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-23A	MNPA-MPOL-SB-005-(9.0-10.0)	01/19/10 09:00 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/21/10 09:28 AM	39118
	MNPA-MPOL-SB-005-(9.0-10.0)	01/19/10 09:00 AM	Soil	SW5030B	Purge and Trap Soils GC	01/21/10 08:50 AM	39113
1001116-23B	MNPA-MPOL-SB-005-(9.0-10.0)	01/19/10 09:00 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-005-(9.0-10.0)	01/19/10 09:00 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-005-(9.0-10.0)	01/19/10 09:00 AM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-24A	MNPA-MPOL-SB-005-(14.0-15.0)	01/19/10 09:14 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/22/10 09:50 AM	39163
	MNPA-MPOL-SB-005-(14.0-15.0)	01/19/10 09:14 AM	Soil	SW5030B	Purge and Trap Soils GC	01/22/10 10:05 AM	39132
1001116-24B	MNPA-MPOL-SB-005-(14.0-15.0)	01/19/10 09:14 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-005-(14.0-15.0)	01/19/10 09:14 AM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-25A	MNPA-MPOL-SB-005-(19.0-20.0)	01/19/10 09:25 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/22/10 09:50 AM	39163
	MNPA-MPOL-SB-005-(19.0-20.0)	01/19/10 09:25 AM	Soil	SW5030B	Purge and Trap Soils GC	01/22/10 10:05 AM	39132
1001116-25B	MNPA-MPOL-SB-005-(19.0-20.0)	01/19/10 09:25 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
	MNPA-MPOL-SB-005-(19.0-20.0)	01/19/10 09:25 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-005-(19.0-20.0)	01/19/10 09:25 AM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-26A	MNPA-MPOL-SB-006-(3.0-4.0)	01/19/10 10:15 AM	Soil	SW5030B	Purge and Trap Soils GC/MS	01/25/10 09:36 AM	39179
	MNPA-MPOL-SB-006-(3.0-4.0)	01/19/10 10:15 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/22/10 09:50 AM	39163
1001116-26B	MNPA-MPOL-SB-006-(3.0-4.0)	01/19/10 10:15 AM	Soil	SW3550B	Soil Prep Sonication: BNA	02/01/10 02:42 PM	39319
	MNPA-MPOL-SB-006-(3.0-4.0)	01/19/10 10:15 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-006-(3.0-4.0)	01/19/10 10:15 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-006-(3.0-4.0)	01/19/10 10:15 AM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-27A	MNPA-MPOL-SB-006-(9.0-10.0)	01/19/10 10:23 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/22/10 09:50 AM	39163
	MNPA-MPOL-SB-006-(9.0-10.0)	01/19/10 10:23 AM	Soil	SW5030B	Purge and Trap Soils GC	01/22/10 10:05 AM	39132
	MNPA-MPOL-SB-006-(9.0-10.0)	01/19/10 10:23 AM	Soil	SW5030B	Purge and Trap Soils GC	01/22/10 10:05 AM	39132
1001116-27B	MNPA-MPOL-SB-006-(9.0-10.0)	01/19/10 10:23 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-006-(9.0-10.0)	01/19/10 10:23 AM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-28A	MNPA-MPOL-SB-006-(14.0-15.0)	01/19/10 10:33 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/22/10 09:50 AM	39163
	MNPA-MPOL-SB-006-(14.0-15.0)	01/19/10 10:33 AM	Soil	SW5030B	Purge and Trap Soils GC	01/22/10 10:05 AM	39132
1001116-28B	MNPA-MPOL-SB-006-(14.0-15.0)	01/19/10 10:33 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-006-(14.0-15.0)	01/19/10 10:33 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-006-(14.0-15.0)	01/19/10 10:33 AM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-29A	MNPA-MPOL-SB-006-(19.0-20.0)	01/19/10 10:46 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/22/10 09:50 AM	39163
	MNPA-MPOL-SB-006-(19.0-20.0)	01/19/10 10:46 AM	Soil	SW5030B	Purge and Trap Soils GC	01/22/10 10:05 AM	39132
	MNPA-MPOL-SB-006-(19.0-20.0)	01/19/10 10:46 AM	Soil	SW5030B	Purge and Trap Soils GC	01/22/10 10:05 AM	39132
1001116-29B	MNPA-MPOL-SB-006-(19.0-20.0)	01/19/10 10:46 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-006-(19.0-20.0)	01/19/10 10:46 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-006-(19.0-20.0)	01/19/10 10:46 AM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-30A	MNPA-MPOL-SB-106-(19.0-20.0)	01/19/10 10:46 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/22/10 09:50 AM	39163
	MNPA-MPOL-SB-106-(19.0-20.0)	01/19/10 10:46 AM	Soil	SW5030B	Purge and Trap Soils GC	01/22/10 10:05 AM	39132
1001116-30B	MNPA-MPOL-SB-106-(19.0-20.0)	01/19/10 10:46 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-106-(19.0-20.0)	01/19/10 10:46 AM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-31A	MNPA-MPOL-FB-002-0110	01/19/10 10:40 AM	Field Blank	SW5030B	Purge and Trap Water GC	01/22/10 05:08 PM	39115
1001116-31B	MNPA-MPOL-FB-002-0110	01/19/10 10:40 AM	Field Blank	SW5030B	Purge and Trap Water GC-Gas	01/28/10 01:58 PM	39265
1001116-32A	MNPA-MPOL-SB-006-(0.5-1.0)	01/19/10 11:20 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	01/22/10 09:50 AM	39163
	MNPA-MPOL-SB-006-(0.5-1.0)	01/19/10 11:20 AM	Soil	SW5030B	Purge and Trap Soils GC	01/22/10 10:05 AM	39132
	MNPA-MPOL-SB-006-(0.5-1.0)	01/19/10 11:20 AM	Soil	SW5030B	Purge and Trap Soils GC	01/22/10 10:05 AM	39132

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1001116-32B	MNPA-MPOL-SB-006-(0.5-1.0)	01/19/10 11:20 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	01/22/10 09:00 AM	39120
	MNPA-MPOL-SB-006-(0.5-1.0)	01/19/10 11:20 AM	Soil	D2216	Moisture Preparation	01/21/10 11:15 AM	39124
1001116-33A	MNPA-MPOL-RB-002-0110	01/19/10 11:30 AM	Equip Blank	SW5030B	Purge and Trap Water GC	01/22/10 05:08 PM	39115
1001116-33B	MNPA-MPOL-RB-002-0110	01/19/10 11:30 AM	Equip Blank	SW5030B	Purge and Trap Water GC-Gas	01/28/10 01:58 PM	39265
1001116-33C	MNPA-MPOL-RB-002-0110	01/19/10 11:30 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	01/21/10 08:39 AM	39110
1001116-34A	MNPA-MPOL-TB-001-0110	01/18/10 03:55 PM	Trip Blank	SW5030B	Purge and Trap Water GC	01/22/10 05:08 PM	39115

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1001116-01A	MNPA-MPOL-SB-001-(5.0-6.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 06:00 PM	GC4_100125B
	MNPA-MPOL-SB-001-(5.0-6.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 11:30 AM	GC4_100121A
1001116-01B	MNPA-MPOL-SB-001-(5.0-6.0)	Soil	D2216	Percent Moisture	39117	1	01/21/10 03:00 PM	PMOIST_100121A
	MNPA-MPOL-SB-001-(5.0-6.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 05:04 PM	ICP-MS3_100202A
1001116-02A	MNPA-MPOL-SB-001-(9.0-10.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 06:23 PM	GC4_100125B
	MNPA-MPOL-SB-001-(9.0-10.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 11:54 AM	GC4_100121A
1001116-02B	MNPA-MPOL-SB-001-(9.0-10.0)	Soil	D2216	Percent Moisture	39117	1	01/21/10 03:00 PM	PMOIST_100121A
	MNPA-MPOL-SB-001-(9.0-10.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 05:10 PM	ICP-MS3_100202A
1001116-03A	MNPA-MPOL-SB-001-(14.0-15.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 06:47 PM	GC4_100125B
	MNPA-MPOL-SB-001-(14.0-15.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 12:18 PM	GC4_100121A
1001116-03B	MNPA-MPOL-SB-001-(14.0-15.0)	Soil	D2216	Percent Moisture	39117	1	01/21/10 03:00 PM	PMOIST_100121A
	MNPA-MPOL-SB-001-(14.0-15.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 05:15 PM	ICP-MS3_100202A
1001116-04A	MNPA-MPOL-SB-001-(19.0-20.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 07:10 PM	GC4_100125B
	MNPA-MPOL-SB-001-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 01:31 PM	GC4_100121A
1001116-04B	MNPA-MPOL-SB-001-(19.0-20.0)	Soil	D2216	Percent Moisture	39117	1	01/21/10 03:00 PM	PMOIST_100121A
	MNPA-MPOL-SB-001-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 05:20 PM	ICP-MS3_100202A
1001116-05A	MNPA-MPOL-SB-002-(4.0-5.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/26/10 11:43 AM	GC4_100125B
	MNPA-MPOL-SB-002-(4.0-5.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 01:56 PM	GC4_100121A
1001116-05B	MNPA-MPOL-SB-002-(4.0-5.0)	Soil	D2216	Percent Moisture	39117	1	01/21/10 03:00 PM	PMOIST_100121A
	MNPA-MPOL-SB-002-(4.0-5.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 05:26 PM	ICP-MS3_100202A
1001116-06A	MNPA-MPOL-SB-002-(9.0-10.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 07:33 PM	GC4_100125B
	MNPA-MPOL-SB-002-(9.0-10.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 02:21 PM	GC4_100121A
1001116-06B	MNPA-MPOL-SB-002-(9.0-10.0)	Soil	D2216	Percent Moisture	39117	1	01/21/10 03:00 PM	PMOIST_100121A
	MNPA-MPOL-SB-002-(9.0-10.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 05:31 PM	ICP-MS3_100202A
1001116-07A	MNPA-MPOL-SB-002-(14.0-15.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 07:56 PM	GC4_100125B
	MNPA-MPOL-SB-002-(14.0-15.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 02:44 PM	GC4_100121A
1001116-07B	MNPA-MPOL-SB-002-(14.0-15.0)	Soil	D2216	Percent Moisture	39117	1	01/21/10 03:00 PM	PMOIST_100121A
	MNPA-MPOL-SB-002-(14.0-15.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 05:37 PM	ICP-MS3_100202A
1001116-08A	MNPA-MPOL-FB-001-0110	Field Blank	SW8021B	Volatile Organics by GC	39115	1	01/22/10 11:00 PM	GC8_100122B
1001116-08B	MNPA-MPOL-FB-001-0110	Field Blank	M8015V	Method 8015 Gasoline (GRO)	39265	1	01/28/10 04:21 PM	GC4_100128A
1001116-09A	MNPA-MPOL-SB-002-(19.0-20.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 08:19 PM	GC4_100125B
	MNPA-MPOL-SB-002-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 03:08 PM	GC4_100121A
1001116-09B	MNPA-MPOL-SB-002-(19.0-20.0)	Soil	D2216	Percent Moisture	39117	1	01/21/10 03:00 PM	PMOIST_100121A

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Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
	MNPA-MPOL-SB-002-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 05:42 PM	ICP-MS3_100202A
1001116-10A	MNPA-MPOL-SB-102-(19.0-20.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 08:41 PM	GC4_100125B
	MNPA-MPOL-SB-102-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 03:33 PM	GC4_100121A
1001116-10B	MNPA-MPOL-SB-102-(19.0-20.0)	Soil	D2216	Percent Moisture	39117	1	01/21/10 03:00 PM	PMOIST_100121A
	MNPA-MPOL-SB-102-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 05:48 PM	ICP-MS3_100202A
1001116-11A	MNPA-MPOL-SB-003-(4.0-5.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 09:04 PM	GC4_100125B
	MNPA-MPOL-SB-003-(4.0-5.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 03:59 PM	GC4_100121A
1001116-11B	MNPA-MPOL-SB-003-(4.0-5.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-003-(4.0-5.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 06:16 PM	ICP-MS3_100202A
1001116-12A	MNPA-MPOL-SB-003-(9.0-10.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 09:28 PM	GC4_100125B
	MNPA-MPOL-SB-003-(9.0-10.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 04:47 PM	GC4_100121A
1001116-12B	MNPA-MPOL-SB-003-(9.0-10.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-003-(9.0-10.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 06:21 PM	ICP-MS3_100202A
1001116-13A	MNPA-MPOL-SB-003-(14.0-15.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 11:00 PM	GC4_100125B
	MNPA-MPOL-SB-003-(14.0-15.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 05:11 PM	GC4_100121A
1001116-13B	MNPA-MPOL-SB-003-(14.0-15.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-003-(14.0-15.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 06:27 PM	ICP-MS3_100202A
1001116-14A	MNPA-MPOL-SB-003-(19.0-20.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 11:22 PM	GC4_100125B
	MNPA-MPOL-SB-003-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 05:36 PM	GC4_100121A
1001116-14B	MNPA-MPOL-SB-003-(19.0-20.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-003-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 06:32 PM	ICP-MS3_100202A
1001116-15A	MNPA-MPOL-RB-001-0110	Equip Blank	SW8021B	Volatile Organics by GC	39115	1	01/22/10 11:21 PM	GC8_100122B
1001116-15B	MNPA-MPOL-RB-001-0110	Equip Blank	M8015V	Method 8015 Gasoline (GRO)	39265	1	01/28/10 04:45 PM	GC4_100128A
1001116-15C	MNPA-MPOL-RB-001-0110	Equip Blank	SW6020	Trace Metals: ICP-MS - Water	39110	1	02/02/10 12:05 PM	ICP-MS3_100202A
1001116-16A	MNPA-MPOL-TB-002-0110	Trip Blank	SW8021B	Volatile Organics by GC	39115	1	01/22/10 11:42 PM	GC8_100122B
1001116-17A	MNPA-MPOL-SB-004-(4.0-5.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/25/10 11:45 PM	GC4_100125B
	MNPA-MPOL-SB-004-(4.0-5.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 06:00 PM	GC4_100121A
1001116-17B	MNPA-MPOL-SB-004-(4.0-5.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-004-(4.0-5.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 06:38 PM	ICP-MS3_100202A
1001116-18A	MNPA-MPOL-SB-004-(9.0-10.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/26/10 12:09 AM	GC4_100125B
	MNPA-MPOL-SB-004-(9.0-10.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 06:22 PM	GC4_100121A
1001116-18B	MNPA-MPOL-SB-004-(9.0-10.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-004-(9.0-10.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 06:43 PM	ICP-MS3_100202A

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Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1001116-19A	MNPA-MPOL-SB-004-(14.0-15.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/26/10 12:31 AM	GC4_100125B
	MNPA-MPOL-SB-004-(14.0-15.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 06:44 PM	GC4_100121A
1001116-19B	MNPA-MPOL-SB-004-(14.0-15.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-004-(14.0-15.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 06:49 PM	ICP-MS3_100202A
1001116-20A	MNPA-MPOL-SB-004-(19.0-20.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/26/10 12:54 AM	GC4_100125B
	MNPA-MPOL-SB-004-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 07:06 PM	GC4_100121A
1001116-20B	MNPA-MPOL-SB-004-(19.0-20.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-004-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39104	5	02/02/10 06:54 PM	ICP-MS3_100202A
1001116-21A	MNPA-MPOL-SB-104-(19.0-20.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/26/10 01:17 AM	GC4_100125B
	MNPA-MPOL-SB-104-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 07:28 PM	GC4_100121A
1001116-21B	MNPA-MPOL-SB-104-(19.0-20.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-104-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 10:12 PM	ICP-MS2_100127B
1001116-22A	MNPA-MPOL-SB-005-(4.0-5.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/26/10 10:57 AM	GC4_100125B
	MNPA-MPOL-SB-005-(4.0-5.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 07:50 PM	GC4_100121A
1001116-22B	MNPA-MPOL-SB-005-(4.0-5.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-005-(4.0-5.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 10:17 PM	ICP-MS2_100127B
	MNPA-MPOL-SB-005-(4.0-5.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/29/10 03:50 PM	ICP-MS2_100129C
1001116-23A	MNPA-MPOL-SB-005-(9.0-10.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39118	1	01/26/10 11:20 AM	GC4_100125B
	MNPA-MPOL-SB-005-(9.0-10.0)	Soil	SW8021B	Volatile Organics by GC	39113	1	01/21/10 08:12 PM	GC4_100121A
1001116-23B	MNPA-MPOL-SB-005-(9.0-10.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-005-(9.0-10.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 10:23 PM	ICP-MS2_100127B
	MNPA-MPOL-SB-005-(9.0-10.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/29/10 03:56 PM	ICP-MS2_100129C
1001116-24A	MNPA-MPOL-SB-005-(14.0-15.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39163	1	01/26/10 03:11 PM	GC4_100126A
	MNPA-MPOL-SB-005-(14.0-15.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 11:19 AM	GC4_100122A
	MNPA-MPOL-SB-005-(14.0-15.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 11:19 AM	GC4_100122B
1001116-24B	MNPA-MPOL-SB-005-(14.0-15.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-005-(14.0-15.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 09:14 PM	ICP-MS2_100127B
1001116-25A	MNPA-MPOL-SB-005-(19.0-20.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39163	1	01/26/10 03:34 PM	GC4_100126A
	MNPA-MPOL-SB-005-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 12:24 PM	GC4_100122A
	MNPA-MPOL-SB-005-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 12:24 PM	GC4_100122B
1001116-25B	MNPA-MPOL-SB-005-(19.0-20.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-005-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 10:29 PM	ICP-MS2_100127B
	MNPA-MPOL-SB-005-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/29/10 04:02 PM	ICP-MS2_100129C

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Lab Order: 1001116

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1001116-26A	MNPA-MPOL-SB-006-(3.0-4.0)	Soil	SW8260B	8260 Soil Volatiles by GC/MS	39179	1	01/25/10 03:51 PM	GCMS2_100125A
	MNPA-MPOL-SB-006-(3.0-4.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39163	1	01/26/10 03:58 PM	GC4_100126A
1001116-26B	MNPA-MPOL-SB-006-(3.0-4.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-006-(3.0-4.0)	Soil	SW8270C	Semivolatiles by GC/MS - Soil	39319	1	02/03/10 03:26 AM	GCMS4_100202A
	MNPA-MPOL-SB-006-(3.0-4.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 10:35 PM	ICP-MS2_100127B
	MNPA-MPOL-SB-006-(3.0-4.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/29/10 04:07 PM	ICP-MS2_100129C
1001116-27A	MNPA-MPOL-SB-006-(9.0-10.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39163	1	01/26/10 04:20 PM	GC4_100126A
	MNPA-MPOL-SB-006-(9.0-10.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 12:46 PM	GC4_100122A
	MNPA-MPOL-SB-006-(9.0-10.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 12:46 PM	GC4_100122B
1001116-27B	MNPA-MPOL-SB-006-(9.0-10.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-006-(9.0-10.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 10:40 PM	ICP-MS2_100127B
1001116-28A	MNPA-MPOL-SB-006-(14.0-15.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39163	1	01/26/10 04:43 PM	GC4_100126A
	MNPA-MPOL-SB-006-(14.0-15.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 01:08 PM	GC4_100122A
	MNPA-MPOL-SB-006-(14.0-15.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 01:08 PM	GC4_100122B
1001116-28B	MNPA-MPOL-SB-006-(14.0-15.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-006-(14.0-15.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 10:46 PM	ICP-MS2_100127B
	MNPA-MPOL-SB-006-(14.0-15.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/29/10 04:13 PM	ICP-MS2_100129C
1001116-29A	MNPA-MPOL-SB-006-(19.0-20.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39163	1	01/26/10 05:06 PM	GC4_100126A
	MNPA-MPOL-SB-006-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 01:31 PM	GC4_100122A
	MNPA-MPOL-SB-006-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 01:31 PM	GC4_100122B
1001116-29B	MNPA-MPOL-SB-006-(19.0-20.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-006-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 10:52 PM	ICP-MS2_100127B
	MNPA-MPOL-SB-006-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/29/10 04:19 PM	ICP-MS2_100129C
1001116-30A	MNPA-MPOL-SB-106-(19.0-20.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39163	1	01/26/10 05:28 PM	GC4_100126A
	MNPA-MPOL-SB-106-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 01:53 PM	GC4_100122A
	MNPA-MPOL-SB-106-(19.0-20.0)	Soil	SW8021B	Volatile Organics by GC	39132	1	01/22/10 01:53 PM	GC4_100122B
1001116-30B	MNPA-MPOL-SB-106-(19.0-20.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-106-(19.0-20.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 10:58 PM	ICP-MS2_100127B
1001116-31A	MNPA-MPOL-FB-002-0110	Field Blank	SW8021B	Volatile Organics by GC	39115	1	01/23/10 12:02 AM	GC8_100122B
1001116-31B	MNPA-MPOL-FB-002-0110	Field Blank	M8015V	Method 8015 Gasoline (GRO)	39265	1	01/28/10 05:07 PM	GC4_100128A
1001116-32A	MNPA-MPOL-SB-006-(0.5-1.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	39163	20	01/26/10 05:51 PM	GC4_100126A
	MNPA-MPOL-SB-006-(0.5-1.0)	Soil	SW8021B	Volatile Organics by GC	39132	200	01/22/10 02:15 PM	GC4_100122A
	MNPA-MPOL-SB-006-(0.5-1.0)	Soil	SW8021B	Volatile Organics by GC	39132	20	01/22/10 02:36 PM	GC4_100122A

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Lab Order: 1001116

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
	MNPA-MPOL-SB-006-(0.5-1.0)	Soil	SW8021B	Volatile Organics by GC	39132	200	01/22/10 02:15 PM	GC4_100122B
	MNPA-MPOL-SB-006-(0.5-1.0)	Soil	SW8021B	Volatile Organics by GC	39132	20	01/22/10 02:36 PM	GC4_100122B
1001116-32B	MNPA-MPOL-SB-006-(0.5-1.0)	Soil	D2216	Percent Moisture	39124	1	01/21/10 03:15 PM	PMOIST_100121B
	MNPA-MPOL-SB-006-(0.5-1.0)	Soil	SW6020	Trace Metals: ICP-MS - Solid	39120	5	01/27/10 11:03 PM	ICP-MS2_100127B
1001116-33A	MNPA-MPOL-RB-002-0110	Equip Blank	SW8021B	Volatile Organics by GC	39115	1	01/23/10 12:22 AM	GC8_100122B
1001116-33B	MNPA-MPOL-RB-002-0110	Equip Blank	M8015V	Method 8015 Gasoline (GRO)	39265	1	01/28/10 05:30 PM	GC4_100128A
1001116-33C	MNPA-MPOL-RB-002-0110	Equip Blank	SW6020	Trace Metals: ICP-MS - Water	39110	1	02/02/10 12:00 PM	ICP-MS3_100202A
1001116-34A	MNPA-MPOL-TB-001-0110	Trip Blank	SW8021B	Volatile Organics by GC	39115	1	01/23/10 12:43 AM	GC8_100122B

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-001-(5.0-6.0)
Lab ID: 1001116-01
Collection Date: 01/18/10 11:35 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.104	0.208		mg/Kg-dry	1	01/25/10 06:00 PM
Surr: Tetrachlorethene	107	0	70 - 134		%REC	1	01/25/10 06:00 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00313	0.00521		mg/Kg-dry	1	01/21/10 11:30 AM
Toluene	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 11:30 AM
Ethylbenzene	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 11:30 AM
Xylenes, Total	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 11:30 AM
Surr: Tetrachloroethene	81.5	0	79 - 135		%REC	1	01/21/10 11:30 AM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	10.4	0.106	0.318		mg/Kg-dry	5	02/02/10 05:04 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	7.53	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-001-(9.0-10.0)
Lab ID: 1001116-02
Collection Date: 01/18/10 11:46 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.101	0.203		mg/Kg-dry	1	01/25/10 06:23 PM
Surr: Tetrachlorethene	106	0	70 - 134		%REC	1	01/25/10 06:23 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00312	0.00519		mg/Kg-dry	1	01/21/10 11:54 AM
Toluene	ND	0.00519	0.0156		mg/Kg-dry	1	01/21/10 11:54 AM
Ethylbenzene	ND	0.00519	0.0156		mg/Kg-dry	1	01/21/10 11:54 AM
Xylenes, Total	ND	0.00519	0.0156		mg/Kg-dry	1	01/21/10 11:54 AM
Surr: Tetrachloroethene	80.8	0	79 - 135		%REC	1	01/21/10 11:54 AM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	9.24	0.0994	0.298		mg/Kg-dry	5	02/02/10 05:10 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	6.88	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-001-(14.0-15.0)
Lab ID: 1001116-03
Collection Date: 01/18/10 12:05 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.101	0.203		mg/Kg-dry	1	01/25/10 06:47 PM
Surr: Tetrachlorethene	103	0	70 - 134		%REC	1	01/25/10 06:47 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00286	0.00476		mg/Kg-dry	1	01/21/10 12:18 PM
Toluene	ND	0.00476	0.0143		mg/Kg-dry	1	01/21/10 12:18 PM
Ethylbenzene	ND	0.00476	0.0143		mg/Kg-dry	1	01/21/10 12:18 PM
Xylenes, Total	ND	0.00476	0.0143		mg/Kg-dry	1	01/21/10 12:18 PM
Surr: Tetrachloroethene	79.8	0	79 - 135		%REC	1	01/21/10 12:18 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	5.08	0.0958	0.287		mg/Kg-dry	5	02/02/10 05:15 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	2.44	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-001-(19.0-20.0)
Lab ID: 1001116-04
Collection Date: 01/18/10 12:20 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.102	0.203		mg/Kg-dry	1	01/25/10 07:10 PM
Surr: Tetrachlorethene	103	0	70 - 134		%REC	1	01/25/10 07:10 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00295	0.00491		mg/Kg-dry	1	01/21/10 01:31 PM
Toluene	ND	0.00491	0.0147		mg/Kg-dry	1	01/21/10 01:31 PM
Ethylbenzene	ND	0.00491	0.0147		mg/Kg-dry	1	01/21/10 01:31 PM
Xylenes, Total	ND	0.00491	0.0147		mg/Kg-dry	1	01/21/10 01:31 PM
Surr: Tetrachloroethene	83.1	0	79 - 135		%REC	1	01/21/10 01:31 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	13.1	0.101	0.303		mg/Kg-dry	5	02/02/10 05:20 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	5.71	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-002-(4.0-5.0)
Lab ID: 1001116-05
Collection Date: 01/18/10 02:05 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	1.04	0.102	0.205		mg/Kg-dry	1	01/26/10 11:43 AM
Surr: Tetrachlorethene	95.0	0	70 - 134		%REC	1	01/26/10 11:43 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00313	0.00521		mg/Kg-dry	1	01/21/10 01:56 PM
Toluene	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 01:56 PM
Ethylbenzene	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 01:56 PM
Xylenes, Total	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 01:56 PM
Surr: Tetrachloroethene	85.9	0	79 - 135		%REC	1	01/21/10 01:56 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	47.5	0.0994	0.298		mg/Kg-dry	5	02/02/10 05:26 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	6.80	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-002-(9.0-10.0)
Lab ID: 1001116-06
Collection Date: 01/18/10 02:18 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.103	0.205		mg/Kg-dry	1	01/25/10 07:33 PM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	01/25/10 07:33 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00293	0.00488		mg/Kg-dry	1	01/21/10 02:21 PM
Toluene	ND	0.00488	0.0146		mg/Kg-dry	1	01/21/10 02:21 PM
Ethylbenzene	ND	0.00488	0.0146		mg/Kg-dry	1	01/21/10 02:21 PM
Xylenes, Total	ND	0.00488	0.0146		mg/Kg-dry	1	01/21/10 02:21 PM
Surr: Tetrachloroethene	84.2	0	79 - 135		%REC	1	01/21/10 02:21 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	6.69	0.0920	0.276		mg/Kg-dry	5	02/02/10 05:31 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	5.45	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-002-(14.0-15.0)
Lab ID: 1001116-07
Collection Date: 01/18/10 02:28 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0999	0.200		mg/Kg-dry	1	01/25/10 07:56 PM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	01/25/10 07:56 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00303	0.00505		mg/Kg-dry	1	01/21/10 02:44 PM
Toluene	ND	0.00505	0.0151		mg/Kg-dry	1	01/21/10 02:44 PM
Ethylbenzene	ND	0.00505	0.0151		mg/Kg-dry	1	01/21/10 02:44 PM
Xylenes, Total	ND	0.00505	0.0151		mg/Kg-dry	1	01/21/10 02:44 PM
Surr: Tetrachloroethene	84.6	0	79 - 135		%REC	1	01/21/10 02:44 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	7.60	0.101	0.303		mg/Kg-dry	5	02/02/10 05:37 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	2.84	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-FB-001-0110
Lab ID: 1001116-08
Collection Date: 01/18/10 02:30 PM
Matrix: Field Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0600	0.100		mg/L	1	01/28/10 04:21 PM
Surr: Tetrachlorethene	108	0	74 - 138		%REC	1	01/28/10 04:21 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/22/10 11:00 PM
Toluene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:00 PM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:00 PM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/22/10 11:00 PM
Surr: a,a,a-Trifluorotoluene	97.3	0	87 - 113		%REC	1	01/22/10 11:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-002-(19.0-20.0)
Lab ID: 1001116-09
Collection Date: 01/18/10 02:40 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0979	0.196		mg/Kg-dry	1	01/25/10 08:19 PM
Surr: Tetrachlorethene	107	0	70 - 134		%REC	1	01/25/10 08:19 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00290	0.00484		mg/Kg-dry	1	01/21/10 03:08 PM
Toluene	ND	0.00484	0.0145		mg/Kg-dry	1	01/21/10 03:08 PM
Ethylbenzene	ND	0.00484	0.0145		mg/Kg-dry	1	01/21/10 03:08 PM
Xylenes, Total	ND	0.00484	0.0145		mg/Kg-dry	1	01/21/10 03:08 PM
Surr: Tetrachloroethene	92.6	0	79 - 135		%REC	1	01/21/10 03:08 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	6.97	0.0930	0.279		mg/Kg-dry	5	02/02/10 05:42 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	3.12	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-102-(19.0-20.0)
Lab ID: 1001116-10
Collection Date: 01/18/10 02:40 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0985	0.197		mg/Kg-dry	1	01/25/10 08:41 PM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/25/10 08:41 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00306	0.00510		mg/Kg-dry	1	01/21/10 03:33 PM
Toluene	ND	0.00510	0.0153		mg/Kg-dry	1	01/21/10 03:33 PM
Ethylbenzene	ND	0.00510	0.0153		mg/Kg-dry	1	01/21/10 03:33 PM
Xylenes, Total	ND	0.00510	0.0153		mg/Kg-dry	1	01/21/10 03:33 PM
Surr: Tetrachloroethene	85.1	0	79 - 135		%REC	1	01/21/10 03:33 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	8.51	0.0967	0.290		mg/Kg-dry	5	02/02/10 05:48 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	3.33	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-003-(4.0-5.0)
Lab ID: 1001116-11
Collection Date: 01/18/10 03:17 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.108	0.216		mg/Kg-dry	1	01/25/10 09:04 PM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/25/10 09:04 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00299	0.00498		mg/Kg-dry	1	01/21/10 03:59 PM
Toluene	ND	0.00498	0.0149		mg/Kg-dry	1	01/21/10 03:59 PM
Ethylbenzene	ND	0.00498	0.0149		mg/Kg-dry	1	01/21/10 03:59 PM
Xylenes, Total	ND	0.00498	0.0149		mg/Kg-dry	1	01/21/10 03:59 PM
Surr: Tetrachloroethene	88.3	0	79 - 135		%REC	1	01/21/10 03:59 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	18.4	0.100	0.301		mg/Kg-dry	5	02/02/10 06:16 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	7.84	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-003-(9.0-10.0)
Lab ID: 1001116-12
Collection Date: 01/18/10 03:25 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0952	0.190		mg/Kg-dry	1	01/25/10 09:28 PM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/25/10 09:28 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00290	0.00483		mg/Kg-dry	1	01/21/10 04:47 PM
Toluene	ND	0.00483	0.0145		mg/Kg-dry	1	01/21/10 04:47 PM
Ethylbenzene	ND	0.00483	0.0145		mg/Kg-dry	1	01/21/10 04:47 PM
Xylenes, Total	ND	0.00483	0.0145		mg/Kg-dry	1	01/21/10 04:47 PM
Surr: Tetrachloroethene	86.9	0	79 - 135		%REC	1	01/21/10 04:47 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	4.90	0.0898	0.269		mg/Kg-dry	5	02/02/10 06:21 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	3.12	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-003-(14.0-15.0)
Lab ID: 1001116-13
Collection Date: 01/18/10 03:35 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0998	0.200		mg/Kg-dry	1	01/25/10 11:00 PM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	01/25/10 11:00 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00288	0.00481		mg/Kg-dry	1	01/21/10 05:11 PM
Toluene	ND	0.00481	0.0144		mg/Kg-dry	1	01/21/10 05:11 PM
Ethylbenzene	ND	0.00481	0.0144		mg/Kg-dry	1	01/21/10 05:11 PM
Xylenes, Total	ND	0.00481	0.0144		mg/Kg-dry	1	01/21/10 05:11 PM
Surr: Tetrachloroethene	83.9	0	79 - 135		%REC	1	01/21/10 05:11 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	5.96	0.0983	0.295		mg/Kg-dry	5	02/02/10 06:27 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	3.13	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-003-(19.0-20.0)
Lab ID: 1001116-14
Collection Date: 01/18/10 03:50 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0971	0.194		mg/Kg-dry	1	01/25/10 11:22 PM
Surr: Tetrachlorethene	102	0	70 - 134		%REC	1	01/25/10 11:22 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00297	0.00495		mg/Kg-dry	1	01/21/10 05:36 PM
Toluene	ND	0.00495	0.0148		mg/Kg-dry	1	01/21/10 05:36 PM
Ethylbenzene	ND	0.00495	0.0148		mg/Kg-dry	1	01/21/10 05:36 PM
Xylenes, Total	ND	0.00495	0.0148		mg/Kg-dry	1	01/21/10 05:36 PM
Surr: Tetrachloroethene	83.0	0	79 - 135		%REC	1	01/21/10 05:36 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	6.28	0.0926	0.278		mg/Kg-dry	5	02/02/10 06:32 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	3.53	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-RB-001-0110
Lab ID: 1001116-15
Collection Date: 01/18/10 03:55 PM
Matrix: Equip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0600	0.100		mg/L	1	01/28/10 04:45 PM
Surr: Tetrachlorethene	113	0	74 - 138		%REC	1	01/28/10 04:45 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/22/10 11:21 PM
Toluene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:21 PM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:21 PM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/22/10 11:21 PM
Surr: a,a,a-Trifluorotoluene	95.6	0	87 - 113		%REC	1	01/22/10 11:21 PM
Trace Metals: ICP-MS - Water		**SW6020**					**Analyst: CZ**
Lead	ND	0.000300	0.00100		mg/L	1	02/02/10 12:05 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-TB-002-0110
Lab ID: 1001116-16
Collection Date: 01/18/10 03:55 PM
Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/22/10 11:42 PM
Toluene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:42 PM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:42 PM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/22/10 11:42 PM
Surr: a,a,a-Trifluorotoluene	100	0	87 - 113		%REC	1	01/22/10 11:42 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-004-(4.0-5.0)
Lab ID: 1001116-17
Collection Date: 01/18/10 04:23 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.100	0.200		mg/Kg-dry	1	01/25/10 11:45 PM
Surr: Tetrachlorethene	99.7	0	70 - 134		%REC	1	01/25/10 11:45 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00319	0.00532		mg/Kg-dry	1	01/21/10 06:00 PM
Toluene	ND	0.00532	0.0160		mg/Kg-dry	1	01/21/10 06:00 PM
Ethylbenzene	ND	0.00532	0.0160		mg/Kg-dry	1	01/21/10 06:00 PM
Xylenes, Total	ND	0.00532	0.0160		mg/Kg-dry	1	01/21/10 06:00 PM
Surr: Tetrachloroethene	90.0	0	79 - 135		%REC	1	01/21/10 06:00 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	7.54	0.0958	0.288		mg/Kg-dry	5	02/02/10 06:38 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	7.67	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-004-(9.0-10.0)
Lab ID: 1001116-18
Collection Date: 01/18/10 04:31 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.108	0.217		mg/Kg-dry	1	01/26/10 12:09 AM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/26/10 12:09 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00296	0.00493		mg/Kg-dry	1	01/21/10 06:22 PM
Toluene	ND	0.00493	0.0148		mg/Kg-dry	1	01/21/10 06:22 PM
Ethylbenzene	ND	0.00493	0.0148		mg/Kg-dry	1	01/21/10 06:22 PM
Xylenes, Total	ND	0.00493	0.0148		mg/Kg-dry	1	01/21/10 06:22 PM
Surr: Tetrachloroethene	91.2	0	79 - 135		%REC	1	01/21/10 06:22 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	8.77	0.103	0.309		mg/Kg-dry	5	02/02/10 06:43 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	8.54	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-004-(14.0-15.0)
Lab ID: 1001116-19
Collection Date: 01/18/10 04:40 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.102	0.205		mg/Kg-dry	1	01/26/10 12:31 AM
Surr: Tetrachlorethene	101	0	70 - 134		%REC	1	01/26/10 12:31 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00313	0.00522		mg/Kg-dry	1	01/21/10 06:44 PM
Toluene	ND	0.00522	0.0157		mg/Kg-dry	1	01/21/10 06:44 PM
Ethylbenzene	ND	0.00522	0.0157		mg/Kg-dry	1	01/21/10 06:44 PM
Xylenes, Total	ND	0.00522	0.0157		mg/Kg-dry	1	01/21/10 06:44 PM
Surr: Tetrachloroethene	89.1	0	79 - 135		%REC	1	01/21/10 06:44 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	8.05	0.0926	0.278		mg/Kg-dry	5	02/02/10 06:49 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	5.23	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-004-(19.0-20.0)
Lab ID: 1001116-20
Collection Date: 01/18/10 04:52 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.108	0.216		mg/Kg-dry	1	01/26/10 12:54 AM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/26/10 12:54 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00307	0.00512		mg/Kg-dry	1	01/21/10 07:06 PM
Toluene	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 07:06 PM
Ethylbenzene	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 07:06 PM
Xylenes, Total	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 07:06 PM
Surr: Tetrachloroethene	91.1	0	79 - 135		%REC	1	01/21/10 07:06 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	10.7	0.105	0.315		mg/Kg-dry	5	02/02/10 06:54 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	8.41	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-104-(19.0-20.0)
Lab ID: 1001116-21
Collection Date: 01/18/10 04:52 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.104	0.208		mg/Kg-dry	1	01/26/10 01:17 AM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	01/26/10 01:17 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00315	0.00525		mg/Kg-dry	1	01/21/10 07:28 PM
Toluene	ND	0.00525	0.0157		mg/Kg-dry	1	01/21/10 07:28 PM
Ethylbenzene	ND	0.00525	0.0157		mg/Kg-dry	1	01/21/10 07:28 PM
Xylenes, Total	ND	0.00525	0.0157		mg/Kg-dry	1	01/21/10 07:28 PM
Surr: Tetrachloroethene	88.9	0	79 - 135		%REC	1	01/21/10 07:28 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	10.1	0.101	0.304		mg/Kg-dry	5	01/27/10 10:12 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	6.98	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-005-(4.0-5.0)
Lab ID: 1001116-22
Collection Date: 01/19/10 08:52 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0992	0.198		mg/Kg-dry	1	01/26/10 10:57 AM
Surr: Tetrachlorethene	111	0	70 - 134		%REC	1	01/26/10 10:57 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00301	0.00502		mg/Kg-dry	1	01/21/10 07:50 PM
Toluene	ND	0.00502	0.0151		mg/Kg-dry	1	01/21/10 07:50 PM
Ethylbenzene	ND	0.00502	0.0151		mg/Kg-dry	1	01/21/10 07:50 PM
Xylenes, Total	ND	0.00502	0.0151		mg/Kg-dry	1	01/21/10 07:50 PM
Surr: Tetrachloroethene	91.8	0	79 - 135		%REC	1	01/21/10 07:50 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	15.7	0.101	0.303		mg/Kg-dry	5	01/29/10 03:50 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	9.17	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-005-(9.0-10.0)
Lab ID: 1001116-23
Collection Date: 01/19/10 09:00 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0989	0.198		mg/Kg-dry	1	01/26/10 11:20 AM
Surr: Tetrachlorethene	97.9	0	70 - 134		%REC	1	01/26/10 11:20 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00307	0.00512		mg/Kg-dry	1	01/21/10 08:12 PM
Toluene	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 08:12 PM
Ethylbenzene	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 08:12 PM
Xylenes, Total	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 08:12 PM
Surr: Tetrachloroethene	91.6	0	79 - 135		%REC	1	01/21/10 08:12 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	6.89	0.101	0.304		mg/Kg-dry	5	01/29/10 03:56 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	6.07	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-005-(14.0-15.0)
Lab ID: 1001116-24
Collection Date: 01/19/10 09:14 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0993	0.199		mg/Kg-dry	1	01/26/10 03:11 PM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	01/26/10 03:11 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00289	0.00482		mg/Kg-dry	1	01/22/10 11:19 AM
Toluene	ND	0.00482	0.0144		mg/Kg-dry	1	01/22/10 11:19 AM
Ethylbenzene	ND	0.00482	0.0144		mg/Kg-dry	1	01/22/10 11:19 AM
Xylenes, Total	ND	0.00482	0.0144		mg/Kg-dry	1	01/22/10 11:19 AM
Surr: Tetrachloroethene	88.1	0	79 - 135		%REC	1	01/22/10 11:19 AM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	6.34	0.102	0.305		mg/Kg-dry	5	01/27/10 09:14 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	2.60	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-005-(19.0-20.0)
Lab ID: 1001116-25
Collection Date: 01/19/10 09:25 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.104	0.208		mg/Kg-dry	1	01/26/10 03:34 PM
Surr: Tetrachlorethene	107	0	70 - 134		%REC	1	01/26/10 03:34 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00329	0.00548		mg/Kg-dry	1	01/22/10 12:24 PM
Toluene	ND	0.00548	0.0164		mg/Kg-dry	1	01/22/10 12:24 PM
Ethylbenzene	ND	0.00548	0.0164		mg/Kg-dry	1	01/22/10 12:24 PM
Xylenes, Total	ND	0.00548	0.0164		mg/Kg-dry	1	01/22/10 12:24 PM
Surr: Tetrachloroethene	91.5	0	79 - 135		%REC	1	01/22/10 12:24 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	11.4	0.0986	0.296		mg/Kg-dry	5	01/29/10 04:02 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	10.2	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(3.0-4.0)
Lab ID: 1001116-26
Collection Date: 01/19/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.109	0.217		mg/Kg-dry	1	01/26/10 03:58 PM
Surr: Tetrachlorethene	108	0	70 - 134		%REC	1	01/26/10 03:58 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	12.9	0.105	0.316		mg/Kg-dry	5	01/29/10 04:07 PM
Semivolatiles by GC/MS - Soil		**SW8270C**					**Analyst: DO**
1,2,4,5-Tetrachlorobenzene	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1,2,4-Trichlorobenzene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1,2-Dichlorobenzene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1,2-Diphenylhydrazine	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1,3-Dichlorobenzene	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1,4-Dichlorobenzene	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1-Chloronaphthalene	ND	0.0457	0.152	N	mg/Kg-dry	1	02/03/10 03:26 AM
1-Methylnaphthalene	ND	0.0686	0.152	N	mg/Kg-dry	1	02/03/10 03:26 AM
1-Naphthylamine	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,4,5-Trichlorophenol	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,4,6-Trichlorophenol	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,4-Dichlorophenol	ND	0.0915	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,4-Dimethylphenol	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,4-Dinitrophenol	ND	0.0572	0.755		mg/Kg-dry	1	02/03/10 03:26 AM
2,4-Dinitrotoluene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,6-Dichlorophenol	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,6-Dinitrotoluene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Chloronaphthalene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Chlorophenol	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Methylnaphthalene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Methylphenol	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Naphthylamine	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Nitroaniline	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Nitrophenol	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Picoline	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
3,3´-Dichlorobenzidine	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
3-Methylcholanthrene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
3-Nitroaniline	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4,6-Dinitro-2-methylphenol	ND	0.0915	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
4-Aminobiphenyl	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Bromophenyl phenyl ether	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Chloro-3-methylphenol	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Chloroaniline	ND	0.0572	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
4-Chlorophenyl phenyl ether	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Methylphenol	ND	0.114	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Nitroaniline	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Nitrophenol	ND	0.160	0.755		mg/Kg-dry	1	02/03/10 03:26 AM
7,12-Dimethylbenz(a)anthracene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Acenaphthene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(3.0-4.0)
Lab ID: 1001116-26
Collection Date: 01/19/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Acenaphthylene	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Acetophenone	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Aniline	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Anthracene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzidine	ND	0.377	0.755		mg/Kg-dry	1	02/03/10 03:26 AM
Benzo[a]anthracene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzo[a]pyrene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzo[b]fluoranthene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzo[g,h,i]perylene	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzo[k]fluoranthene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzoic acid	ND	0.149	0.755		mg/Kg-dry	1	02/03/10 03:26 AM
Benzyl alcohol	ND	0.0457	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Biphenyl	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Bis(2-chloroethoxy)methane	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Bis(2-chloroethyl)ether	ND	0.0114	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Bis(2-chloroisopropyl)ether	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Bis(2-ethylhexyl)phthalate	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Butyl benzyl phthalate	ND	0.114	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Carbazole	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Chrysene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Di-n-butyl phthalate	ND	0.114	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Di-n-octyl phthalate	ND	0.114	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Dibenz(a,j)acridine	0.0610	0.0457	0.152	JN	mg/Kg-dry	1	02/03/10 03:26 AM
Dibenz[a,h]anthracene	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Dibenzofuran	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Diethyl phthalate	ND	0.114	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Dimethyl phthalate	ND	0.114	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Dimethylphenethylamine	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Diphenylamine	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Ethyl methanesulfonate	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Fluoranthene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Fluorene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Hexachlorobenzene	ND	0.0114	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Hexachlorobutadiene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Hexachlorocyclopentadiene	ND	0.0686	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Hexachloroethane	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Indeno[1,2,3-cd]pyrene	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Isophorone	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Methyl methanesulfonate	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
N-Nitrosodi-n-propylamine	ND	0.0114	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
N-Nitrosodimethylamine	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
N-Nitrosodiphenylamine	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
N-Nitrosopiperidine	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Naphthalene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Nitrobenzene	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(3.0-4.0)
Lab ID: 1001116-26
Collection Date: 01/19/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
p-Dimethylaminoazobenzene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pentachlorobenzene	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pentachloronitrobenzene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pentachlorophenol	ND	0.103	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Phenacetin	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Phenanthrene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Phenol	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pronamide	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pyrene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pyridine	ND	0.149	0.755		mg/Kg-dry	1	02/03/10 03:26 AM
Surr: 2,4,6-Tribromophenol	80.6	0	37 - 125		%REC	1	02/03/10 03:26 AM
Surr: 2-Fluorobiphenyl	73.1	0	60 - 135		%REC	1	02/03/10 03:26 AM
Surr: 2-Fluorophenol	51.7	0	60 - 129	S	%REC	1	02/03/10 03:26 AM
Surr: 4-Terphenyl-d14	85.1	0	45 - 125		%REC	1	02/03/10 03:26 AM
Surr: Nitrobenzene-d5	69.2	0	40 - 125		%REC	1	02/03/10 03:26 AM
Surr: Phenol-d6	51.5	0	40 - 125		%REC	1	02/03/10 03:26 AM
8260 Soil Volatiles by GC/MS		**SW8260B**					**Analyst: AJR**
1,1,1,2-Tetrachloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1,1-Trichloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1,2,2-Tetrachloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1,2-Trichloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1-Dichloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1-Dichloroethene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1-Dichloropropene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2,3-Trichlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2,3-Trichloropropane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2,4-Trichlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2,4-Trimethylbenzene	0.00432	0.00111	0.00556	J	mg/Kg-dry	1	01/25/10 03:51 PM
1,2-Dibromo-3-chloropropane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2-Dibromoethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2-Dichlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2-Dichloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2-Dichloropropane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,3,5-Trimethylbenzene	0.00117	0.00111	0.00556	J	mg/Kg-dry	1	01/25/10 03:51 PM
1,3-Dichlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,3-Dichloropropane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,4-Dichloro-2-butene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,4-Dichlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
2,2-Dichloropropane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
2-Butanone	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
2-Chloroethylvinylether	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
2-Chlorotoluene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
2-Hexanone	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
4-Chlorotoluene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
4-Isopropyltoluene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(3.0-4.0)
Lab ID: 1001116-26
Collection Date: 01/19/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
4-Methyl-2-pentanone	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
Acetone	ND	0.0167	0.0556		mg/Kg-dry	1	01/25/10 03:51 PM
Acrylonitrile	ND	0.00333	0.0111		mg/Kg-dry	1	01/25/10 03:51 PM
Benzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Bromobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Bromochloromethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Bromodichloromethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Bromoform	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Bromomethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Carbon disulfide	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Carbon tetrachloride	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Chlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Chloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Chloroform	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Chloromethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
cis-1,2-Dichloroethene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
cis-1,3-Dichloropropene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Dibromochloromethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Dibromomethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Dichlorodifluoromethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Ethylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Hexachlorobutadiene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Iodomethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Isopropylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
m,p-Xylene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Methyl tert-butyl ether	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Methylene chloride	ND	0.00556	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
n-Butylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
n-Propylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Naphthalene	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
o-Xylene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
sec-Butylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Styrene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
tert-Butylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Tetrachloroethene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Toluene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
trans-1,2-Dichloroethene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
trans-1,3-Dichloropropene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Trichloroethene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Trichlorofluoromethane	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
Vinyl chloride	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Surr: 1,2-Dichloroethane-d4	103	0	78 - 125		%REC	1	01/25/10 03:51 PM
Surr: 4-Bromofluorobenzene	99.0	0	85 - 120		%REC	1	01/25/10 03:51 PM
Surr: Dibromofluoromethane	100	0	84 - 116		%REC	1	01/25/10 03:51 PM
Surr: Toluene-d8	93.6	0	85 - 115		%REC	1	01/25/10 03:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(3.0-4.0)
Lab ID: 1001116-26
Collection Date: 01/19/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	12.8	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(9.0-10.0)
Lab ID: 1001116-27
Collection Date: 01/19/10 10:23 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0971	0.194		mg/Kg-dry	1	01/26/10 04:20 PM
Surr: Tetrachlorethene	102	0	70 - 134		%REC	1	01/26/10 04:20 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00290	0.00484		mg/Kg-dry	1	01/22/10 12:46 PM
Toluene	ND	0.00484	0.0145		mg/Kg-dry	1	01/22/10 12:46 PM
Ethylbenzene	ND	0.00484	0.0145		mg/Kg-dry	1	01/22/10 12:46 PM
Xylenes, Total	ND	0.00484	0.0145		mg/Kg-dry	1	01/22/10 12:46 PM
Surr: Tetrachloroethene	88.2	0	79 - 135		%REC	1	01/22/10 12:46 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	7.99	0.104	0.312		mg/Kg-dry	5	01/27/10 10:40 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	6.58	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(14.0-15.0)
Lab ID: 1001116-28
Collection Date: 01/19/10 10:33 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.102	0.204		mg/Kg-dry	1	01/26/10 04:43 PM
Surr: Tetrachlorethene	103	0	70 - 134		%REC	1	01/26/10 04:43 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00278	0.00463		mg/Kg-dry	1	01/22/10 01:08 PM
Toluene	ND	0.00463	0.0139		mg/Kg-dry	1	01/22/10 01:08 PM
Ethylbenzene	ND	0.00463	0.0139		mg/Kg-dry	1	01/22/10 01:08 PM
Xylenes, Total	ND	0.00463	0.0139		mg/Kg-dry	1	01/22/10 01:08 PM
Surr: Tetrachloroethene	88.4	0	79 - 135		%REC	1	01/22/10 01:08 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	5.00	0.0960	0.288		mg/Kg-dry	5	01/29/10 04:13 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	2.66	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(19.0-20.0)
Lab ID: 1001116-29
Collection Date: 01/19/10 10:46 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0954	0.191		mg/Kg-dry	1	01/26/10 05:06 PM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/26/10 05:06 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00292	0.00487		mg/Kg-dry	1	01/22/10 01:31 PM
Toluene	ND	0.00487	0.0146		mg/Kg-dry	1	01/22/10 01:31 PM
Ethylbenzene	ND	0.00487	0.0146		mg/Kg-dry	1	01/22/10 01:31 PM
Xylenes, Total	ND	0.00487	0.0146		mg/Kg-dry	1	01/22/10 01:31 PM
Surr: Tetrachloroethene	85.8	0	79 - 135		%REC	1	01/22/10 01:31 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	5.96	0.0985	0.295		mg/Kg-dry	5	01/29/10 04:19 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	4.19	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-106-(19.0-20.0)
Lab ID: 1001116-30
Collection Date: 01/19/10 10:46 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.101	0.202		mg/Kg-dry	1	01/26/10 05:28 PM
Surr: Tetrachlorethene	107	0	70 - 134		%REC	1	01/26/10 05:28 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00288	0.00480		mg/Kg-dry	1	01/22/10 01:53 PM
Toluene	ND	0.00480	0.0144		mg/Kg-dry	1	01/22/10 01:53 PM
Ethylbenzene	ND	0.00480	0.0144		mg/Kg-dry	1	01/22/10 01:53 PM
Xylenes, Total	ND	0.00480	0.0144		mg/Kg-dry	1	01/22/10 01:53 PM
Surr: Tetrachloroethene	87.5	0	79 - 135		%REC	1	01/22/10 01:53 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	6.31	0.100	0.301		mg/Kg-dry	5	01/27/10 10:58 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	4.17	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-FB-002-0110
Lab ID: 1001116-31
Collection Date: 01/19/10 10:40 AM
Matrix: Field Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0600	0.100		mg/L	1	01/28/10 05:07 PM
Surr: Tetrachlorethene	107	0	74 - 138		%REC	1	01/28/10 05:07 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/23/10 12:02 AM
Toluene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:02 AM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:02 AM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/23/10 12:02 AM
Surr: a,a,a-Trifluorotoluene	101	0	87 - 113		%REC	1	01/23/10 12:02 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(0.5-1.0)
Lab ID: 1001116-32
Collection Date: 01/19/10 11:20 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	511	2.17	4.34		mg/Kg-dry	20	01/26/10 05:51 PM
Surr: Tetrachlorethene	76.8	0	70 - 134		%REC	20	01/26/10 05:51 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	0.487	0.0651	0.109		mg/Kg-dry	20	01/22/10 02:36 PM
Toluene	17.0	1.09	3.26		mg/Kg-dry	200	01/22/10 02:15 PM
Ethylbenzene	9.68	1.09	3.26		mg/Kg-dry	200	01/22/10 02:15 PM
Xylenes, Total	66.0	1.09	3.26		mg/Kg-dry	200	01/22/10 02:15 PM
Surr: Tetrachloroethene	97.2	0	79 - 135		%REC	200	01/22/10 02:15 PM
Surr: Tetrachloroethene	90.7	0	79 - 135		%REC	20	01/22/10 02:36 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	8.09	0.102	0.307		mg/Kg-dry	5	01/27/10 11:03 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	7.90	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-RB-002-0110
Lab ID: 1001116-33
Collection Date: 01/19/10 11:30 AM
Matrix: Equip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0600	0.100		mg/L	1	01/28/10 05:30 PM
Surr: Tetrachlorethene	106	0	74 - 138		%REC	1	01/28/10 05:30 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/23/10 12:22 AM
Toluene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:22 AM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:22 AM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/23/10 12:22 AM
Surr: a,a,a-Trifluorotoluene	99.8	0	87 - 113		%REC	1	01/23/10 12:22 AM
Trace Metals: ICP-MS - Water		**SW6020**					**Analyst: CZ**
Lead	0.000892	0.000300	0.00100	J	mg/L	1	02/02/10 12:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-TB-001-0110
Lab ID: 1001116-34
Collection Date: 01/18/10 03:55 PM
Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/23/10 12:43 AM
Toluene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:43 AM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:43 AM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/23/10 12:43 AM
Surr: a,a,a-Trifluorotoluene	98.3	0	87 - 113		%REC	1	01/23/10 12:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100121A

Sample ID:	**LCS-39113**	**Batch ID:**	**39113**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**LCS**	**Run ID:**	**GC4_100121A**	**Analysis Date:**	**01/21/10 10:41 AM**	**Prep Date:**	**01/21/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0969	0.00500	0.1000	0	96.9	65	113			
Toluene	0.0973	0.0150	0.1000	0	97.3	73	115			
Ethylbenzene	0.0968	0.0150	0.1000	0	96.8	74	118			
Xylenes, Total	0.295	0.0150	0.3000	0	98.4	73	119			
Surr: Tetrachloroethene	0.163		0.2000		81.3	79	135			

Sample ID:	**MB-39113**	**Batch ID:**	**39113**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**GC4_100121A**	**Analysis Date:**	**01/21/10 11:05 AM**	**Prep Date:**	**01/21/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	ND	0.00500								
Toluene	ND	0.0150								
Ethylbenzene	ND	0.0150								
Xylenes, Total	ND	0.0150								
Surr: Tetrachloroethene	0.158		0.2000		79.1	79	135			

Sample ID:	**1001116-03AMS**	**Batch ID:**	**39113**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg-dry**
SampType:	**MS**	**Run ID:**	**GC4_100121A**	**Analysis Date:**	**01/21/10 12:42 PM**	**Prep Date:**	**01/21/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0937	0.00488	0.09762	0	95.9	65	113			
Toluene	0.0927	0.0146	0.09762	0	94.9	73	115			
Ethylbenzene	0.0918	0.0146	0.09762	0	94.0	74	118			
Xylenes, Total	0.278	0.0146	0.2929	0	95.1	73	119			
Surr: Tetrachloroethene	0.179		0.1952		91.4	79	135			

Sample ID:	**1001116-03AMSD**	**Batch ID:**	**39113**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg-dry**
SampType:	**MSD**	**Run ID:**	**GC4_100121A**	**Analysis Date:**	**01/21/10 01:06 PM**	**Prep Date:**	**01/21/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0914	0.00490	0.09799	0	93.2	65	113	2.47	30	
Toluene	0.0909	0.0147	0.09799	0	92.7	73	115	1.96	30	
Ethylbenzene	0.0903	0.0147	0.09799	0	92.1	74	118	1.66	30	
Xylenes, Total	0.273	0.0147	0.2940	0	92.8	73	119	2.05	30	
Surr: Tetrachloroethene	0.173		0.1960		88.0	79	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100121A

Sample ID:	**ICV-100121**	**Batch ID:**	**R47469**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**ICV**	**Run ID:**	**GC4_100121A**	**Analysis Date:**	**01/21/10 10:17 AM**	**Prep Date:**	

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.183	0.00500	0.2000	0	91.3	80	120			
Toluene	0.186	0.0150	0.2000	0	92.8	80	120			
Ethylbenzene	0.185	0.0150	0.2000	0	92.6	80	120			
Xylenes, Total	0.555	0.0150	0.6000	0	92.6	80	120			
Surr: Tetrachloroethene	0.166		0.2000		82.9	79	135			

Sample ID:	**CCV1-100121**	**Batch ID:**	**R47469**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**CCV**	**Run ID:**	**GC4_100121A**	**Analysis Date:**	**01/21/10 04:23 PM**	**Prep Date:**	

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0924	0.00500	0.1000	0	92.4	80	120			
Toluene	0.0916	0.0150	0.1000	0	91.6	80	120			
Ethylbenzene	0.0911	0.0150	0.1000	0	91.1	80	120			
Xylenes, Total	0.276	0.0150	0.3000	0	92.1	80	120			
Surr: Tetrachloroethene	0.164		0.2000		81.8	79	135			

Sample ID:	**CCV2-100121**	**Batch ID:**	**R47469**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**CCV**	**Run ID:**	**GC4_100121A**	**Analysis Date:**	**01/21/10 08:33 PM**	**Prep Date:**	

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0904	0.00500	0.1000	0	90.4	80	120			
Toluene	0.0907	0.0150	0.1000	0	90.7	80	120			
Ethylbenzene	0.0905	0.0150	0.1000	0	90.5	80	120			
Xylenes, Total	0.273	0.0150	0.3000	0	91.0	80	120			
Surr: Tetrachloroethene	0.174		0.2000		87.0	79	135			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100122A

Sample ID:	**LCS-39132**	**Batch ID:**	**39132**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**LCS**	**Run ID:**	**GC4_100122A**	**Analysis Date:**	**01/22/10 10:35 AM**	**Prep Date:**	**01/22/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0858	0.00500	0.1000	0	85.8	65	113			
Toluene	0.0895	0.0150	0.1000	0	89.5	73	115			
Ethylbenzene	0.0894	0.0150	0.1000	0	89.4	74	118			
Xylenes, Total	0.269	0.0150	0.3000	0	89.6	73	119			
Surr: Tetrachloroethene	0.163		0.2000		81.4	79	135			

Sample ID:	**MB-39132**	**Batch ID:**	**39132**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**GC4_100122A**	**Analysis Date:**	**01/22/10 10:57 AM**	**Prep Date:**	**01/22/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	ND	0.00500								
Toluene	ND	0.0150								
Ethylbenzene	ND	0.0150								
Xylenes, Total	ND	0.0150								
Surr: Tetrachloroethene	0.171		0.2000		85.6	79	135			

Sample ID:	**1001116-24AMS**	**Batch ID:**	**39132**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg-dry**
SampType:	**MS**	**Run ID:**	**GC4_100122A**	**Analysis Date:**	**01/22/10 11:41 AM**	**Prep Date:**	**01/22/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0829	0.00463	0.09266	0	89.4	65	113			
Toluene	0.0836	0.0139	0.09266	0	90.2	73	115			
Ethylbenzene	0.0833	0.0139	0.09266	0	89.9	74	118			
Xylenes, Total	0.254	0.0139	0.2780	0	91.3	73	119			
Surr: Tetrachloroethene	0.168		0.1853		90.5	79	135			

Sample ID:	**1001116-24AMSD**	**Batch ID:**	**39132**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg-dry**
SampType:	**MSD**	**Run ID:**	**GC4_100122A**	**Analysis Date:**	**01/22/10 12:02 PM**	**Prep Date:**	**01/22/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0854	0.00481	0.09613	0	88.8	65	113	3.00	30	
Toluene	0.0868	0.0144	0.09613	0	90.2	73	115	3.68	30	
Ethylbenzene	0.0866	0.0144	0.09613	0	90.0	74	118	3.79	30	
Xylenes, Total	0.262	0.0144	0.2884	0	90.8	73	119	3.15	30	
Surr: Tetrachloroethene	0.172		0.1923		89.7	79	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100122A

Sample ID:	**ICV-100122**	**Batch ID:**	**R47502**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**ICV**	**Run ID:**	**GC4_100122A**	**Analysis Date:**	**01/22/10 10:13 AM**	**Prep Date:**	

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.178	0.00500	0.2000	0	88.9	80	120			
Toluene	0.180	0.0150	0.2000	0	89.9	80	120			
Ethylbenzene	0.177	0.0150	0.2000	0	88.3	80	120			
Xylenes, Total	0.529	0.0150	0.6000	0	88.1	80	120			
Surr: Tetrachloroethene	0.169		0.2000		84.7	79	135			

Sample ID:	**CCV1-100122**	**Batch ID:**	**R47502**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**CCV**	**Run ID:**	**GC4_100122A**	**Analysis Date:**	**01/22/10 03:19 PM**	**Prep Date:**	

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0888	0.00500	0.1000	0	88.8	80	120			
Toluene	0.0906	0.0150	0.1000	0	90.6	80	120			
Ethylbenzene	0.0895	0.0150	0.1000	0	89.5	80	120			
Xylenes, Total	0.271	0.0150	0.3000	0	90.2	80	120			
Surr: Tetrachloroethene	0.173		0.2000		86.6	79	135			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100122B

Sample ID:	**LCS-39132**	**Batch ID:**	**39132**		**TestNo:**		**SW8021B**			**Units:**	**mg/Kg**
SampType:	**LCS**	**Run ID:**	**GC4_100122B**		**Analysis Date:**		**01/22/10 10:35 AM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Toluene		0.105	0.0150	0.1000	0	105	73	115			
Ethylbenzene		0.105	0.0150	0.1000	0	105	74	118			
Xylenes, Total		0.304	0.0150	0.3000	0	101	73	119			
Surr: Tetrachloroethene		0.183		0.2000		91.7	79	135			

Sample ID:	**MB-39132**	**Batch ID:**	**39132**		**TestNo:**		**SW8021B**			**Units:**	**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**GC4_100122B**		**Analysis Date:**		**01/22/10 10:57 AM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Toluene		ND	0.0150								
Ethylbenzene		ND	0.0150								
Xylenes, Total		ND	0.0150								
Surr: Tetrachloroethene		0.191		0.2000		95.3	79	135			

Sample ID:	**1001116-24AMS**	**Batch ID:**	**39132**		**TestNo:**		**SW8021B**			**Units:**	**mg/Kg-dry**
SampType:	**MS**	**Run ID:**	**GC4_100122B**		**Analysis Date:**		**01/22/10 11:41 AM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Toluene		0.0983	0.0139	0.09266	0	106	73	115			
Ethylbenzene		0.0981	0.0139	0.09266	0	106	74	118			
Xylenes, Total		0.284	0.0139	0.2780	0	102	73	119			
Surr: Tetrachloroethene		0.191		0.1853		103	79	135			

Sample ID:	**1001116-24AMSD**	**Batch ID:**	**39132**		**TestNo:**		**SW8021B**			**Units:**	**mg/Kg-dry**
SampType:	**MSD**	**Run ID:**	**GC4_100122B**		**Analysis Date:**		**01/22/10 12:02 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Toluene		0.102	0.0144	0.09613	0	106	73	115	3.99	30	
Ethylbenzene		0.101	0.0144	0.09613	0	105	74	118	2.98	30	
Xylenes, Total		0.288	0.0144	0.2884	0	100	73	119	1.50	30	
Surr: Tetrachloroethene		0.196		0.1923		102	79	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100122B

Sample ID:	**ICV-100122**	**Batch ID:**	**R47503**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**ICV**	**Run ID:**	**GC4_100122B**	**Analysis Date:**	**01/22/10 10:13 AM**	**Prep Date:**	

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Toluene	0.210	0.0150	0.2000	0	105	80	120			
Ethylbenzene	0.208	0.0150	0.2000	0	104	80	120			
Xylenes, Total	0.596	0.0150	0.6000	0	99.3	80	120			
Surr: Tetrachloroethene	0.192		0.2000		96.1	79	135			

Sample ID:	**CCV1-100122**	**Batch ID:**	**R47503**	**TestNo:**	**SW8021B**	**Units:**	**mg/Kg**
SampType:	**CCV**	**Run ID:**	**GC4_100122B**	**Analysis Date:**	**01/22/10 03:19 PM**	**Prep Date:**	

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Toluene	0.109	0.0150	0.1000	0	109	80	120			
Ethylbenzene	0.108	0.0150	0.1000	0	108	80	120			
Xylenes, Total	0.313	0.0150	0.3000	0	104	80	120			
Surr: Tetrachloroethene	0.199		0.2000		99.4	79	135			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100125B

Sample ID:	**LCS-39118**	**Batch ID:**	**39118**	**TestNo:**	**M8015V**			**Units:**	**mg/Kg**
SampType:	**LCS**	**Run ID:**	**GC4_100125B**	**Analysis Date:**	**01/25/10 04:27 PM**			**Prep Date:**	**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.66	0.200	5.000	0	93.1	68	126			
Surr: Tetrachlorethene		0.371		0.4000		92.7	70	134			

Sample ID:	**MB-39118**	**Batch ID:**	**39118**	**TestNo:**	**M8015V**			**Units:**	**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**GC4_100125B**	**Analysis Date:**	**01/25/10 05:37 PM**			**Prep Date:**	**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		ND	0.200								
Surr: Tetrachlorethene		0.411		0.4000		103	70	134			

Sample ID:	**MB-39118**	**Batch ID:**	**39118**	**TestNo:**	**M8015V**			**Units:**	**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**GC4_100125B**	**Analysis Date:**	**01/26/10 10:34 AM**			**Prep Date:**	**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		ND	0.200								
Surr: Tetrachlorethene		0.404		0.4000		101	70	134			

Sample ID:	**1001116-03AMS**	**Batch ID:**	**39118**	**TestNo:**	**M8015V**			**Units:**	**mg/Kg-dry**
SampType:	**MS**	**Run ID:**	**GC4_100125B**	**Analysis Date:**	**01/26/10 12:07 PM**			**Prep Date:**	**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.41	0.197	4.928	0	89.5	68	126			
Surr: Tetrachlorethene		0.366		0.3942		92.9	70	134			

Sample ID:	**1001116-03AMSD**	**Batch ID:**	**39118**	**TestNo:**	**M8015V**			**Units:**	**mg/Kg-dry**
SampType:	**MSD**	**Run ID:**	**GC4_100125B**	**Analysis Date:**	**01/26/10 12:30 PM**			**Prep Date:**	**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.33	0.194	4.844	0	89.3	68	126	1.91	30	
Surr: Tetrachlorethene		0.358		0.3875		92.5	70	134	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100125B

Sample ID:	**ICV-0100125**	**Batch ID:**	**R47543**		**TestNo:**		**M8015V**		**Units:**		**mg/Kg**
SampType:	**ICV**	**Run ID:**	**GC4_100125B**		**Analysis Date:**		**01/25/10 04:05 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		9.29	0.200	10.00	0	92.9	80	120			
Surr: Tetrachlorethene		0.373		0.4000		93.3	70	134			

Sample ID:	**CCV1-100125**	**Batch ID:**	**R47543**		**TestNo:**		**M8015V**		**Units:**		**mg/Kg**
SampType:	**CCV**	**Run ID:**	**GC4_100125B**		**Analysis Date:**		**01/25/10 09:51 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.50	0.200	5.000	0	89.9	80	120			
Surr: Tetrachlorethene		0.358		0.4000		89.5	70	134			

Sample ID:	**ICV-100126**	**Batch ID:**	**R47543**		**TestNo:**		**M8015V**		**Units:**		**mg/Kg**
SampType:	**ICV**	**Run ID:**	**GC4_100125B**		**Analysis Date:**		**01/26/10 09:49 AM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		9.38	0.200	10.00	0	93.8	80	120			
Surr: Tetrachlorethene		0.350		0.4000		87.5	70	134			

Sample ID:	**CCV2-100125**	**Batch ID:**	**R47543**		**TestNo:**		**M8015V**		**Units:**		**mg/Kg**
SampType:	**CCV**	**Run ID:**	**GC4_100125B**		**Analysis Date:**		**01/26/10 12:53 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.66	0.200	5.000	0	93.3	80	120			
Surr: Tetrachlorethene		0.375		0.4000		93.7	70	134			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100126A

Sample ID:	**LCS-39163**	**Batch ID:**	**39163**	**TestNo:**	**M8015V**			**Units:**	**mg/Kg**
SampType:	**LCS**	**Run ID:**	**GC4_100126A**	**Analysis Date:**	**01/26/10 01:38 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.84	0.200	5.000	0	96.8	68	126			
Surr: Tetrachlorethene		0.374		0.4000		93.5	70	134			

Sample ID:	**MB-39163**	**Batch ID:**	**39163**	**TestNo:**	**M8015V**			**Units:**	**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**GC4_100126A**	**Analysis Date:**	**01/26/10 02:48 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		ND	0.200								
Surr: Tetrachlorethene		0.386		0.4000		96.6	70	134			

Sample ID:	**1001116-24AMS**	**Batch ID:**	**39163**	**TestNo:**	**M8015V**			**Units:**	**mg/Kg-dry**
SampType:	**MS**	**Run ID:**	**GC4_100126A**	**Analysis Date:**	**01/26/10 06:13 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.63	0.193	4.834	0	95.8	68	126			
Surr: Tetrachlorethene		0.366		0.3867		94.7	70	134			

Sample ID:	**1001116-24AMSD**	**Batch ID:**	**39163**	**TestNo:**	**M8015V**			**Units:**	**mg/Kg-dry**
SampType:	**MSD**	**Run ID:**	**GC4_100126A**	**Analysis Date:**	**01/26/10 06:36 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.44	0.197	4.917	0	90.3	68	126	4.25	30	
Surr: Tetrachlorethene		0.363		0.3934		92.2	70	134	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100126A

Sample ID:	**ICV-100126**	**Batch ID:**	**R47560**		**TestNo:**		**M8015V**		**Units:**		**mg/Kg**
SampType:	**ICV**	**Run ID:**	**GC4_100126A**		**Analysis Date:**		**01/26/10 01:16 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		9.51	0.200	10.00	0	95.1	80	120			
Surr: Tetrachlorethene		0.356		0.4000		89.0	70	134			

Sample ID:	**CCV1-100126**	**Batch ID:**	**R47560**		**TestNo:**		**M8015V**		**Units:**		**mg/Kg**
SampType:	**CCV**	**Run ID:**	**GC4_100126A**		**Analysis Date:**		**01/26/10 06:58 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.58	0.200	5.000	0	91.6	80	120			
Surr: Tetrachlorethene		0.357		0.4000		89.3	70	134			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100128A

Sample ID:	**LCS-39265**	**Batch ID:**	**39265**	**TestNo:**	**M8015V**			**Units:**	**mg/L**
SampType:	**LCS**	**Run ID:**	**GC4_100128A**	**Analysis Date:**	**01/28/10 03:11 PM**			**Prep Date:**	**01/28/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		5.00	0.100	5.000	0	100	67	136			
Surr: Tetrachlorethene		0.429		0.4000		107	74	138			

Sample ID:	**LCSD-39265**	**Batch ID:**	**39265**	**TestNo:**	**M8015V**			**Units:**	**mg/L**
SampType:	**LCSD**	**Run ID:**	**GC4_100128A**	**Analysis Date:**	**01/28/10 03:34 PM**			**Prep Date:**	**01/28/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.99	0.100	5.000	0	99.8	67	136	0.157	30	
Surr: Tetrachlorethene		0.432		0.4000		108	74	138	0	0	

Sample ID:	**MB-39265**	**Batch ID:**	**39265**	**TestNo:**	**M8015V**			**Units:**	**mg/L**
SampType:	**MBLK**	**Run ID:**	**GC4_100128A**	**Analysis Date:**	**01/28/10 03:58 PM**			**Prep Date:**	**01/28/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		ND	0.100								
Surr: Tetrachlorethene		0.437		0.4000		109	74	138			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100128A

Sample ID:	**ICV-100128**	**Batch ID:**	**R47598**		**TestNo:**		**M8015V**		**Units:**		**mg/L**
SampType:	**ICV**	**Run ID:**	**GC4_100128A**		**Analysis Date:**		**01/28/10 02:48 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		9.96	0.100	10.00	0	99.6	80	120			
Surr: Tetrachlorethene		0.411		0.4000		103	74	138			

Sample ID:	**CCV1-100128**	**Batch ID:**	**R47598**		**TestNo:**		**M8015V**		**Units:**		**mg/L**
SampType:	**CCV**	**Run ID:**	**GC4_100128A**		**Analysis Date:**		**01/28/10 06:15 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Gasoline Range Organics		4.85	0.100	5.000	0	96.9	80	120			
Surr: Tetrachlorethene		0.396		0.4000		99.0	74	138			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC8_100122B

Sample ID:	**LCS-39115**	**Batch ID:**	**39115**	**TestNo:**	**SW8021B**	**Units:**	**mg/L**
SampType:	**LCS**	**Run ID:**	**GC8_100122B**	**Analysis Date:**	**01/22/10 09:59 PM**	**Prep Date:**	**01/22/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0500	0.00200	0.0500	0	100	81	125			
Toluene	0.0496	0.00600	0.0500	0	99.2	84	123			
Ethylbenzene	0.0504	0.00600	0.0500	0	101	83	119			
Xylenes, Total	0.149	0.00900	0.150	0	99.6	81	117			
Surr: a,a,a-Trifluorotoluene	203		200.0		101	87	113			

Sample ID:	**LCSD-39115**	**Batch ID:**	**39115**	**TestNo:**	**SW8021B**	**Units:**	**mg/L**
SampType:	**LCSD**	**Run ID:**	**GC8_100122B**	**Analysis Date:**	**01/22/10 10:20 PM**	**Prep Date:**	**01/22/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0508	0.00200	0.0500	0	102	81	125	1.55	20	
Toluene	0.0504	0.00600	0.0500	0	101	84	123	1.53	20	
Ethylbenzene	0.0512	0.00600	0.0500	0	102	83	119	1.58	20	
Xylenes, Total	0.152	0.00900	0.150	0	101	81	117	1.56	20	
Surr: a,a,a-Trifluorotoluene	204		200.0		102	87	113	0	0	

Sample ID:	**MB-39115**	**Batch ID:**	**39115**	**TestNo:**	**SW8021B**	**Units:**	**mg/L**
SampType:	**MBLK**	**Run ID:**	**GC8_100122B**	**Analysis Date:**	**01/22/10 10:40 PM**	**Prep Date:**	**01/22/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	ND	0.00200								
Toluene	ND	0.00600								
Ethylbenzene	ND	0.00600								
Xylenes, Total	ND	0.00900								
Surr: a,a,a-Trifluorotoluene	203		200.0		102	87	113			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC8_100122B

Sample ID:	**ICV-100122**	**Batch ID:**	**R47497**	**TestNo:**	**SW8021B**	**Units:**	**mg/L**
SampType:	**ICV**	**Run ID:**	**GC8_100122B**	**Analysis Date:**	**01/22/10 09:38 PM**	**Prep Date:**	

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0989	0.00200	0.100	0	98.9	80	120			
Toluene	0.0992	0.00600	0.100	0	99.2	80	120			
Ethylbenzene	0.101	0.00600	0.100	0	101	80	120			
Xylenes, Total	0.298	0.00900	0.300	0	99.5	80	120			
Surr: a,a,a-Trifluorotoluene	199		200.0		99.7	87	113			

Sample ID:	**CCV1-100122**	**Batch ID:**	**R47497**	**TestNo:**	**SW8021B**	**Units:**	**mg/L**
SampType:	**CCV**	**Run ID:**	**GC8_100122B**	**Analysis Date:**	**01/23/10 01:04 AM**	**Prep Date:**	

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Benzene	0.0524	0.00200	0.0500	0	105	80	120			
Toluene	0.0516	0.00600	0.0500	0	103	80	120			
Ethylbenzene	0.0523	0.00600	0.0500	0	105	80	120			
Xylenes, Total	0.156	0.00900	0.150	0	104	80	120			
Surr: a,a,a-Trifluorotoluene	204		200.0		102	87	113			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS2_100127B

Sample ID:	**LCS-39120**	**Batch ID:**	**39120**		**TestNo:**		**SW6020**			**Units:**	**mg/Kg**
SampType:	**LCS**	**Run ID:**	**ICP-MS2_100127B**		**Analysis Date:**		**01/27/10 08:57 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		49.4	0.300	50.00	0	98.9	80	120			

Sample ID:	**LCSD-39120**	**Batch ID:**	**39120**		**TestNo:**		**SW6020**			**Units:**	**mg/Kg**
SampType:	**LCSD**	**Run ID:**	**ICP-MS2_100127B**		**Analysis Date:**		**01/27/10 09:02 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		50.1	0.300	50.00	0	100	80	120	1.31	20	

Sample ID:	**1001116-24B SD**	**Batch ID:**	**39120**		**TestNo:**		**SW6020**			**Units:**	**mg/Kg-dry**
SampType:	**SD**	**Run ID:**	**ICP-MS2_100127B**		**Analysis Date:**		**01/27/10 09:20 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		6.12	1.52	0	6.338				3.53	10	

Sample ID:	**1001116-24B PDS**	**Batch ID:**	**39120**		**TestNo:**		**SW6020**			**Units:**	**mg/Kg-dry**
SampType:	**PDS**	**Run ID:**	**ICP-MS2_100127B**		**Analysis Date:**		**01/27/10 09:26 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		56.4	0.305	50.83	6.338	98.5	75	125			

Sample ID:	**1001116-24B MS**	**Batch ID:**	**39120**		**TestNo:**		**SW6020**			**Units:**	**mg/Kg-dry**
SampType:	**MS**	**Run ID:**	**ICP-MS2_100127B**		**Analysis Date:**		**01/27/10 09:31 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		57.1	0.302	50.33	6.338	101	80	120			

Sample ID:	**1001116-24B MSD**	**Batch ID:**	**39120**		**TestNo:**		**SW6020**			**Units:**	**mg/Kg-dry**
SampType:	**MSD**	**Run ID:**	**ICP-MS2_100127B**		**Analysis Date:**		**01/27/10 09:37 PM**			**Prep Date:**	**01/22/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		55.4	0.302	50.33	6.338	97.4	80	120	3.09	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS2_100127B

Sample ID:	**ICV1-100127**	**Batch ID:**	**R47580**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**ICV**	**Run ID:**	**ICP-MS2_100127B**		**Analysis Date:**		**01/27/10 12:50 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.0972	0.00100	0.100	0	97.2	90	110			

Sample ID:	**CCV5-100127**	**Batch ID:**	**R47580**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**CCV**	**Run ID:**	**ICP-MS2_100127B**		**Analysis Date:**		**01/27/10 08:21 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.192	0.00100	0.200	0	96.1	90	110			

Sample ID:	**CCV6-100127**	**Batch ID:**	**R47580**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**CCV**	**Run ID:**	**ICP-MS2_100127B**		**Analysis Date:**		**01/27/10 09:42 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.194	0.00100	0.200	0	97.2	90	110			

Sample ID:	**CCV7-100127**	**Batch ID:**	**R47580**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**CCV**	**Run ID:**	**ICP-MS2_100127B**		**Analysis Date:**		**01/27/10 11:15 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.193	0.00100	0.200	0	96.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS2_100129C

Sample ID:	**MB-39120**	**Batch ID:**	**39120**	**TestNo:**	**SW6020**	**Units:**	**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**ICP-MS2_100129C**	**Analysis Date:**	**01/29/10 03:44 PM**	**Prep Date:**	**01/22/10**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Lead	ND	0.300								

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS2_100129C

Sample ID:	**ICV1-100129**	**Batch ID:**	**R47631**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**ICV**	**Run ID:**	**ICP-MS2_100129C**		**Analysis Date:**		**01/29/10 12:29 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.0967	0.00100	0.100	0	96.7	90	110			

Sample ID:	**CCV2-100129**	**Batch ID:**	**R47631**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**CCV**	**Run ID:**	**ICP-MS2_100129C**		**Analysis Date:**		**01/29/10 03:20 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.191	0.00100	0.200	0	95.6	90	110			

Sample ID:	**CCV3-100129**	**Batch ID:**	**R47631**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**CCV**	**Run ID:**	**ICP-MS2_100129C**		**Analysis Date:**		**01/29/10 04:54 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.189	0.00100	0.200	0	94.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_100202A

Sample ID:	**MB-39104**	**Batch ID:**	**39104**		**TestNo:**		**SW6020**		**Units:**		**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 04:42 PM**		**Prep Date:**		**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		ND	0.300								

Sample ID:	**LCS-39104**	**Batch ID:**	**39104**		**TestNo:**		**SW6020**		**Units:**		**mg/Kg**
SampType:	**LCS**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 04:48 PM**		**Prep Date:**		**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		53.4	0.300	50.00	0	107	80	120			

Sample ID:	**LCSD-39104**	**Batch ID:**	**39104**		**TestNo:**		**SW6020**		**Units:**		**mg/Kg**
SampType:	**LCSD**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 04:53 PM**		**Prep Date:**		**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		53.4	0.300	50.00	0	107	80	120	0	20	

Sample ID:	**1001116-20B SD**	**Batch ID:**	**39104**		**TestNo:**		**SW6020**		**Units:**		**mg/Kg-dry**
SampType:	**SD**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 07:00 PM**		**Prep Date:**		**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		10.3	1.57	0	10.70				3.55	10	

Sample ID:	**1001116-20B PDS**	**Batch ID:**	**39104**		**TestNo:**		**SW6020**		**Units:**		**mg/Kg-dry**
SampType:	**PDS**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 07:05 PM**		**Prep Date:**		**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		66.4	0.315	52.49	10.70	106	75	125			

Sample ID:	**1001116-20B MS**	**Batch ID:**	**39104**		**TestNo:**		**SW6020**		**Units:**		**mg/Kg-dry**
SampType:	**MS**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 07:10 PM**		**Prep Date:**		**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		66.1	0.306	51.02	10.70	109	80	120			

Sample ID:	**1001116-20B MSD**	**Batch ID:**	**39104**		**TestNo:**		**SW6020**		**Units:**		**mg/Kg-dry**
SampType:	**MSD**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 07:16 PM**		**Prep Date:**		**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		67.5	0.309	51.50	10.70	110	80	120	2.17	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_100202A

Sample ID:	**MB-39110**	**Batch ID:**	**39110**		**TestNo:**		**SW6020**			**Units:**	**mg/L**
SampType:	**MBLK**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 11:38 AM**			**Prep Date:**	**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		ND	0.00100								

Sample ID:	**LCS-39110**	**Batch ID:**	**39110**		**TestNo:**		**SW6020**			**Units:**	**mg/L**
SampType:	**LCS**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 11:43 AM**			**Prep Date:**	**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.203	0.00100	0.200	0	102	80	120			

Sample ID:	**LCSD-39110**	**Batch ID:**	**39110**		**TestNo:**		**SW6020**			**Units:**	**mg/L**
SampType:	**LCSD**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 11:49 AM**			**Prep Date:**	**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.202	0.00100	0.200	0	101	80	120	0.593	15	

Sample ID:	**1001116-15C SD**	**Batch ID:**	**39110**		**TestNo:**		**SW6020**			**Units:**	**mg/L**
SampType:	**SD**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 12:11 PM**			**Prep Date:**	**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0	0.00500	0	0				0	10	

Sample ID:	**1001116-15C PDS**	**Batch ID:**	**39110**		**TestNo:**		**SW6020**			**Units:**	**mg/L**
SampType:	**PDS**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 12:16 PM**			**Prep Date:**	**01/21/10**
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.207	0.00100	0.200	0	104	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_100202A

Sample ID:	**ICV1-100202**	**Batch ID:**	**R47675**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**ICV**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 11:09 AM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.100	0.00100	0.100	0	100	90	110			

Sample ID:	**CCV1-100202**	**Batch ID:**	**R47675**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**CCV**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 12:33 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.210	0.00100	0.200	0	105	90	110			

Sample ID:	**ICV2-100202**	**Batch ID:**	**R47675**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**ICV**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 03:14 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.0994	0.00100	0.100	0	99.4	90	110			

Sample ID:	**CCV3-100202**	**Batch ID:**	**R47675**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**CCV**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 04:20 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.196	0.00100	0.200	0	98.2	90	110			

Sample ID:	**CCV4-100202**	**Batch ID:**	**R47675**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**CCV**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 05:53 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.204	0.00100	0.200	0	102	90	110			

Sample ID:	**CCV5-100202**	**Batch ID:**	**R47675**		**TestNo:**		**SW6020**		**Units:**		**mg/L**
SampType:	**CCV**	**Run ID:**	**ICP-MS3_100202A**		**Analysis Date:**		**02/02/10 07:21 PM**		**Prep Date:**		
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
Lead		0.201	0.00100	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

Sample ID:	**LCS-39319**	**Batch ID:**	**39319**	**TestNo:**	**SW8270C**	**Units:**	**mg/Kg**
SampType:	**LCS**	**Run ID:**	**GCMS4_100202A**	**Analysis Date:**	**02/03/10 12:27 AM**	**Prep Date:**	**02/01/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
1,2,4,5-Tetrachlorobenzene	2.40	0.133	2.640	0	90.9	35	125			
1,2,4-Trichlorobenzene	1.26	0.133	1.340	0	94.0	45	110			
1,2-Dichlorobenzene	1.01	0.133	1.340	0	75.6	45	100			
1,2-Diphenylhydrazine	1.31	0.133	1.340	0	97.5	38	125			
1,3-Dichlorobenzene	1.11	0.133	1.340	0	83.1	40	100			
1,4-Dichlorobenzene	1.24	0.133	1.340	0	92.5	35	105			
1-Chloronaphthalene	1.29	0.133	1.340	0	96.0	40	125			N
1-Methylnaphthalene	1.20	0.133	1.340	0	89.6	45	105			N
1-Naphthylamine	0.747	0.133	1.340	0	55.7	40	125			
2,4,5-Trichlorophenol	1.37	0.133	1.340	0	102	50	110			
2,4,6-Trichlorophenol	1.37	0.133	1.340	0	102	45	110			
2,4-Dichlorophenol	1.23	0.133	1.340	0	91.5	45	110			
2,4-Dimethylphenol	1.20	0.133	1.340	0	89.6	30	105			
2,4-Dinitrophenol	1.43	0.660	1.340	0	107	15	130			
2,4-Dinitrotoluene	1.29	0.133	1.340	0	96.5	50	115			
2,6-Dichlorophenol	1.23	0.133	1.340	0	91.5	35	125			
2,6-Dinitrotoluene	1.31	0.133	1.340	0	97.5	50	110			
2-Chloronaphthalene	1.31	0.133	1.340	0	98.0	45	105			
2-Chlorophenol	0.953	0.133	1.340	0	71.1	45	105			
2-Methylnaphthalene	1.20	0.133	1.340	0	89.6	45	105			
2-Methylphenol	0.893	0.133	1.340	0	66.7	40	105			
2-Naphthylamine	0.887	0.133	1.340	0	66.2	40	125			
2-Nitroaniline	1.39	0.133	1.340	0	103	45	120			
2-Nitrophenol	1.29	0.133	1.340	0	96.5	40	110			
2-Picoline	0.733	0.133	1.340	0	54.7	40	125			
3,3´-Dichlorobenzidine	0.993	0.133	1.340	0	74.1	25	128			
3-Methylcholanthrene	1.42	0.133	1.340	0	106	40	125			
3-Nitroaniline	1.35	0.133	1.340	0	100	25	110			
4,6-Dinitro-2-methylphenol	1.36	0.330	1.340	0	101	30	135			
4-Aminobiphenyl	0.747	0.133	1.340	0	55.7	40	125			
4-Bromophenyl phenyl ether	1.34	0.133	1.340	0	100	45	115			
4-Chloro-3-methylphenol	1.21	0.133	1.340	0	90.5	45	115			
4-Chloroaniline	0.887	0.330	1.340	0	66.2	25	125			
4-Chlorophenyl phenyl ether	1.31	0.133	1.340	0	98.0	45	110			
4-Methylphenol	0.880	0.133	1.340	0	65.7	40	105			
4-Nitroaniline	1.15	0.133	1.340	0	85.6	35	115			
4-Nitrophenol	1.37	0.660	1.340	0	102	15	140			
7,12-Dimethylbenz(a)anthracene	1.36	0.133	1.340	0	101	40	125			
Acenaphthene	1.31	0.133	1.340	0	98.0	45	110			
Acenaphthylene	1.33	0.133	1.340	0	99.5	45	105			
Acetophenone	0.913	0.133	1.340	0	68.2	40	125			
Aniline	0.540	0.133	1.340	0	40.3	40	125			
Anthracene	1.33	0.133	1.340	0	99.5	55	105			
Benzidine	0.493	0.660	1.340	0	36.8	20	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

Benzo[a]anthracene	1.33	0.133	1.340	0	99.5	50	110	
Benzo[a]pyrene	1.38	0.133	1.340	0	103	50	110	
Benzo[b]fluoranthene	1.37	0.133	1.340	0	102	45	115	
Benzo[g,h,i]perylene	1.46	0.133	1.340	0	109	40	125	
Benzo[k]fluoranthene	1.45	0.133	1.340	0	108	45	125	
Benzoic acid	1.53	0.660	1.340	0	114	25	125	
Benzyl alcohol	0.853	0.330	1.340	0	63.7	20	125	
Biphenyl	1.31	0.133	1.340	0	97.5	60	140	
Bis(2-chloroethoxy)methane	1.25	0.133	1.340	0	93.0	45	110	
Bis(2-chloroethyl)ether	0.940	0.133	1.340	0	70.1	40	105	
Bis(2-chloroisopropyl)ether	0.880	0.133	1.340	0	65.7	20	115	
Bis(2-ethylhexyl)phthalate	1.43	0.133	1.340	0	106	45	125	
Butyl benzyl phthalate	1.40	0.330	1.340	0	104	50	125	
Carbazole	1.37	0.133	1.340	0	102	45	115	
Chrysene	1.34	0.133	1.340	0	100	55	110	
Di-n-butyl phthalate	1.41	0.330	1.340	0	105	55	110	
Di-n-octyl phthalate	1.37	0.330	1.340	0	102	40	130	
Dibenz(a,j)acridine	1.43	0.133	1.340	0	106	40	125	N
Dibenz[a,h]anthracene	1.47	0.133	1.340	0	109	40	125	
Dibenzofuran	1.29	0.133	1.340	0	96.0	50	105	
Diethyl phthalate	1.31	0.330	1.340	0	98.0	50	115	
Dimethyl phthalate	1.29	0.330	1.340	0	96.0	50	110	
Dimethylphenethylamine	0.320	0.133	1.340	0	23.9	40	125	S
Diphenylamine	1.33	0.133	1.340	0	99.5	40	125	
Ethyl methanesulfonate	0.967	0.133	1.340	0	72.1	40	125	
Fluoranthene	1.37	0.133	1.340	0	102	55	115	
Fluorene	1.32	0.133	1.340	0	98.5	50	110	
Hexachlorobenzene	1.35	0.133	1.340	0	101	45	120	
Hexachlorobutadiene	1.25	0.133	1.340	0	93.5	40	115	
Hexachlorocyclopentadiene	1.22	0.330	1.340	0	91.0	34	125	
Hexachloroethane	1.03	0.133	1.340	0	76.6	35	110	
Indeno[1,2,3-cd]pyrene	1.46	0.133	1.340	0	109	40	120	
Isophorone	1.18	0.133	1.340	0	88.1	45	110	
Methyl methanesulfonate	0.967	0.133	1.340	0	72.1	40	125	
N-Nitrosodi-n-propylamine	0.927	0.133	1.340	0	69.2	40	115	
N-Nitrosodimethylamine	0.813	0.133	1.340	0	60.7	20	115	
N-Nitrosodiphenylamine	1.33	0.133	1.340	0	99.5	50	115	
N-Nitrosopiperidine	1.22	0.133	1.340	0	91.0	40	125	
Naphthalene	1.26	0.133	1.340	0	94.0	40	105	
Nitrobenzene	1.29	0.133	1.340	0	96.0	40	115	
p-Dimethylaminoazobenzene	1.34	0.133	1.340	0	100	40	125	
Pentachlorobenzene	2.66	0.133	2.640	0	101	35	125	
Pentachloronitrobenzene	1.31	0.133	1.340	0	98.0	40	125	
Pentachlorophenol	1.39	0.133	1.340	0	104	25	120	
Phenacetin	1.47	0.133	1.340	0	109	40	125	
Phenanthrene	1.32	0.133	1.340	0	98.5	50	110	
Phenol	0.887	0.133	1.340	0	66.2	40	100	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

Pronamide	1.24	0.133	1.340	0	92.5	40	125
Pyrene	1.35	0.133	1.340	0	100	45	125
Pyridine	0.627	0.660	1.340	0	46.8	20	125
Surr: 2,4,6-Tribromophenol	2.47		2.680		92.0	45	138
Surr: 2-Fluorobiphenyl	2.29		2.680		85.6	37	125
Surr: 2-Fluorophenol	1.62		2.680		60.4	60	135
Surr: 4-Terphenyl-d14	2.44		2.680		91.0	60	129
Surr: Nitrobenzene-d5	2.23		2.680		83.3	45	125
Surr: Phenol-d6	1.52		2.680		56.7	40	125

Sample ID:	**1001149-46C-MS**	**Batch ID:**	**39319**	**TestNo:**	**SW8270C**		**Units:**	**mg/Kg-dry**	
SampType:	**MS**	**Run ID:**	**GCMS4_100202A**	**Analysis Date:**	**02/03/10 01:17 AM**		**Prep Date:**	**02/01/10**	
Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
1,2,4,5-Tetrachlorobenzene	2.51	0.141	2.808	0	89.4	35	125			
1,2,4-Trichlorobenzene	1.30	0.141	1.425	0	91.5	45	110			
1,2-Dichlorobenzene	1.06	0.141	1.425	0	74.6	45	100			
1,2-Diphenylhydrazine	1.38	0.141	1.425	0	97.0	38	125			
1,3-Dichlorobenzene	1.13	0.141	1.425	0	79.6	40	100			
1,4-Dichlorobenzene	1.24	0.141	1.425	0	87.1	35	105			
1-Chloronaphthalene	1.36	0.141	1.425	0	95.5	40	125			N
1-Methylnaphthalene	1.27	0.141	1.425	0	89.1	45	105			N
1-Naphthylamine	1.05	0.141	1.425	0	73.6	40	125			
2,4,5-Trichlorophenol	1.49	0.141	1.425	0	104	50	110			
2,4,6-Trichlorophenol	1.48	0.141	1.425	0	104	45	110			
2,4-Dichlorophenol	1.38	0.141	1.425	0	97.0	45	110			
2,4-Dimethylphenol	1.35	0.141	1.425	0	94.5	30	105			
2,4-Dinitrophenol	0.248	0.702	1.425	0	17.4	15	130			
2,4-Dinitrotoluene	1.34	0.141	1.425	0	94.0	50	115			
2,6-Dichlorophenol	1.37	0.141	1.425	0	96.0	35	125			
2,6-Dinitrotoluene	1.40	0.141	1.425	0	98.0	50	110			
2-Chloronaphthalene	1.39	0.141	1.425	0	97.5	45	105			
2-Chlorophenol	0.986	0.141	1.425	0	69.2	45	105			
2-Methylnaphthalene	1.31	0.141	1.425	0	92.0	45	105			
2-Methylphenol	0.971	0.141	1.425	0	68.2	40	105			
2-Naphthylamine	0.355	0.141	1.425	0	24.9	40	125			S
2-Nitroaniline	1.48	0.141	1.425	0	104	45	120			
2-Nitrophenol	1.23	0.141	1.425	0	86.1	40	110			
2-Picoline	0.298	0.141	1.425	0	20.9	40	125			S
3,3´-Dichlorobenzidine	1.18	0.141	1.425	0	83.1	25	128			
3-Methylcholanthrene	1.43	0.141	1.425	0	100	40	125			
3-Nitroaniline	1.43	0.141	1.425	0	100	25	110			
4,6-Dinitro-2-methylphenol	0.581	0.351	1.425	0	40.8	30	135			
4-Aminobiphenyl	0.879	0.141	1.425	0	61.7	40	125			
4-Bromophenyl phenyl ether	1.44	0.141	1.425	0	101	45	115			
4-Chloro-3-methylphenol	1.38	0.141	1.425	0	97.0	45	115			
4-Chloroaniline	1.13	0.351	1.425	0	79.6	25	125			
4-Chlorophenyl phenyl ether	1.44	0.141	1.425	0	101	45	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

4-Methylphenol	0.964	0.141	1.425	0	67.7	40	105	
4-Nitroaniline	1.35	0.141	1.425	0	95.0	35	115	
4-Nitrophenol	1.41	0.702	1.425	0	99.0	15	140	
7,12-Dimethylbenz(a)anthracene	1.56	0.141	1.425	0	109	40	125	
Acenaphthene	1.40	0.141	1.425	0	98.5	45	110	
Acenaphthylene	1.45	0.141	1.425	0	101	45	105	
Acetophenone	0.957	0.141	1.425	0	67.2	40	125	
Aniline	0.652	0.141	1.425	0	45.8	40	125	
Anthracene	1.45	0.141	1.425	0	102	55	105	
Benzidine	0	0.702	1.425	0	0	20	125	S
Benzo[a]anthracene	1.43	0.141	1.425	0	100	50	110	
Benzo[a]pyrene	1.52	0.141	1.425	0	106	50	110	
Benzo[b]fluoranthene	1.61	0.141	1.425	0	113	45	115	
Benzo[g,h,i]perylene	1.58	0.141	1.425	0	111	40	125	
Benzo[k]fluoranthene	1.55	0.141	1.425	0	108	45	125	
Benzoic acid	0.603	0.702	1.425	0	42.3	25	125	
Benzyl alcohol	0.964	0.351	1.425	0	67.7	20	125	
Biphenyl	1.40	0.141	1.425	0	98.0	60	140	
Bis(2-chloroethoxy)methane	1.30	0.141	1.425	0	91.5	45	110	
Bis(2-chloroethyl)ether	0.957	0.141	1.425	0	67.2	40	105	
Bis(2-chloroisopropyl)ether	0.936	0.141	1.425	0	65.7	20	115	
Bis(2-ethylhexyl)phthalate	1.33	0.141	1.425	0	93.5	45	125	
Butyl benzyl phthalate	1.22	0.351	1.425	0	85.6	50	125	
Carbazole	1.48	0.141	1.425	0	104	45	115	
Chrysene	1.45	0.141	1.425	0	102	55	110	
Di-n-butyl phthalate	1.48	0.351	1.425	0	104	55	110	
Di-n-octyl phthalate	1.26	0.351	1.425	0	88.6	40	130	
Dibenz(a,j)acridine	0.319	0.141	1.425	0	22.4	40	125	SN
Dibenz[a,h]anthracene	1.54	0.141	1.425	0	108	40	125	
Dibenzofuran	1.42	0.141	1.425	0	99.5	50	105	
Diethyl phthalate	1.43	0.351	1.425	0	100	50	115	
Dimethyl phthalate	1.43	0.351	1.425	0	100	50	110	
Dimethylphenethylamine	0.0496	0.141	1.425	0	3.48	40	125	S
Diphenylamine	1.42	0.141	1.425	0	99.5	40	125	
Ethyl methanesulfonate	1.00	0.141	1.425	0	70.1	40	125	
Fluoranthene	1.47	0.141	1.425	0	103	55	115	
Fluorene	1.41	0.141	1.425	0	99.0	50	110	
Hexachlorobenzene	1.44	0.141	1.425	0	101	45	120	
Hexachlorobutadiene	1.27	0.141	1.425	0	89.1	40	115	
Hexachlorocyclopentadiene	1.28	0.351	1.425	0	90.0	34	125	
Hexachloroethane	1.06	0.141	1.425	0	74.6	35	110	
Indeno[1,2,3-cd]pyrene	1.59	0.141	1.425	0	111	40	120	
Isophorone	1.33	0.141	1.425	0	93.0	45	110	
Methyl methanesulfonate	0.993	0.141	1.425	0	69.7	40	125	
N-Nitrosodi-n-propylamine	0.971	0.141	1.425	0	68.2	40	115	
N-Nitrosodimethylamine	0.929	0.141	1.425	0	65.2	20	115	
N-Nitrosodiphenylamine	1.42	0.141	1.425	0	99.5	50	115	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

N-Nitrosopiperidine	1.35	0.141	1.425	0	94.5	40	125	
Naphthalene	1.32	0.141	1.425	0	92.5	40	105	
Nitrobenzene	1.35	0.141	1.425	0	95.0	40	115	
p-Dimethylaminoazobenzene	1.33	0.141	1.425	0	93.5	40	125	
Pentachlorobenzene	2.80	0.141	2.808	0	99.7	35	125	
Pentachloronitrobenzene	1.38	0.141	1.425	0	97.0	40	125	
Pentachlorophenol	1.40	0.141	1.425	0	98.5	25	120	
Phenacetin	1.46	0.141	1.425	0	102	40	125	
Phenanthrene	1.43	0.141	1.425	0	100	50	110	
Phenol	0.950	0.141	1.425	0	66.7	40	100	
Pronamide	1.44	0.141	1.425	0	101	40	125	
Pyrene	1.44	0.141	1.425	0	101	45	125	
Pyridine	0.461	0.702	1.425	0	32.3	20	125	
Surr: 2,4,6-Tribromophenol	2.59		2.850		90.8	45	138	
Surr: 2-Fluorobiphenyl	2.35		2.850		82.6	37	125	
Surr: 2-Fluorophenol	1.64		2.850		57.5	60	135	S
Surr: 4-Terphenyl-d14	2.50		2.850		87.6	60	129	
Surr: Nitrobenzene-d5	2.30		2.850		80.8	45	125	
Surr: Phenol-d6	1.57		2.850		55.2	40	125	

Sample ID:	**1001149-46C-MSD**	**Batch ID:**	**39319**	**TestNo:**	**SW8270C**		**Units:**	**mg/Kg-dry**	
SampType:	**MSD**	**Run ID:**	**GCMS4_100202A**	**Analysis Date:**	**02/03/10 01:43 AM**		**Prep Date:**	**02/01/10**	
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
1,2,4,5-Tetrachlorobenzene		2.43	0.142	2.826	0	86.1	35	125	3.09	30	
1,2,4-Trichlorobenzene		1.25	0.142	1.434	0	87.1	45	110	4.36	30	
1,2-Dichlorobenzene		1.01	0.142	1.434	0	70.6	45	100	4.83	30	
1,2-Diphenylhydrazine		1.34	0.142	1.434	0	93.5	38	125	3.01	30	
1,3-Dichlorobenzene		1.09	0.142	1.434	0	76.1	40	100	3.82	30	
1,4-Dichlorobenzene		1.23	0.142	1.434	0	85.6	35	105	1.08	30	
1-Chloronaphthalene		1.31	0.142	1.434	0	91.0	40	125	4.15	30	N
1-Methylnaphthalene		1.22	0.142	1.434	0	85.1	45	105	3.92	30	N
1-Naphthylamine		0.992	0.142	1.434	0	69.2	40	125	5.62	30	
2,4,5-Trichlorophenol		1.41	0.142	1.434	0	98.5	50	110	5.23	30	
2,4,6-Trichlorophenol		1.41	0.142	1.434	0	98.0	45	110	5.26	30	
2,4-Dichlorophenol		1.28	0.142	1.434	0	89.6	45	110	7.35	30	
2,4-Dimethylphenol		1.23	0.142	1.434	0	86.1	30	105	8.72	30	
2,4-Dinitrophenol		0.321	0.707	1.434	0	22.4	15	130	25.6	30	
2,4-Dinitrotoluene		1.29	0.142	1.434	0	90.0	50	115	3.68	30	
2,6-Dichlorophenol		1.29	0.142	1.434	0	90.0	35	125	5.77	30	
2,6-Dinitrotoluene		1.32	0.142	1.434	0	92.0	50	110	5.63	30	
2-Chloronaphthalene		1.32	0.142	1.434	0	92.0	45	105	5.13	30	
2-Chlorophenol		0.978	0.142	1.434	0	68.2	45	105	0.800	30	
2-Methylnaphthalene		1.23	0.142	1.434	0	85.6	45	105	6.63	30	
2-Methylphenol		0.928	0.142	1.434	0	64.7	40	105	4.59	30	
2-Naphthylamine		0.328	0.142	1.434	0	22.9	40	125	7.69	30	S
2-Nitroaniline		1.41	0.142	1.434	0	98.0	45	120	5.26	30	
2-Nitrophenol		1.20	0.142	1.434	0	83.6	40	110	2.28	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

2-Picoline	0.335	0.142	1.434	0	23.4	40	125	11.9	30	S
3,3´-Dichlorobenzidine	1.17	0.142	1.434	0	81.6	25	128	1.16	30	
3-Methylcholanthrene	1.39	0.142	1.434	0	97.0	40	125	2.88	30	
3-Nitroaniline	1.36	0.142	1.434	0	95.0	25	110	4.95	30	
4,6-Dinitro-2-methylphenol	0.664	0.353	1.434	0	46.3	30	135	13.2	30	
4-Aminobiphenyl	0.849	0.142	1.434	0	59.2	40	125	3.47	30	
4-Bromophenyl phenyl ether	1.37	0.142	1.434	0	95.5	45	115	4.92	30	
4-Chloro-3-methylphenol	1.27	0.142	1.434	0	88.6	45	115	8.47	30	
4-Chloroaniline	1.07	0.353	1.434	0	74.6	25	125	5.80	30	
4-Chlorophenyl phenyl ether	1.35	0.142	1.434	0	94.0	45	110	6.49	30	
4-Methylphenol	0.928	0.142	1.434	0	64.7	40	105	3.86	30	
4-Nitroaniline	1.28	0.142	1.434	0	89.6	35	115	5.28	30	
4-Nitrophenol	1.36	0.707	1.434	0	95.0	15	140	3.45	30	
7,12-Dimethylbenz(a)anthracene	1.48	0.142	1.434	0	103	40	125	4.96	30	
Acenaphthene	1.33	0.142	1.434	0	92.5	45	110	5.60	30	
Acenaphthylene	1.36	0.142	1.434	0	94.5	45	105	6.46	30	
Acetophenone	0.928	0.142	1.434	0	64.7	40	125	3.12	30	
Aniline	0.621	0.142	1.434	0	43.3	40	125	4.94	30	
Anthracene	1.38	0.142	1.434	0	96.5	55	105	4.86	30	
Benzidine	0	0.707	1.434	0	0	20	125	0	30	S
Benzo[a]anthracene	1.37	0.142	1.434	0	95.5	50	110	3.93	30	
Benzo[a]pyrene	1.46	0.142	1.434	0	101	50	110	4.14	30	
Benzo[b]fluoranthene	1.46	0.142	1.434	0	102	45	115	9.54	30	
Benzo[g,h,i]perylene	1.49	0.142	1.434	0	104	40	125	5.83	30	
Benzo[k]fluoranthene	1.48	0.142	1.434	0	103	45	125	4.05	30	
Benzoic acid	0.635	0.707	1.434	0	44.3	25	125	5.25	30	
Benzyl alcohol	0.913	0.353	1.434	0	63.7	20	125	5.41	30	
Biphenyl	1.33	0.142	1.434	0	92.5	60	140	5.10	30	
Bis(2-chloroethoxy)methane	1.23	0.142	1.434	0	85.6	45	110	6.09	30	
Bis(2-chloroethyl)ether	0.899	0.142	1.434	0	62.7	40	105	6.25	30	
Bis(2-chloroisopropyl)ether	0.871	0.142	1.434	0	60.7	20	115	7.23	30	
Bis(2-ethylhexyl)phthalate	1.28	0.142	1.434	0	89.6	45	125	3.70	30	
Butyl benzyl phthalate	1.20	0.353	1.434	0	83.6	50	125	1.70	30	
Carbazole	1.42	0.142	1.434	0	99.0	45	115	4.25	30	
Chrysene	1.39	0.142	1.434	0	97.0	55	110	4.35	30	
Di-n-butyl phthalate	1.43	0.353	1.434	0	99.5	55	110	3.75	30	
Di-n-octyl phthalate	1.35	0.353	1.434	0	94.0	40	130	6.64	30	
Dibenz(a,j)acridine	0.393	0.142	1.434	0	27.4	40	125	20.6	30	SN
Dibenz[a,h]anthracene	1.50	0.142	1.434	0	104	40	125	2.63	30	
Dibenzofuran	1.33	0.142	1.434	0	92.5	50	105	6.61	30	
Diethyl phthalate	1.36	0.353	1.434	0	95.0	50	115	4.45	30	
Dimethyl phthalate	1.33	0.353	1.434	0	93.0	50	110	7.06	30	
Dimethylphenethylamine	0	0.142	1.434	0	0	40	125	0	30	S
Diphenylamine	1.36	0.142	1.434	0	95.0	40	125	3.95	30	
Ethyl methanesulfonate	0.942	0.142	1.434	0	65.7	40	125	5.94	30	
Fluoranthene	1.43	0.142	1.434	0	99.5	55	115	3.27	30	
Fluorene	1.36	0.142	1.434	0	94.5	50	110	3.98	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

Hexachlorobenzene	1.39	0.142	1.434	0	97.0	45	120	3.37	30	
Hexachlorobutadiene	1.23	0.142	1.434	0	86.1	40	115	2.76	30	
Hexachlorocyclopentadiene	1.24	0.353	1.434	0	86.6	34	125	3.29	30	
Hexachloroethane	1.01	0.142	1.434	0	70.6	35	110	4.83	30	
Indeno[1,2,3-cd]pyrene	1.53	0.142	1.434	0	107	40	120	3.45	30	
Isophorone	1.19	0.142	1.434	0	83.1	45	110	10.7	30	
Methyl methanesulfonate	0.956	0.142	1.434	0	66.7	40	125	3.73	30	
N-Nitrosodi-n-propylamine	0.935	0.142	1.434	0	65.2	40	115	3.83	30	
N-Nitrosodimethylamine	0.899	0.142	1.434	0	62.7	20	115	3.24	30	
N-Nitrosodiphenylamine	1.36	0.142	1.434	0	95.0	50	115	3.95	30	
N-Nitrosopiperidine	1.23	0.142	1.434	0	86.1	40	125	8.72	30	
Naphthalene	1.26	0.142	1.434	0	87.6	40	105	4.88	30	
Nitrobenzene	1.27	0.142	1.434	0	88.6	40	115	6.40	30	
p-Dimethylaminoazobenzene	1.33	0.142	1.434	0	93.0	40	125	0.116	30	
Pentachlorobenzene	2.74	0.142	2.826	0	97.0	35	125	2.17	30	
Pentachloronitrobenzene	1.33	0.142	1.434	0	93.0	40	125	3.54	30	
Pentachlorophenol	1.35	0.142	1.434	0	94.0	25	120	4.00	30	
Phenacetin	1.47	0.142	1.434	0	102	40	125	0.649	30	
Phenanthrene	1.38	0.142	1.434	0	96.0	50	110	3.91	30	
Phenol	0.928	0.142	1.434	0	64.7	40	100	2.38	30	
Pronamide	1.43	0.142	1.434	0	99.5	40	125	0.840	30	
Pyrene	1.39	0.142	1.434	0	97.0	45	125	3.37	30	
Pyridine	0.464	0.707	1.434	0	32.3	20	125	0.649	30	
Surr: 2,4,6-Tribromophenol	2.53		2.869		88.3	45	138	0	0	
Surr: 2-Fluorobiphenyl	2.26		2.869		78.9	37	125	0	0	
Surr: 2-Fluorophenol	1.62		2.869		56.5	60	135	0	0	S
Surr: 4-Terphenyl-d14	2.43		2.869		84.6	60	129	0	0	
Surr: Nitrobenzene-d5	2.14		2.869		74.6	45	125	0	0	
Surr: Phenol-d6	1.54		2.869		53.7	40	125	0	0	

Sample ID:	**MB-39319**	**Batch ID:**	**39319**	**TestNo:**	**SW8270C**	**Units:**	**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**GCMS4_100202A**	**Analysis Date:**	**02/03/10 03:01 AM**	**Prep Date:**	**02/01/10**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,2,4,5-Tetrachlorobenzene	ND	0.133								
1,2,4-Trichlorobenzene	ND	0.133								
1,2-Dichlorobenzene	ND	0.133								
1,2-Diphenylhydrazine	ND	0.133								
1,3-Dichlorobenzene	ND	0.133								
1,4-Dichlorobenzene	ND	0.133								
1-Chloronaphthalene	ND	0.133								N
1-Methylnaphthalene	ND	0.133								N
1-Naphthylamine	ND	0.133								
2,4,5-Trichlorophenol	ND	0.133								
2,4,6-Trichlorophenol	ND	0.133								
2,4-Dichlorophenol	ND	0.133								
2,4-Dimethylphenol	ND	0.133								
2,4-Dinitrophenol	ND	0.660								

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

2,4-Dinitrotoluene	ND	0.133
2,6-Dichlorophenol	ND	0.133
2,6-Dinitrotoluene	ND	0.133
2-Chloronaphthalene	ND	0.133
2-Chlorophenol	ND	0.133
2-Methylnaphthalene	ND	0.133
2-Methylphenol	ND	0.133
2-Naphthylamine	ND	0.133
2-Nitroaniline	ND	0.133
2-Nitrophenol	ND	0.133
2-Picoline	ND	0.133
3,3´-Dichlorobenzidine	ND	0.133
3-Methylcholanthrene	ND	0.133
3-Nitroaniline	ND	0.133
4,6-Dinitro-2-methylphenol	ND	0.330
4-Aminobiphenyl	ND	0.133
4-Bromophenyl phenyl ether	ND	0.133
4-Chloro-3-methylphenol	ND	0.133
4-Chloroaniline	ND	0.330
4-Chlorophenyl phenyl ether	ND	0.133
4-Methylphenol	ND	0.133
4-Nitroaniline	ND	0.133
4-Nitrophenol	ND	0.660
7,12-Dimethylbenz(a)anthracene	ND	0.133
Acenaphthene	ND	0.133
Acenaphthylene	ND	0.133
Acetophenone	ND	0.133
Aniline	ND	0.133
Anthracene	ND	0.133
Benzidine	ND	0.660
Benzo[a]anthracene	ND	0.133
Benzo[a]pyrene	ND	0.133
Benzo[b]fluoranthene	ND	0.133
Benzo[g,h,i]perylene	ND	0.133
Benzo[k]fluoranthene	ND	0.133
Benzoic acid	ND	0.660
Benzyl alcohol	ND	0.330
Biphenyl	ND	0.133
Bis(2-chloroethoxy)methane	ND	0.133
Bis(2-chloroethyl)ether	ND	0.133
Bis(2-chloroisopropyl)ether	ND	0.133
Bis(2-ethylhexyl)phthalate	ND	0.133
Butyl benzyl phthalate	ND	0.330
Carbazole	ND	0.133
Chrysene	ND	0.133
Di-n-butyl phthalate	ND	0.330
Di-n-octyl phthalate	ND	0.330

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

Dibenz(a,j)acridine	ND	0.133					N
Dibenz[a,h]anthracene	ND	0.133					
Dibenzofuran	ND	0.133					
Diethyl phthalate	ND	0.330					
Dimethyl phthalate	ND	0.330					
Dimethylphenethylamine	ND	0.133					
Diphenylamine	ND	0.133					
Ethyl methanesulfonate	ND	0.133					
Fluoranthene	ND	0.133					
Fluorene	ND	0.133					
Hexachlorobenzene	ND	0.133					
Hexachlorobutadiene	ND	0.133					
Hexachlorocyclopentadiene	ND	0.330					
Hexachloroethane	ND	0.133					
Indeno[1,2,3-cd]pyrene	ND	0.133					
Isophorone	ND	0.133					
Methyl methanesulfonate	ND	0.133					
N-Nitrosodi-n-propylamine	ND	0.133					
N-Nitrosodimethylamine	ND	0.133					
N-Nitrosodiphenylamine	ND	0.133					
N-Nitrosopiperidine	ND	0.133					
Naphthalene	ND	0.133					
Nitrobenzene	ND	0.133					
p-Dimethylaminoazobenzene	ND	0.133					
Pentachlorobenzene	ND	0.133					
Pentachloronitrobenzene	ND	0.133					
Pentachlorophenol	ND	0.133					
Phenacetin	ND	0.133					
Phenanthrene	ND	0.133					
Phenol	ND	0.133					
Pronamide	ND	0.133					
Pyrene	ND	0.133					
Pyridine	ND	0.660					
Surr: 2,4,6-Tribromophenol	2.35		2.680	87.8	45	138	
Surr: 2-Fluorobiphenyl	2.20		2.680	82.1	37	125	
Surr: 2-Fluorophenol	1.53		2.680	57.2	60	135	S
Surr: 4-Terphenyl-d14	2.53		2.680	94.5	60	129	
Surr: Nitrobenzene-d5	2.13		2.680	79.4	45	125	
Surr: Phenol-d6	1.50		2.680	56.0	40	125	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

Sample ID:	**ICV-100202**	**Batch ID:**	**R47689**	**TestNo:**	**SW8270C**	**Units:**	**mg/Kg**		
SampType:	**ICV**	**Run ID:**	**GCMS4_100202A**	**Analysis Date:**	**02/02/10 10:46 PM**	**Prep Date:**			

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,2,4,5-Tetrachlorobenzene	8.56	0.133	8.000	0	107	80	120			
1,2,4-Trichlorobenzene	4.14	0.133	4.000	0	104	80	120			
1,2-Dichlorobenzene	3.82	0.133	4.000	0	95.5	80	120			
1,2-Diphenylhydrazine	4.01	0.133	4.000	0	100	80	120			
1,3-Dichlorobenzene	4.06	0.133	4.000	0	102	80	120			
1,4-Dichlorobenzene	4.31	0.133	4.000	0	108	80	120			
1-Chloronaphthalene	4.07	0.133	4.000	0	102	80	120			N
1-Methylnaphthalene	4.17	0.133	4.000	0	104	80	120			N
1-Naphthylamine	4.28	0.133	4.000	0	107	80	120			
2,4,5-Trichlorophenol	4.31	0.133	4.000	0	108	80	120			
2,4,6-Trichlorophenol	4.34	0.133	4.000	0	108	80	120			
2,4-Dichlorophenol	4.37	0.133	4.000	0	109	80	120			
2,4-Dimethylphenol	4.20	0.133	4.000	0	105	80	120			
2,4-Dinitrophenol	4.19	0.660	4.000	0	105	80	120			
2,4-Dinitrotoluene	4.08	0.133	4.000	0	102	80	120			
2,6-Dichlorophenol	4.32	0.133	4.000	0	108	80	120			
2,6-Dinitrotoluene	4.10	0.133	4.000	0	103	80	120			
2-Chloronaphthalene	4.10	0.133	4.000	0	103	80	120			
2-Chlorophenol	3.54	0.133	4.000	0	88.5	80	120			
2-Methylnaphthalene	4.17	0.133	4.000	0	104	80	120			
2-Methylphenol	3.55	0.133	4.000	0	88.8	80	120			
2-Naphthylamine	4.20	0.133	4.000	0	105	80	120			
2-Nitroaniline	4.53	0.133	4.000	0	113	80	120			
2-Nitrophenol	4.52	0.133	4.000	0	113	80	120			
2-Picoline	3.55	0.133	4.000	0	88.8	80	120			
3,3´-Dichlorobenzidine	4.35	0.133	4.000	0	109	80	120			
3-Methylcholanthrene	4.06	0.133	4.000	0	102	80	120			
3-Nitroaniline	4.39	0.133	4.000	0	110	80	120			
4,6-Dinitro-2-methylphenol	4.11	0.330	4.000	0	103	80	120			
4-Aminobiphenyl	4.23	0.133	4.000	0	106	80	120			
4-Bromophenyl phenyl ether	4.25	0.133	4.000	0	106	80	120			
4-Chloro-3-methylphenol	4.30	0.133	4.000	0	108	80	120			
4-Chloroaniline	4.23	0.330	4.000	0	106	80	120			
4-Chlorophenyl phenyl ether	4.21	0.133	4.000	0	105	80	120			
4-Methylphenol	3.60	0.133	4.000	0	90.0	80	120			
4-Nitroaniline	4.36	0.133	4.000	0	109	80	120			
4-Nitrophenol	4.05	0.660	4.000	0	101	80	120			
7,12-Dimethylbenz(a)anthracene	4.31	0.133	4.000	0	108	80	120			
Acenaphthene	4.13	0.133	4.000	0	103	80	120			
Acenaphthylene	4.22	0.133	4.000	0	106	80	120			
Acetophenone	3.46	0.133	4.000	0	86.5	80	120			
Aniline	3.49	0.133	4.000	0	87.2	80	120			
Anthracene	4.16	0.133	4.000	0	104	80	120			
Benzidine	3.66	0.660	4.000	0	91.5	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

Benzo[a]anthracene	3.99	0.133	4.000	0	99.8	80	120	
Benzo[a]pyrene	3.98	0.133	4.000	0	99.5	80	120	
Benzo[b]fluoranthene	4.02	0.133	4.000	0	101	80	120	
Benzo[g,h,i]perylene	4.07	0.133	4.000	0	102	80	120	
Benzo[k]fluoranthene	3.91	0.133	4.000	0	97.8	80	120	
Benzoic acid	4.35	0.660	4.000	0	109	80	120	
Benzyl alcohol	3.60	0.330	4.000	0	90.0	80	120	
Biphenyl	4.12	0.133	4.000	0	103	80	120	
Bis(2-chloroethoxy)methane	4.10	0.133	4.000	0	103	80	120	
Bis(2-chloroethyl)ether	3.35	0.133	4.000	0	83.8	80	120	
Bis(2-chloroisopropyl)ether	3.24	0.133	4.000	0	81.0	80	120	
Bis(2-ethylhexyl)phthalate	4.21	0.133	4.000	0	105	80	120	
Butyl benzyl phthalate	4.22	0.330	4.000	0	106	80	120	
Carbazole	4.12	0.133	4.000	0	103	80	120	
Chrysene	3.97	0.133	4.000	0	99.2	80	120	
Di-n-butyl phthalate	4.11	0.330	4.000	0	103	80	120	
Di-n-octyl phthalate	4.08	0.330	4.000	0	102	80	120	
Dibenz(a,j)acridine	4.12	0.133	4.000	0	103	80	120	N
Dibenz[a,h]anthracene	4.10	0.133	4.000	0	103	80	120	
Dibenzofuran	4.14	0.133	4.000	0	104	80	120	
Diethyl phthalate	4.00	0.330	4.000	0	100	80	120	
Dimethyl phthalate	4.05	0.330	4.000	0	101	80	120	
Dimethylphenethylamine	4.32	0.133	4.000	0	108	80	120	
Diphenylamine	4.15	0.133	4.000	0	104	80	120	
Ethyl methanesulfonate	3.67	0.133	4.000	0	91.8	80	120	
Fluoranthene	4.13	0.133	4.000	0	103	80	120	
Fluorene	4.18	0.133	4.000	0	104	80	120	
Hexachlorobenzene	4.28	0.133	4.000	0	107	80	120	
Hexachlorobutadiene	4.19	0.133	4.000	0	105	80	120	
Hexachlorocyclopentadiene	3.98	0.330	4.000	0	99.5	80	120	
Hexachloroethane	3.87	0.133	4.000	0	96.8	80	120	
Indeno[1,2,3-cd]pyrene	4.08	0.133	4.000	0	102	80	120	
Isophorone	4.13	0.133	4.000	0	103	80	120	
Methyl methanesulfonate	3.67	0.133	4.000	0	91.8	80	120	
N-Nitrosodi-n-propylamine	3.47	0.133	4.000	0	86.8	80	120	
N-Nitrosodimethylamine	3.99	0.133	4.000	0	99.8	80	120	
N-Nitrosodiphenylamine	4.15	0.133	4.000	0	104	80	120	
N-Nitrosopiperidine	4.27	0.133	4.000	0	107	80	120	
Naphthalene	4.09	0.133	4.000	0	102	80	120	
Nitrobenzene	4.07	0.133	4.000	0	102	80	120	
p-Dimethylaminoazobenzene	4.01	0.133	4.000	0	100	80	120	
Pentachlorobenzene	8.64	0.133	8.000	0	108	80	120	
Pentachloronitrobenzene	3.99	0.133	4.000	0	99.8	80	120	
Pentachlorophenol	4.14	0.133	4.000	0	104	80	120	
Phenacetin	4.38	0.133	4.000	0	110	80	120	
Phenanthrene	4.01	0.133	4.000	0	100	80	120	
Phenol	3.50	0.133	4.000	0	87.5	80	120	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100202A

Pronamide	4.06	0.133	4.000	0	102	80	120
Pyrene	4.00	0.133	4.000	0	100	80	120
Pyridine	3.46	0.660	4.000	0	86.5	80	120
Surr: 2,4,6-Tribromophenol	4.53		4.000		113	80	120
Surr: 2-Fluorobiphenyl	4.12		4.000		103	80	120
Surr: 2-Fluorophenol	3.61		4.000		90.2	80	120
Surr: 4-Terphenyl-d14	4.07		4.000		102	80	120
Surr: Nitrobenzene-d5	4.11		4.000		103	80	120
Surr: Phenol-d6	3.54		4.000		88.5	80	120

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

Sample ID:	**LCS-39179**	**Batch ID:**	**39179**	**TestNo:**	**SW8260B**	**Units:**	**mg/Kg**
SampType:	**LCS**	**Run ID:**	**GCMS2_100125A**	**Analysis Date:**	**01/25/10 12:42 PM**	**Prep Date:**	**01/25/10**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.0237	0.00500	0.0232	0	102	75	125			
1,1,1-Trichloroethane	0.0245	0.00500	0.0232	0	106	70	130			
1,1,2,2-Tetrachloroethane	0.0248	0.00500	0.0232	0	107	59	130			
1,1,2-Trichloroethane	0.0247	0.00500	0.0232	0	107	62	125			
1,1-Dichloroethane	0.0244	0.00500	0.0232	0	105	75	125			
1,1-Dichloroethene	0.0252	0.00500	0.0232	0	108	65	135			
1,1-Dichloropropene	0.0251	0.00500	0.0232	0	108	70	135			
1,2,3-Trichlorobenzene	0.0259	0.00500	0.0232	0	112	62	133			
1,2,3-Trichloropropane	0.0256	0.00500	0.0232	0	110	65	130			
1,2,4-Trichlorobenzene	0.0248	0.00500	0.0232	0	107	65	130			
1,2,4-Trimethylbenzene	0.0245	0.00500	0.0232	0	106	65	135			
1,2-Dibromo-3-chloropropane	0.0255	0.00500	0.0232	0	110	49	135			
1,2-Dibromoethane	0.0236	0.00500	0.0232	0	102	70	124			
1,2-Dichlorobenzene	0.0242	0.00500	0.0232	0	105	75	120			
1,2-Dichloroethane	0.0246	0.00500	0.0232	0	106	72	135			
1,2-Dichloropropane	0.0244	0.00500	0.0232	0	105	71	120			
1,3,5-Trimethylbenzene	0.0246	0.00500	0.0232	0	106	65	133			
1,3-Dichlorobenzene	0.0242	0.00500	0.0232	0	104	72	124			
1,3-Dichloropropane	0.0237	0.00500	0.0232	0	102	76	123			
1,4-Dichloro-2-butene	0.0258	0.00500	0.0232	0	111	50	150			
1,4-Dichlorobenzene	0.0245	0.00500	0.0232	0	106	72	125			
2,2-Dichloropropane	0.0254	0.00500	0.0232	0	109	67	134			
2-Butanone	0.0268	0.0150	0.0232	0	116	60	135			
2-Chloroethylvinylether	0.0243	0.0150	0.0232	0	105	50	150			
2-Chlorotoluene	0.0242	0.00500	0.0232	0	104	70	128			
2-Hexanone	0.0256	0.0150	0.0232	0	110	50	145			
4-Chlorotoluene	0.0239	0.00500	0.0232	0	103	75	125			
4-Isopropyltoluene	0.0246	0.00500	0.0232	0	106	75	133			
4-Methyl-2-pentanone	0.0261	0.0150	0.0232	0	113	60	135			
Acetone	0.0301	0.0500	0.0232	0	130	40	141			
Acrylonitrile	0.0524	0.0100	0.0464	0	113	40	160			
Benzene	0.0246	0.00500	0.0232	0	106	75	125			
Bromobenzene	0.0245	0.00500	0.0232	0	106	66	120			
Bromochloromethane	0.0249	0.00500	0.0232	0	107	71	125			
Bromodichloromethane	0.0243	0.00500	0.0232	0	105	72	128			
Bromoform	0.0236	0.00500	0.0232	0	102	66	137			
Bromomethane	0.0232	0.00500	0.0232	0	100	45	141			
Carbon disulfide	0.0221	0.00500	0.0232	0	95.4	50	150			
Carbon tetrachloride	0.0244	0.00500	0.0232	0	105	67	133			
Chlorobenzene	0.0242	0.00500	0.0232	0	104	75	123			
Chloroethane	0.0252	0.00500	0.0232	0	108	41	141			
Chloroform	0.0247	0.00500	0.0232	0	106	72	124			
Chloromethane	0.0248	0.00500	0.0232	0	107	51	129			
cis-1,2-Dichloroethene	0.0245	0.00500	0.0232	0	106	67	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

cis-1,3-Dichloropropene	0.0245	0.00500	0.0232	0	106	72	125
Dibromochloromethane	0.0231	0.00500	0.0232	0	99.7	66	130
Dibromomethane	0.0252	0.00500	0.0232	0	109	75	128
Dichlorodifluoromethane	0.0252	0.00500	0.0232	0	109	80	121
Ethylbenzene	0.0245	0.00500	0.0232	0	105	75	125
Hexachlorobutadiene	0.0243	0.00500	0.0232	0	105	55	140
Iodomethane	0.0249	0.00500	0.0232	0	107	50	150
Isopropylbenzene	0.0239	0.00500	0.0232	0	103	77	129
m,p-Xylene	0.0489	0.00500	0.0464	0	105	80	125
Methyl tert-butyl ether	0.0289	0.00500	0.0232	0	125	68	130
Methylene chloride	0.0261	0.00500	0.0232	0	112	63	137
n-Butylbenzene	0.0246	0.00500	0.0232	0	106	65	138
n-Propylbenzene	0.0246	0.00500	0.0232	0	106	65	135
Naphthalene	0.0268	0.0150	0.0232	0	115	51	125
o-Xylene	0.0236	0.00500	0.0232	0	102	77	125
sec-Butylbenzene	0.0247	0.00500	0.0232	0	106	65	130
Styrene	0.0230	0.00500	0.0232	0	99.4	75	125
tert-Butylbenzene	0.0243	0.00500	0.0232	0	105	65	130
Tetrachloroethene	0.0245	0.00500	0.0232	0	106	67	139
Toluene	0.0247	0.00500	0.0232	0	106	75	125
trans-1,2-Dichloroethene	0.0246	0.00500	0.0232	0	106	66	134
trans-1,3-Dichloropropene	0.0250	0.00500	0.0232	0	108	65	125
Trichloroethene	0.0257	0.00500	0.0232	0	111	77	124
Trichlorofluoromethane	0.0248	0.0150	0.0232	0	107	49	139
Vinyl chloride	0.0254	0.00500	0.0232	0	109	60	125
Surr: 1,2-Dichloroethane-d4	52.8		50.00		106	78	125
Surr: 4-Bromofluorobenzene	48.9		50.00		97.9	85	120
Surr: Dibromofluoromethane	50.7		50.00		101	84	116
Surr: Toluene-d8	47.3		50.00		94.5	85	115

Sample ID:	**MB-39179**	**Batch ID:**	**39179**	**TestNo:**	**SW8260B**	**Units:**	**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**GCMS2_100125A**	**Analysis Date:**	**01/25/10 01:45 PM**	**Prep Date:**	**01/25/10**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	0.00500								
1,1,1-Trichloroethane	ND	0.00500								
1,1,2,2-Tetrachloroethane	ND	0.00500								
1,1,2-Trichloroethane	ND	0.00500								
1,1-Dichloroethane	ND	0.00500								
1,1-Dichloroethene	ND	0.00500								
1,1-Dichloropropene	ND	0.00500								
1,2,3-Trichlorobenzene	ND	0.00500								
1,2,3-Trichloropropane	ND	0.00500								
1,2,4-Trichlorobenzene	ND	0.00500								
1,2,4-Trimethylbenzene	ND	0.00500								
1,2-Dibromo-3-chloropropane	ND	0.00500								
1,2-Dibromoethane	ND	0.00500								
1,2-Dichlorobenzene	ND	0.00500								

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

1,2-Dichloroethane	ND	0.00500
1,2-Dichloropropane	ND	0.00500
1,3,5-Trimethylbenzene	ND	0.00500
1,3-Dichlorobenzene	ND	0.00500
1,3-Dichloropropane	ND	0.00500
1,4-Dichloro-2-butene	ND	0.00500
1,4-Dichlorobenzene	ND	0.00500
2,2-Dichloropropane	ND	0.00500
2-Butanone	ND	0.0150
2-Chloroethylvinylether	ND	0.0150
2-Chlorotoluene	ND	0.00500
2-Hexanone	ND	0.0150
4-Chlorotoluene	ND	0.00500
4-Isopropyltoluene	ND	0.00500
4-Methyl-2-pentanone	ND	0.0150
Acetone	ND	0.0500
Acrylonitrile	ND	0.0100
Benzene	ND	0.00500
Bromobenzene	ND	0.00500
Bromochloromethane	ND	0.00500
Bromodichloromethane	ND	0.00500
Bromoform	ND	0.00500
Bromomethane	ND	0.00500
Carbon disulfide	ND	0.00500
Carbon tetrachloride	ND	0.00500
Chlorobenzene	ND	0.00500
Chloroethane	ND	0.00500
Chloroform	ND	0.00500
Chloromethane	ND	0.00500
cis-1,2-Dichloroethene	ND	0.00500
cis-1,3-Dichloropropene	ND	0.00500
Dibromochloromethane	ND	0.00500
Dibromomethane	ND	0.00500
Dichlorodifluoromethane	ND	0.00500
Ethylbenzene	ND	0.00500
Hexachlorobutadiene	ND	0.00500
Iodomethane	ND	0.00500
Isopropylbenzene	ND	0.00500
m,p-Xylene	ND	0.00500
Methyl tert-butyl ether	ND	0.00500
Methylene chloride	ND	0.00500
n-Butylbenzene	ND	0.00500
n-Propylbenzene	ND	0.00500
Naphthalene	ND	0.0150
o-Xylene	ND	0.00500
sec-Butylbenzene	ND	0.00500
Styrene	ND	0.00500

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

tert-Butylbenzene	ND	0.00500				
Tetrachloroethene	ND	0.00500				
Toluene	ND	0.00500				
trans-1,2-Dichloroethene	ND	0.00500				
trans-1,3-Dichloropropene	ND	0.00500				
Trichloroethene	ND	0.00500				
Trichlorofluoromethane	ND	0.0150				
Vinyl chloride	ND	0.00500				
Surr: 1,2-Dichloroethane-d4	49.7		50.00	99.3	78	125
Surr: 4-Bromofluorobenzene	48.4		50.00	96.7	85	120
Surr: Dibromofluoromethane	50.2		50.00	100	84	116
Surr: Toluene-d8	47.4		50.00	94.8	85	115

Sample ID:	**SYS BL-39179**	**Batch ID:**	**39179**	**TestNo:**	**SW8260B**	**Units:**	**mg/Kg**
SampType:	**MBLK**	**Run ID:**	**GCMS2_100125A**	**Analysis Date:**	**01/26/10 11:13 AM**	**Prep Date:**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	0.00500								
1,1,1-Trichloroethane	ND	0.00500								
1,1,2,2-Tetrachloroethane	ND	0.00500								
1,1,2-Trichloroethane	ND	0.00500								
1,1-Dichloroethane	ND	0.00500								
1,1-Dichloroethene	ND	0.00500								
1,1-Dichloropropene	ND	0.00500								
1,2,3-Trichlorobenzene	ND	0.00500								
1,2,3-Trichloropropane	ND	0.00500								
1,2,4-Trichlorobenzene	ND	0.00500								
1,2,4-Trimethylbenzene	ND	0.00500								
1,2-Dibromo-3-chloropropane	ND	0.00500								
1,2-Dibromoethane	ND	0.00500								
1,2-Dichlorobenzene	ND	0.00500								
1,2-Dichloroethane	ND	0.00500								
1,2-Dichloropropane	ND	0.00500								
1,3,5-Trimethylbenzene	ND	0.00500								
1,3-Dichlorobenzene	ND	0.00500								
1,3-Dichloropropane	ND	0.00500								
1,4-Dichloro-2-butene	ND	0.00500								
1,4-Dichlorobenzene	ND	0.00500								
2,2-Dichloropropane	ND	0.00500								
2-Butanone	ND	0.0150								
2-Chloroethylvinylether	ND	0.0150								
2-Chlorotoluene	ND	0.00500								
2-Hexanone	ND	0.0150								
4-Chlorotoluene	ND	0.00500								
4-Isopropyltoluene	ND	0.00500								
4-Methyl-2-pentanone	ND	0.0150								
Acetone	ND	0.0500								
Acrylonitrile	ND	0.0100								

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

Benzene	ND	0.00500				
Bromobenzene	ND	0.00500				
Bromochloromethane	ND	0.00500				
Bromodichloromethane	ND	0.00500				
Bromoform	ND	0.00500				
Bromomethane	ND	0.00500				
Carbon disulfide	ND	0.00500				
Carbon tetrachloride	ND	0.00500				
Chlorobenzene	ND	0.00500				
Chloroethane	ND	0.00500				
Chloroform	ND	0.00500				
Chloromethane	ND	0.00500				
cis-1,2-Dichloroethene	ND	0.00500				
cis-1,3-Dichloropropene	ND	0.00500				
Dibromochloromethane	ND	0.00500				
Dibromomethane	ND	0.00500				
Dichlorodifluoromethane	ND	0.00500				
Ethylbenzene	ND	0.00500				
Hexachlorobutadiene	ND	0.00500				
Iodomethane	ND	0.00500				
Isopropylbenzene	ND	0.00500				
m,p-Xylene	ND	0.00500				
Methyl tert-butyl ether	ND	0.00500				
Methylene chloride	ND	0.00500				
n-Butylbenzene	ND	0.00500				
n-Propylbenzene	ND	0.00500				
Naphthalene	ND	0.0150				
o-Xylene	ND	0.00500				
sec-Butylbenzene	ND	0.00500				
Styrene	ND	0.00500				
tert-Butylbenzene	ND	0.00500				
Tetrachloroethene	ND	0.00500				
Toluene	ND	0.00500				
trans-1,2-Dichloroethene	ND	0.00500				
trans-1,3-Dichloropropene	ND	0.00500				
Trichloroethene	ND	0.00500				
Trichlorofluoromethane	ND	0.0150				
Vinyl chloride	ND	0.00500				
Surr: 1,2-Dichloroethane-d4	49.7		50.00	99.4	78	125
Surr: 4-Bromofluorobenzene	49.9		50.00	99.8	85	120
Surr: Dibromofluoromethane	50.5		50.00	101	84	116
Surr: Toluene-d8	47.6		50.00	95.2	85	115

Sample ID:	**1001149-14AMS**	**Batch ID:**	**39179**	**TestNo:**	**SW8260B**	**Units:**	**mg/Kg-dry**
SampType:	**MS**	**Run ID:**	**GCMS2_100125A**	**Analysis Date:**	**01/26/10 12:54 PM**	**Prep Date:**	**01/25/10**

Analyte	**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
1,1,1,2-Tetrachloroethane	0.0185	0.00510	0.0237	0	78.2	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

1,1,1-Trichloroethane	0.0202	0.00510	0.0237	0	85.2	70	130	
1,1,2,2-Tetrachloroethane	0.0208	0.00510	0.0237	0	87.8	59	130	
1,1,2-Trichloroethane	0.0199	0.00510	0.0237	0	84.0	62	125	
1,1-Dichloroethane	0.0214	0.00510	0.0237	0	90.4	75	125	
1,1-Dichloroethene	0.0217	0.00510	0.0237	0	91.6	65	135	
1,1-Dichloropropene	0.0199	0.00510	0.0237	0	84.1	70	135	
1,2,3-Trichlorobenzene	0.00895	0.00510	0.0237	0	37.8	62	133	S
1,2,3-Trichloropropane	0.0213	0.00510	0.0237	0	89.9	65	130	
1,2,4-Trichlorobenzene	0.00963	0.00510	0.0237	0	40.7	65	130	S
1,2,4-Trimethylbenzene	0.0151	0.00510	0.0237	0	63.9	65	135	S
1,2-Dibromo-3-chloropropane	0.0194	0.00510	0.0237	0	82.1	49	135	
1,2-Dibromoethane	0.0193	0.00510	0.0237	0	81.5	70	124	
1,2-Dichlorobenzene	0.0152	0.00510	0.0237	0	64.1	75	120	S
1,2-Dichloroethane	0.0207	0.00510	0.0237	0	87.6	72	135	
1,2-Dichloropropane	0.0209	0.00510	0.0237	0	88.4	71	120	
1,3,5-Trimethylbenzene	0.0150	0.00510	0.0237	0	63.3	65	133	S
1,3-Dichlorobenzene	0.0149	0.00510	0.0237	0	63.0	72	124	S
1,3-Dichloropropane	0.0196	0.00510	0.0237	0	82.8	76	123	
1,4-Dichloro-2-butene	0.0208	0.00510	0.0237	0	88.1	50	150	
1,4-Dichlorobenzene	0.0158	0.00510	0.0237	0	66.6	72	125	S
2,2-Dichloropropane	0.0218	0.00510	0.0237	0	92.1	67	134	
2-Butanone	0.0184	0.0153	0.0237	0	77.8	60	135	
2-Chloroethylvinylether	0.0192	0.0153	0.0237	0	81.3	50	150	
2-Chlorotoluene	0.0162	0.00510	0.0237	0	68.4	70	128	S
2-Hexanone	0.0189	0.0153	0.0237	0	79.7	50	145	
4-Chlorotoluene	0.0166	0.00510	0.0237	0	69.9	75	125	S
4-Isopropyltoluene	0.0122	0.00510	0.0237	0	51.6	75	133	S
4-Methyl-2-pentanone	0.0196	0.0153	0.0237	0	82.9	60	135	
Acetone	0.0233	0.0510	0.0237	0	98.3	40	141	
Acrylonitrile	0.0433	0.0102	0.0473	0	91.4	40	160	
Benzene	0.0209	0.00510	0.0237	0	88.4	75	125	
Bromobenzene	0.0192	0.00510	0.0237	0	80.9	66	120	
Bromochloromethane	0.0215	0.00510	0.0237	0	91.0	71	125	
Bromodichloromethane	0.0201	0.00510	0.0237	0	84.8	72	128	
Bromoform	0.0176	0.00510	0.0237	0	74.4	66	137	
Bromomethane	0.0225	0.00510	0.0237	0	95.0	45	141	
Carbon disulfide	0.0185	0.00510	0.0237	0	78.1	50	150	
Carbon tetrachloride	0.0191	0.00510	0.0237	0	80.5	67	133	
Chlorobenzene	0.0185	0.00510	0.0237	0	78.1	75	123	
Chloroethane	0.0238	0.00510	0.0237	0	100	41	141	
Chloroform	0.0214	0.00510	0.0237	0	90.3	72	124	
Chloromethane	0.0219	0.00510	0.0237	0	92.7	51	129	
cis-1,2-Dichloroethene	0.0215	0.00510	0.0237	0	90.9	67	125	
cis-1,3-Dichloropropene	0.0205	0.00510	0.0237	0	86.8	72	125	
Dibromochloromethane	0.0187	0.00510	0.0237	0	78.8	66	130	
Dibromomethane	0.0208	0.00510	0.0237	0	88.1	75	128	
Dichlorodifluoromethane	0.0215	0.00510	0.0237	0	90.8	80	121	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

Ethylbenzene	0.0171	0.00510	0.0237	0	72.1	75	125	S
Hexachlorobutadiene	0.00536	0.00510	0.0237	0	22.6	55	140	S
Iodomethane	0.0216	0.00510	0.0237	0	91.2	50	150	
Isopropylbenzene	0.0141	0.00510	0.0237	0	59.4	77	129	S
m,p-Xylene	0.0341	0.00510	0.0473	0	72.1	80	125	S
Methyl tert-butyl ether	0.0237	0.00510	0.0237	0	100	68	130	
Methylene chloride	0.0221	0.00510	0.0237	0	93.4	63	137	
n-Butylbenzene	0.0108	0.00510	0.0237	0	45.6	65	138	S
n-Propylbenzene	0.0149	0.00510	0.0237	0	63.1	65	135	S
Naphthalene	0.0141	0.0153	0.0237	0	59.4	51	125	
o-Xylene	0.0165	0.00510	0.0237	0	69.9	77	125	S
sec-Butylbenzene	0.0122	0.00510	0.0237	0	51.5	65	130	S
Styrene	0.0164	0.00510	0.0237	0	69.3	75	125	S
tert-Butylbenzene	0.0135	0.00510	0.0237	0	57.1	65	130	S
Tetrachloroethene	0.0161	0.00510	0.0237	0	68.2	67	139	
Toluene	0.0198	0.00510	0.0237	0	83.6	75	125	
trans-1,2-Dichloroethene	0.0215	0.00510	0.0237	0	90.6	66	134	
trans-1,3-Dichloropropene	0.0205	0.00510	0.0237	0	86.7	65	125	
Trichloroethene	0.0204	0.00510	0.0237	0	86.1	77	124	
Trichlorofluoromethane	0.0218	0.0153	0.0237	0	92.2	49	139	
Vinyl chloride	0.0229	0.00510	0.0237	0	96.6	60	125	
Surr: 1,2-Dichloroethane-d4	52.5		51.02		103	78	125	
Surr: 4-Bromofluorobenzene	54.2		51.02		106	85	120	
Surr: Dibromofluoromethane	51.7		51.02		101	84	116	
Surr: Toluene-d8	49.7		51.02		97.5	85	115	

Sample ID:	**1001149-14AMSD**	**Batch ID:**	**39179**	**TestNo:**	**SW8260B**			**Units:**	**mg/Kg-dry**	
SampType:	**MSD**	**Run ID:**	**GCMS2_100125A**	**Analysis Date:**	**01/26/10 04:19 PM**			**Prep Date:**	**01/25/10**	
Analyte		**Result**	**RL**	**SPK value**	**Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPD Limit**	**Qual**
1,1,1,2-Tetrachloroethane		0.0190	0.00522	0.0242	0	78.4	75	125	2.60	30	
1,1,1-Trichloroethane		0.0208	0.00522	0.0242	0	85.7	70	130	2.98	30	
1,1,2,2-Tetrachloroethane		0.0211	0.00522	0.0242	0	87.1	59	130	1.43	30	
1,1,2-Trichloroethane		0.0218	0.00522	0.0242	0	90.0	62	125	9.21	30	
1,1-Dichloroethane		0.0213	0.00522	0.0242	0	87.9	75	125	0.484	30	
1,1-Dichloroethene		0.0216	0.00522	0.0242	0	89.2	65	135	0.348	30	
1,1-Dichloropropene		0.0205	0.00522	0.0242	0	84.7	70	135	3.09	30	
1,2,3-Trichlorobenzene		0.0124	0.00522	0.0242	0	51.0	62	133	32.1	30	SR
1,2,3-Trichloropropane		0.0224	0.00522	0.0242	0	92.5	65	130	5.11	30	
1,2,4-Trichlorobenzene		0.0128	0.00522	0.0242	0	52.9	65	130	28.4	30	S
1,2,4-Trimethylbenzene		0.0168	0.00522	0.0242	0	69.3	65	135	10.4	30	
1,2-Dibromo-3-chloropropane		0.0201	0.00522	0.0242	0	83.1	49	135	3.63	30	
1,2-Dibromoethane		0.0201	0.00522	0.0242	0	83.1	70	124	4.26	30	
1,2-Dichlorobenzene		0.0172	0.00522	0.0242	0	70.9	75	120	12.3	30	S
1,2-Dichloroethane		0.0219	0.00522	0.0242	0	90.3	72	135	5.37	30	
1,2-Dichloropropane		0.0213	0.00522	0.0242	0	87.8	71	120	1.64	30	
1,3,5-Trimethylbenzene		0.0164	0.00522	0.0242	0	67.9	65	133	9.28	30	
1,3-Dichlorobenzene		0.0167	0.00522	0.0242	0	69.1	72	124	11.5	30	S

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

1,3-Dichloropropane	0.0201	0.00522	0.0242	0	83.1	76	123	2.63	30	
1,4-Dichloro-2-butene	0.0213	0.00522	0.0242	0	87.8	50	150	1.98	30	
1,4-Dichlorobenzene	0.0173	0.00522	0.0242	0	71.4	72	125	9.31	30	S
2,2-Dichloropropane	0.0220	0.00522	0.0242	0	90.8	67	134	0.860	30	
2-Butanone	0.0225	0.0157	0.0242	0	93.1	60	135	20.2	30	
2-Chloroethylvinylether	0.0214	0.0157	0.0242	0	88.3	50	150	10.6	30	
2-Chlorotoluene	0.0171	0.00522	0.0242	0	70.6	70	128	5.54	30	
2-Hexanone	0.0209	0.0157	0.0242	0	86.1	50	145	10.0	30	
4-Chlorotoluene	0.0177	0.00522	0.0242	0	73.0	75	125	6.60	30	S
4-Isopropyltoluene	0.0141	0.00522	0.0242	0	58.3	75	133	14.5	30	S
4-Methyl-2-pentanone	0.0220	0.0157	0.0242	0	90.6	60	135	11.2	30	
Acetone	0.0325	0.0522	0.0242	0	134	40	141	33.2	30	R
Acrylonitrile	0.0474	0.0104	0.0242	0	196	40	160	9.20	30	S
Benzene	0.0212	0.00522	0.0242	0	87.5	75	125	1.39	30	
Bromobenzene	0.0191	0.00522	0.0242	0	78.9	66	120	0.268	30	
Bromochloromethane	0.0224	0.00522	0.0242	0	92.4	71	125	3.87	30	
Bromodichloromethane	0.0208	0.00522	0.0242	0	85.9	72	128	3.63	30	
Bromoform	0.0193	0.00522	0.0242	0	79.7	66	137	9.19	30	
Bromomethane	0.0232	0.00522	0.0242	0	95.9	45	141	3.27	30	
Carbon disulfide	0.0188	0.00522	0.0242	0	77.6	50	150	1.71	30	
Carbon tetrachloride	0.0199	0.00522	0.0242	0	82.3	67	133	4.54	30	
Chlorobenzene	0.0194	0.00522	0.0242	0	80.3	75	123	4.99	30	
Chloroethane	0.0231	0.00522	0.0242	0	95.3	41	141	2.92	30	
Chloroform	0.0209	0.00522	0.0242	0	86.3	72	124	2.12	30	
Chloromethane	0.0217	0.00522	0.0242	0	89.6	51	129	1.04	30	
cis-1,2-Dichloroethene	0.0210	0.00522	0.0242	0	86.6	67	125	2.59	30	
cis-1,3-Dichloropropene	0.0213	0.00522	0.0242	0	87.8	72	125	3.46	30	
Dibromochloromethane	0.0191	0.00522	0.0242	0	78.9	66	130	2.49	30	
Dibromomethane	0.0221	0.00522	0.0242	0	91.2	75	128	5.83	30	
Dichlorodifluoromethane	0.0214	0.00522	0.0242	0	88.5	80	121	0.275	30	
Ethylbenzene	0.0185	0.00522	0.0242	0	76.5	75	125	8.24	30	
Hexachlorobutadiene	0.00797	0.00522	0.0242	0	32.9	55	140	39.2	30	SR
Iodomethane	0.0208	0.00522	0.0242	0	85.8	50	150	3.81	30	
Isopropylbenzene	0.0164	0.00522	0.0242	0	67.5	77	129	15.2	30	S
m,p-Xylene	0.0373	0.00522	0.0485	0	77.0	80	125	8.94	30	S
Methyl tert-butyl ether	0.0249	0.00522	0.0242	0	103	68	130	5.21	30	
Methylene chloride	0.0225	0.00522	0.0242	0	92.7	63	137	1.53	30	
n-Butylbenzene	0.0127	0.00522	0.0242	0	52.3	65	138	16.0	30	S
n-Propylbenzene	0.0165	0.00522	0.0242	0	68.1	65	135	9.87	30	
Naphthalene	0.0164	0.0157	0.0242	0	67.9	51	125	15.7	30	
o-Xylene	0.0182	0.00522	0.0242	0	75.0	77	125	9.34	30	S
sec-Butylbenzene	0.0141	0.00522	0.0242	0	58.1	65	130	14.3	30	S
Styrene	0.0178	0.00522	0.0242	0	73.3	75	125	7.88	30	S
tert-Butylbenzene	0.0150	0.00522	0.0242	0	62.1	65	130	10.7	30	S
Tetrachloroethene	0.0178	0.00522	0.0242	0	73.7	67	139	10.0	30	
Toluene	0.0208	0.00522	0.0242	0	85.9	75	125	5.02	30	
trans-1,2-Dichloroethene	0.0214	0.00522	0.0242	0	88.5	66	134	0.085	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

trans-1,3-Dichloropropene	0.0217	0.00522	0.0242	0	89.6	65	125	5.65	30
Trichloroethene	0.0216	0.00522	0.0242	0	89.0	77	124	5.57	30
Trichlorofluoromethane	0.0221	0.0157	0.0242	0	91.0	49	139	1.10	30
Vinyl chloride	0.0222	0.00522	0.0242	0	91.6	60	125	3.04	30
Surr: 1,2-Dichloroethane-d4	57.8		52.22		111	78	125	0	0
Surr: 4-Bromofluorobenzene	52.8		52.22		101	85	120	0	0
Surr: Dibromofluoromethane	54.9		52.22		105	84	116	0	0
Surr: Toluene-d8	49.3		52.22		94.3	85	115	0	0

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

Sample ID:	**ICV-100125**	**Batch ID:**	**R47494**	**TestNo:**	**SW8260B**	**Units:**	**mg/Kg**
SampType:	**ICV**	**Run ID:**	**GCMS2_100125A**	**Analysis Date:**	**01/25/10 12:09 PM**	**Prep Date:**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.0461	0.00500	0.0464	0	99.3	80	120			
1,1,1-Trichloroethane	0.0490	0.00500	0.0464	0	106	80	120			
1,1,2,2-Tetrachloroethane	0.0463	0.00500	0.0464	0	99.8	80	120			
1,1,2-Trichloroethane	0.0479	0.00500	0.0464	0	103	80	120			
1,1-Dichloroethane	0.0486	0.00500	0.0464	0	105	80	120			
1,1-Dichloroethene	0.0493	0.00500	0.0464	0	106	80	120			
1,1-Dichloropropene	0.0488	0.00500	0.0464	0	105	80	120			
1,2,3-Trichlorobenzene	0.0472	0.00500	0.0464	0	102	80	120			
1,2,3-Trichloropropane	0.0463	0.00500	0.0464	0	99.8	80	120			
1,2,4-Trichlorobenzene	0.0476	0.00500	0.0464	0	102	80	120			
1,2,4-Trimethylbenzene	0.0472	0.00500	0.0464	0	102	80	120			
1,2-Dibromo-3-chloropropane	0.0458	0.00500	0.0464	0	98.8	80	120			
1,2-Dibromoethane	0.0458	0.00500	0.0464	0	98.6	80	120			
1,2-Dichlorobenzene	0.0457	0.00500	0.0464	0	98.6	80	120			
1,2-Dichloroethane	0.0483	0.00500	0.0464	0	104	80	120			
1,2-Dichloropropane	0.0478	0.00500	0.0464	0	103	80	120			
1,3,5-Trimethylbenzene	0.0469	0.00500	0.0464	0	101	80	120			
1,3-Dichlorobenzene	0.0460	0.00500	0.0464	0	99.2	80	120			
1,3-Dichloropropane	0.0454	0.00500	0.0464	0	97.8	80	120			
1,4-Dichloro-2-butene	0.0485	0.00500	0.0464	0	105	80	120			
1,4-Dichlorobenzene	0.0460	0.00500	0.0464	0	99.2	80	120			
2,2-Dichloropropane	0.0513	0.00500	0.0464	0	111	80	120			
2-Butanone	0.0480	0.0150	0.0464	0	103	80	120			
2-Chloroethylvinylether	0.0479	0.0150	0.0464	0	103	80	120			
2-Chlorotoluene	0.0459	0.00500	0.0464	0	98.8	80	120			
2-Hexanone	0.0473	0.0150	0.0464	0	102	80	120			
4-Chlorotoluene	0.0463	0.00500	0.0464	0	99.7	80	120			
4-Isopropyltoluene	0.0473	0.00500	0.0464	0	102	80	120			
4-Methyl-2-pentanone	0.0480	0.0150	0.0464	0	103	80	120			
Acetone	0.0565	0.0500	0.0464	0	122	80	120			S
Acrylonitrile	0.0995	0.0100	0.0928	0	107	80	120			
Benzene	0.0478	0.00500	0.0464	0	103	80	120			
Bromobenzene	0.0467	0.00500	0.0464	0	101	80	120			
Bromochloromethane	0.0491	0.00500	0.0464	0	106	80	120			
Bromodichloromethane	0.0474	0.00500	0.0464	0	102	80	120			
Bromoform	0.0471	0.00500	0.0464	0	101	80	120			
Bromomethane	0.0473	0.00500	0.0464	0	102	80	120			
Carbon disulfide	0.0440	0.00500	0.0464	0	94.8	80	120			
Carbon tetrachloride	0.0485	0.00500	0.0464	0	105	80	120			
Chlorobenzene	0.0475	0.00500	0.0464	0	102	80	120			
Chloroethane	0.0492	0.00500	0.0464	0	106	80	120			
Chloroform	0.0480	0.00500	0.0464	0	103	80	120			
Chloromethane	0.0487	0.00500	0.0464	0	105	80	120			
cis-1,2-Dichloroethene	0.0489	0.00500	0.0464	0	105	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

cis-1,3-Dichloropropene	0.0486	0.00500	0.0464	0	105	80	120
Dibromochloromethane	0.0456	0.00500	0.0464	0	98.2	80	120
Dibromomethane	0.0484	0.00500	0.0464	0	104	80	120
Dichlorodifluoromethane	0.0498	0.00500	0.0464	0	107	80	120
Ethylbenzene	0.0476	0.00500	0.0464	0	103	80	120
Hexachlorobutadiene	0.0464	0.00500	0.0464	0	100	80	120
Iodomethane	0.0498	0.00500	0.0464	0	107	80	120
Isopropylbenzene	0.0466	0.00500	0.0464	0	100	80	120
m,p-Xylene	0.0953	0.00500	0.0928	0	103	80	120
Methyl tert-butyl ether	0.0554	0.00500	0.0464	0	119	80	120
Methylene chloride	0.0501	0.00500	0.0464	0	108	80	120
n-Butylbenzene	0.0476	0.00500	0.0464	0	103	80	120
n-Propylbenzene	0.0471	0.00500	0.0464	0	102	80	120
Naphthalene	0.0476	0.0150	0.0464	0	103	80	120
o-Xylene	0.0471	0.00500	0.0464	0	101	80	120
sec-Butylbenzene	0.0464	0.00500	0.0464	0	99.9	80	120
Styrene	0.0462	0.00500	0.0464	0	99.6	80	120
tert-Butylbenzene	0.0461	0.00500	0.0464	0	99.4	80	120
Tetrachloroethene	0.0474	0.00500	0.0464	0	102	80	120
Toluene	0.0492	0.00500	0.0464	0	106	80	120
trans-1,2-Dichloroethene	0.0485	0.00500	0.0464	0	105	80	120
trans-1,3-Dichloropropene	0.0494	0.00500	0.0464	0	106	80	120
Trichloroethene	0.0494	0.00500	0.0464	0	107	80	120
Trichlorofluoromethane	0.0497	0.0150	0.0464	0	107	80	120
Vinyl chloride	0.0499	0.00500	0.0464	0	108	80	120
Surr: 1,2-Dichloroethane-d4	54.8		50.00		110	78	125
Surr: 4-Bromofluorobenzene	48.3		50.00		96.6	85	120
Surr: Dibromofluoromethane	51.0		50.00		102	84	116
Surr: Toluene-d8	47.9		50.00		95.7	85	115

Sample ID:	**ICV-100126**	**Batch ID:**	**R47494**	**TestNo:**	**SW8260B**	**Units:**	**mg/Kg**
SampType:	**ICV**	**Run ID:**	**GCMS2_100125A**	**Analysis Date:**	**01/26/10 10:05 AM**	**Prep Date:**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.0468	0.00500	0.0464	0	101	80	120			
1,1,1-Trichloroethane	0.0499	0.00500	0.0464	0	107	80	120			
1,1,2,2-Tetrachloroethane	0.0449	0.00500	0.0464	0	96.8	80	120			
1,1,2-Trichloroethane	0.0485	0.00500	0.0464	0	104	80	120			
1,1-Dichloroethane	0.0493	0.00500	0.0464	0	106	80	120			
1,1-Dichloroethene	0.0499	0.00500	0.0464	0	107	80	120			
1,1-Dichloropropene	0.0500	0.00500	0.0464	0	108	80	120			
1,2,3-Trichlorobenzene	0.0458	0.00500	0.0464	0	98.7	80	120			
1,2,3-Trichloropropane	0.0466	0.00500	0.0464	0	100	80	120			
1,2,4-Trichlorobenzene	0.0472	0.00500	0.0464	0	102	80	120			
1,2,4-Trimethylbenzene	0.0479	0.00500	0.0464	0	103	80	120			
1,2-Dibromo-3-chloropropane	0.0464	0.00500	0.0464	0	100	80	120			
1,2-Dibromoethane	0.0458	0.00500	0.0464	0	98.8	80	120			
1,2-Dichlorobenzene	0.0461	0.00500	0.0464	0	99.3	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

1,2-Dichloroethane	0.0496	0.00500	0.0464	0	107	80	120	
1,2-Dichloropropane	0.0483	0.00500	0.0464	0	104	80	120	
1,3,5-Trimethylbenzene	0.0480	0.00500	0.0464	0	103	80	120	
1,3-Dichlorobenzene	0.0470	0.00500	0.0464	0	101	80	120	
1,3-Dichloropropane	0.0456	0.00500	0.0464	0	98.3	80	120	
1,4-Dichloro-2-butene	0.0492	0.00500	0.0464	0	106	80	120	
1,4-Dichlorobenzene	0.0472	0.00500	0.0464	0	102	80	120	
2,2-Dichloropropane	0.0526	0.00500	0.0464	0	113	80	120	
2-Butanone	0.0449	0.0150	0.0464	0	96.7	80	120	
2-Chloroethylvinylether	0.0467	0.0150	0.0464	0	101	80	120	
2-Chlorotoluene	0.0463	0.00500	0.0464	0	99.9	80	120	
2-Hexanone	0.0444	0.0150	0.0464	0	95.8	80	120	
4-Chlorotoluene	0.0473	0.00500	0.0464	0	102	80	120	
4-Isopropyltoluene	0.0479	0.00500	0.0464	0	103	80	120	
4-Methyl-2-pentanone	0.0451	0.0150	0.0464	0	97.2	80	120	
Acetone	0.0595	0.0500	0.0464	0	128	80	120	S
Acrylonitrile	0.0949	0.0100	0.0928	0	102	80	120	
Benzene	0.0486	0.00500	0.0464	0	105	80	120	
Bromobenzene	0.0468	0.00500	0.0464	0	101	80	120	
Bromochloromethane	0.0493	0.00500	0.0464	0	106	80	120	
Bromodichloromethane	0.0490	0.00500	0.0464	0	106	80	120	
Bromoform	0.0468	0.00500	0.0464	0	101	80	120	
Bromomethane	0.0471	0.00500	0.0464	0	102	80	120	
Carbon disulfide	0.0435	0.00500	0.0464	0	93.7	80	120	
Carbon tetrachloride	0.0499	0.00500	0.0464	0	108	80	120	
Chlorobenzene	0.0477	0.00500	0.0464	0	103	80	120	
Chloroethane	0.0502	0.00500	0.0464	0	108	80	120	
Chloroform	0.0486	0.00500	0.0464	0	105	80	120	
Chloromethane	0.0486	0.00500	0.0464	0	105	80	120	
cis-1,2-Dichloroethene	0.0483	0.00500	0.0464	0	104	80	120	
cis-1,3-Dichloropropene	0.0485	0.00500	0.0464	0	104	80	120	
Dibromochloromethane	0.0460	0.00500	0.0464	0	99.1	80	120	
Dibromomethane	0.0478	0.00500	0.0464	0	103	80	120	
Dichlorodifluoromethane	0.0513	0.00500	0.0464	0	111	80	120	
Ethylbenzene	0.0474	0.00500	0.0464	0	102	80	120	
Hexachlorobutadiene	0.0489	0.00500	0.0464	0	105	80	120	
Iodomethane	0.0487	0.00500	0.0464	0	105	80	120	
Isopropylbenzene	0.0476	0.00500	0.0464	0	103	80	120	
m,p-Xylene	0.0973	0.00500	0.0928	0	105	80	120	
Methyl tert-butyl ether	0.0554	0.00500	0.0464	0	119	80	120	
Methylene chloride	0.0507	0.00500	0.0464	0	109	80	120	
n-Butylbenzene	0.0474	0.00500	0.0464	0	102	80	120	
n-Propylbenzene	0.0472	0.00500	0.0464	0	102	80	120	
Naphthalene	0.0443	0.0150	0.0464	0	95.5	80	120	
o-Xylene	0.0467	0.00500	0.0464	0	101	80	120	
sec-Butylbenzene	0.0475	0.00500	0.0464	0	102	80	120	
Styrene	0.0460	0.00500	0.0464	0	99.1	80	120	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS2_100125A

tert-Butylbenzene	0.0475	0.00500	0.0464	0	102	80	120
Tetrachloroethene	0.0482	0.00500	0.0464	0	104	80	120
Toluene	0.0499	0.00500	0.0464	0	108	80	120
trans-1,2-Dichloroethene	0.0492	0.00500	0.0464	0	106	80	120
trans-1,3-Dichloropropene	0.0498	0.00500	0.0464	0	107	80	120
Trichloroethene	0.0500	0.00500	0.0464	0	108	80	120
Trichlorofluoromethane	0.0518	0.0150	0.0464	0	112	80	120
Vinyl chloride	0.0511	0.00500	0.0464	0	110	80	120
Surr: 1,2-Dichloroethane-d4	55.5		50.00		111	78	125
Surr: 4-Bromofluorobenzene	49.0		50.00		98.1	85	120
Surr: Dibromofluoromethane	50.6		50.00		101	84	116
Surr: Toluene-d8	48.3		50.00		96.6	85	115

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_100121A

Sample ID:	**1001116-10B-DUP**	**Batch ID:**	**39117**	**TestNo:**	**D2216**	**Units:**	**WT%**
SampType:	**DUP**	**Run ID:**	**PMOIST_100121A**	**Analysis Date:**	**01/21/10 03:00 PM**	**Prep Date:**	**01/21/10**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Percent Moisture	3.31	0	0	3.333				0.786	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1001116
Project: Main Post POL

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_100121B

Sample ID:	**1001116-32B-DUP**	**Batch ID:**	**39124**	**TestNo:**	**D2216**	**Units:**	**WT%**
SampType:	**DUP**	**Run ID:**	**PMOIST_100121B**	**Analysis Date:**	**01/21/10 03:15 PM**	**Prep Date:**	**01/21/10**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Percent Moisture	7.90	0	0	7.899				0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

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Main Post POL RFI

Data Review

WHITE SANDS MISSLE RANGE, NEW MEXICO

Volatiles, Semivolatiles, GRO, and Metals Analyses

SDG #1001116

Analyses Performed By:
DHL Analytical, Inc.
Round Rock, Texas

Report #12011R
Review Level: Tier II
Project: GP08WSMR.OODM.OC110

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1001116 for samples collected in association with the White Sands Missile Range-Main Post POL RFI Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	BTEX	GRO	MET
MNPA-MPOL-FB-001-0110	1001116-08	Water	1/18/2010				X	X	
MNPA-MPOL-FB-002-0110	1001116-31	Water	1/19/2010				X	X	
MNPA-MPOL-RB-001-0110	1001116-15	Water	1/18/2010				X	X	X
MNPA-MPOL-RB-002-0110	1001116-33	Water	1/19/2010				X	X	X
MNPA-MPOL-SB-001-(14.0-15.0)	1001116-03	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-001-(19.0-20.0)	1001116-04	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-001-(5.0-6.0)	1001116-01	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-001-(9.0-10.0)	1001116-02	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-002-(14.0-15.0)	1001116-07	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-002-(19.0-20.0)	1001116-09	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-002-(4.0-5.0)	1001116-05	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-002-(9.0-10.0)	1001116-05	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-003-(14.0-15.0)	1001116-13	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-003-(19.0-20.0)	1001116-14	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-003-(4.0-5.0)	1001116-11	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-003-(9.0-10.0)	1001116-12	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-004-(14.0-15.0)	1001116-19	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-004-(19.0-20.0)	1001116-20	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-004-(4.0-5.0)	1001116-17	Soil	1/18/2010				X	X	X
MNPA-MPOL-SB-004-(9.0-10.0)	1001116-18	Soil	1/18/2010				X	X	X

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	BTEX	GRO	MET
MNPA-MPOL-SB-005-(14.0-15.0)	1001116-24	Soil	1/19/2010				X	X	X
MNPA-MPOL-SB-005-(19.0-20.0)	1001116-25	Soil	1/19/2010				X	X	X
MNPA-MPOL-SB-005-(4.0-5.0)	1001116-22	Soil	1/19/2010				X	X	X
MNPA-MPOL-SB-005-(9.0-10.0)	1001116-23	Soil	1/19/2010				X	X	X
MNPA-MPOL-SB-006-(0.5-1.0)	1001116-32	Soil	1/19/2010				X	X	X
MNPA-MPOL-SB-006-(14.0-15.0)	1001116-28	Soil	1/19/2010				X	X	X
MNPA-MPOL-SB-006-(19.0-20.0)	1001116-29	Soil	1/19/2010				X	X	X
MNPA-MPOL-SB-006-(3.0-4.0)	1001116-26	Soil	1/19/2010		X	X	X	X	X
MNPA-MPOL-SB-006-(9.0-10.0)	1001116-27	Soil	1/19/2010				X	X	X
MNPA-MPOL-SB-102-(19.0-20.0)	1001116-10	Soil	1/18/2010	MNPA-MPOL-SB-002-(19.0-20.0)			X	X	X
MNPA-MPOL-SB-104-(19.0-20.0)	1001116-21	Soil	1/18/2010	MNPA-MPOL-SB-004-(19.0-20.0)			X	X	X
MNPA-MPOL-SB-106-(19.0-20.0)	1001116-30	Soil	1/19/2010	MNPA-MPOL-SB-006-(19.0-20.0)			X	X	X
MNPA-MPOL-TB-001-0110	1001116-34	Water	1/18/2010				X		
MNPA-MPOL-TB-002-0110	1001116-16	Water	1/18/2010				X		

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B, 8270C, 8021B, and 8015. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999/January 2005.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8021B	Water	14 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to 4°C±2°C.

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination with which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 70% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MNPA-MPOL-SB-002-(19.0-20.0)/ MNPA-MPOL-SB-102-(19.0-20.0)	All compounds	ND	ND	AC
MNPA-MPOL-SB-004-(19.0-20.0)/ MNPA-MPOL-SB-104-(19.0-20.0)	All compounds	ND	ND	AC
MNPA-MPOL-SB-006-(19.0-20.0)/ MNPA-MPOL-SB-106-(19.0-20.0)	All compounds	ND	ND	AC

AC Acceptable
ND Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

Compounds are identified on the GC by laboratory personnel using the analytes relative retention time. These identifications were not reviewed by the data validator.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8021B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

%R Percent recovery
RPD Relative percent difference

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260B	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to 4°C±2°C.

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination with which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD analysis was not performed on a sample location within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 70% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not performed on the sample analyzed by method 8260B.

7. Compound Identification

Compounds are identified on the GC/MS by laboratory personnel using the analytes relative retention time and ion spectra. These identifications were not reviewed by the data validator.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks					X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS)					X
Matrix Spike Duplicate(MSD)					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor					X
Moisture Content		X		X	

%R Percent recovery
RPD Relative percent difference

SEMI-VOLATILE VOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4°C ± 2°C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4°C ± 2°C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
MNPA-MPOL-SB-006-(3.0-4.0)	2-Fluorophenol	<LL but >10%
	Phenol-d5	AC
	Nitrobenzene-d5	AC
	2-Flurobiphenyl	AC
	2,4,6-Tribromophenol	AC

Sample Locations	Surrogate	Recovery
	Terphenyl-d14	AC

Since only one surrogate exhibited a recovery outside of the laboratory-established acceptance limits no qualification of data was warranted.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD analysis was not performed on a sample location within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
MNPA-MPOL-SB-006-(3.0-4.0)	Dimethylphenylamine	<LL but >10%

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 100% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on the sample analyzed by method 8270C.

7. Compound Identification

Compounds are identified on the GC/MS by laboratory personnel using the analytes relative retention time and ion spectra. These identifications were not reviewed by the data validator.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270C	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X	X		
Laboratory Control Sample Duplicate (LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor					X
Moisture Content		X		X	

%R Percent recovery
RPD Relative percent difference

GAS RANGE ORGANICS (GRO) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8015	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to 4°C±2°C
	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to 4°C±2°C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the reporting limit (RL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample (LCS) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 70% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MNPA-MPOL-SB-002-(19.0-20.0)/ MNPA-MPOL-SB-102-(19.0-20.0)	GRO	ND	ND	AC
MNPA-MPOL-SB-004-(19.0-20.0)/ MNPA-MPOL-SB-104-(19.0-20.0)	GRO	ND	ND	AC
MNPA-MPOL-SB-006-(19.0-20.0)/ MNPA-MPOL-SB-106-(19.0-20.0)	GRO	ND	ND	AC

AC Acceptable
ND Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

Compounds are identified on the GC by laboratory personnel using the analytes relative retention time. These identifications were not reviewed by the data validator.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GRO

GRO; SW-846 8015	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 6020. Data were reviewed in accordance with USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review of July 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

  B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

- Quantitation (Q) Qualifiers

  E The reported value is estimated due to the presence of interference.

  N Spiked sample recovery is not within control limits.

  * Duplicate analysis is not within control limits.

- Validation Qualifiers

  J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6020	Soil	180 days from collection to analysis	Cooled @ 4 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory qualifier "N" will be removed.

The MS analyses exhibited recoveries within the control limits.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

The laboratory duplicate sample results exhibited RPD within the control limit.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 70% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
MNPA-MPOL-SB-002-(19.0-20.0)/ MNPA-MPOL-SB-102-(19.0-20.0)	Lead	6.97	8.51	19.9%
MNPA-MPOL-SB-004-(19.0-20.0)/ MNPA-MPOL-SB-104-(19.0-20.0)	Lead	10.7	10.1	5.8%
MNPA-MPOL-SB-006-(19.0-20.0)/ MNPA-MPOL-SB-106-(19.0-20.0)	Lead	5.96	6.31	5.7%

AC Acceptable
ND Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS/LCSD analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS/LCSD analysis exhibited recoveries within and RPD between the control limits.

6. Furnace Analysis QC

No furnace analyses were performed on the samples.

7. Method of Standard Additions (MSA)

No samples were analyzed following the method of standard additions.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METALS

METALS; SW-846 6020	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP) Atomic Absorption – Manual Cold Vapor (CV)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks					X
B. Method Blanks		X		X	
C. Equipment/Field Blanks					X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate (LCSD)		X		X	
LCS/LCSD RPD		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Reporting Limit Verification		X		X	
Moisture Content		X		X	

%R Percent recovery
RPD Relative percent difference

Jeffrey L. Davin

VALIDATION PERFORMED BY:

SIGNATURE:

DATE: April 27, 2010

PEER REVIEW: Dennis Capria

DATE: May 7, 2010

CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-001-(5.0-6.0)
Lab ID: 1001116-01
Collection Date: 01/18/10 11:35 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.104	0.208		mg/Kg-dry	1	01/25/10 06:00 PM
Surr: Tetrachlorethene	107	0	70 - 134		%REC	1	01/25/10 06:00 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00313	0.00521		mg/Kg-dry	1	01/21/10 11:30 AM
Toluene	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 11:30 AM
Ethylbenzene	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 11:30 AM
Xylenes, Total	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 11:30 AM
Surr: Tetrachloroethene	81.5	0	79 - 135		%REC	1	01/21/10 11:30 AM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	10.4	0.106	0.318		mg/Kg-dry	5	02/02/10 05:04 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	7.53	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-001-(9.0-10.0)
Lab ID: 1001116-02
Collection Date: 01/18/10 11:46 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.101	0.203		mg/Kg-dry	1	01/25/10 06:23 PM
Surr: Tetrachlorethene	106	0	70 - 134		%REC	1	01/25/10 06:23 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00312	0.00519		mg/Kg-dry	1	01/21/10 11:54 AM
Toluene	ND	0.00519	0.0156		mg/Kg-dry	1	01/21/10 11:54 AM
Ethylbenzene	ND	0.00519	0.0156		mg/Kg-dry	1	01/21/10 11:54 AM
Xylenes, Total	ND	0.00519	0.0156		mg/Kg-dry	1	01/21/10 11:54 AM
Surr: Tetrachloroethene	80.8	0	79 - 135		%REC	1	01/21/10 11:54 AM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	9.24	0.0994	0.298		mg/Kg-dry	5	02/02/10 05:10 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	6.88	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-001-(14.0-15.0)
Lab ID: 1001116-03
Collection Date: 01/18/10 12:05 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.101	0.203		mg/Kg-dry	1	01/25/10 06:47 PM
Surr: Tetrachlorethene	103	0	70 - 134		%REC	1	01/25/10 06:47 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00286	0.00476		mg/Kg-dry	1	01/21/10 12:18 PM
Toluene	ND	0.00476	0.0143		mg/Kg-dry	1	01/21/10 12:18 PM
Ethylbenzene	ND	0.00476	0.0143		mg/Kg-dry	1	01/21/10 12:18 PM
Xylenes, Total	ND	0.00476	0.0143		mg/Kg-dry	1	01/21/10 12:18 PM
Surr: Tetrachloroethene	79.8	0	79 - 135		%REC	1	01/21/10 12:18 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	5.08	0.0958	0.287		mg/Kg-dry	5	02/02/10 05:15 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	2.44	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-001-(19.0-20.0)
Lab ID: 1001116-04
Collection Date: 01/18/10 12:20 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.102	0.203		mg/Kg-dry	1	01/25/10 07:10 PM
Surr: Tetrachlorethene	103	0	70 - 134		%REC	1	01/25/10 07:10 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00295	0.00491		mg/Kg-dry	1	01/21/10 01:31 PM
Toluene	ND	0.00491	0.0147		mg/Kg-dry	1	01/21/10 01:31 PM
Ethylbenzene	ND	0.00491	0.0147		mg/Kg-dry	1	01/21/10 01:31 PM
Xylenes, Total	ND	0.00491	0.0147		mg/Kg-dry	1	01/21/10 01:31 PM
Surr: Tetrachloroethene	83.1	0	79 - 135		%REC	1	01/21/10 01:31 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	13.1	0.101	0.303		mg/Kg-dry	5	02/02/10 05:20 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	5.71	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-002-(4.0-5.0)
Lab ID: 1001116-05
Collection Date: 01/18/10 02:05 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	1.04	0.102	0.205		mg/Kg-dry	1	01/26/10 11:43 AM
Surr: Tetrachlorethene	95.0	0	70 - 134		%REC	1	01/26/10 11:43 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00313	0.00521		mg/Kg-dry	1	01/21/10 01:56 PM
Toluene	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 01:56 PM
Ethylbenzene	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 01:56 PM
Xylenes, Total	ND	0.00521	0.0156		mg/Kg-dry	1	01/21/10 01:56 PM
Surr: Tetrachloroethene	85.9	0	79 - 135		%REC	1	01/21/10 01:56 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	47.5	0.0994	0.298		mg/Kg-dry	5	02/02/10 05:26 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	6.80	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-002-(9.0-10.0)
Lab ID: 1001116-06
Collection Date: 01/18/10 02:18 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.103	0.205		mg/Kg-dry	1	01/25/10 07:33 PM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	01/25/10 07:33 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00293	0.00488		mg/Kg-dry	1	01/21/10 02:21 PM
Toluene	ND	0.00488	0.0146		mg/Kg-dry	1	01/21/10 02:21 PM
Ethylbenzene	ND	0.00488	0.0146		mg/Kg-dry	1	01/21/10 02:21 PM
Xylenes, Total	ND	0.00488	0.0146		mg/Kg-dry	1	01/21/10 02:21 PM
Surr: Tetrachloroethene	84.2	0	79 - 135		%REC	1	01/21/10 02:21 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	6.69	0.0920	0.276		mg/Kg-dry	5	02/02/10 05:31 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	5.45	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-002-(14.0-15.0)
Lab ID: 1001116-07
Collection Date: 01/18/10 02:28 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0999	0.200		mg/Kg-dry	1	01/25/10 07:56 PM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	01/25/10 07:56 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00303	0.00505		mg/Kg-dry	1	01/21/10 02:44 PM
Toluene	ND	0.00505	0.0151		mg/Kg-dry	1	01/21/10 02:44 PM
Ethylbenzene	ND	0.00505	0.0151		mg/Kg-dry	1	01/21/10 02:44 PM
Xylenes, Total	ND	0.00505	0.0151		mg/Kg-dry	1	01/21/10 02:44 PM
Surr: Tetrachloroethene	84.6	0	79 - 135		%REC	1	01/21/10 02:44 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	7.60	0.101	0.303		mg/Kg-dry	5	02/02/10 05:37 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	2.84	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-FB-001-0110
Lab ID: 1001116-08
Collection Date: 01/18/10 02:30 PM
Matrix: Field Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0600	0.100		mg/L	1	01/28/10 04:21 PM
Surr: Tetrachlorethene	108	0	74 - 138		%REC	1	01/28/10 04:21 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/22/10 11:00 PM
Toluene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:00 PM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:00 PM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/22/10 11:00 PM
Surr: a,a,a-Trifluorotoluene	97.3	0	87 - 113		%REC	1	01/22/10 11:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-002-(19.0-20.0)
Lab ID: 1001116-09
Collection Date: 01/18/10 02:40 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0979	0.196		mg/Kg-dry	1	01/25/10 08:19 PM
Surr: Tetrachlorethene	107	0	70 - 134		%REC	1	01/25/10 08:19 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00290	0.00484		mg/Kg-dry	1	01/21/10 03:08 PM
Toluene	ND	0.00484	0.0145		mg/Kg-dry	1	01/21/10 03:08 PM
Ethylbenzene	ND	0.00484	0.0145		mg/Kg-dry	1	01/21/10 03:08 PM
Xylenes, Total	ND	0.00484	0.0145		mg/Kg-dry	1	01/21/10 03:08 PM
Surr: Tetrachloroethene	92.6	0	79 - 135		%REC	1	01/21/10 03:08 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	6.97	0.0930	0.279		mg/Kg-dry	5	02/02/10 05:42 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	3.12	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-102-(19.0-20.0)
Lab ID: 1001116-10
Collection Date: 01/18/10 02:40 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0985	0.197		mg/Kg-dry	1	01/25/10 08:41 PM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/25/10 08:41 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00306	0.00510		mg/Kg-dry	1	01/21/10 03:33 PM
Toluene	ND	0.00510	0.0153		mg/Kg-dry	1	01/21/10 03:33 PM
Ethylbenzene	ND	0.00510	0.0153		mg/Kg-dry	1	01/21/10 03:33 PM
Xylenes, Total	ND	0.00510	0.0153		mg/Kg-dry	1	01/21/10 03:33 PM
Surr: Tetrachloroethene	85.1	0	79 - 135		%REC	1	01/21/10 03:33 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	8.51	0.0967	0.290		mg/Kg-dry	5	02/02/10 05:48 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	3.33	0	0		WT%	1	01/21/10 03:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-003-(4.0-5.0)
Lab ID: 1001116-11
Collection Date: 01/18/10 03:17 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.108	0.216		mg/Kg-dry	1	01/25/10 09:04 PM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/25/10 09:04 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00299	0.00498		mg/Kg-dry	1	01/21/10 03:59 PM
Toluene	ND	0.00498	0.0149		mg/Kg-dry	1	01/21/10 03:59 PM
Ethylbenzene	ND	0.00498	0.0149		mg/Kg-dry	1	01/21/10 03:59 PM
Xylenes, Total	ND	0.00498	0.0149		mg/Kg-dry	1	01/21/10 03:59 PM
Surr: Tetrachloroethene	88.3	0	79 - 135		%REC	1	01/21/10 03:59 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	18.4	0.100	0.301		mg/Kg-dry	5	02/02/10 06:16 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	7.84	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-003-(9.0-10.0)
Lab ID: 1001116-12
Collection Date: 01/18/10 03:25 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0952	0.190		mg/Kg-dry	1	01/25/10 09:28 PM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/25/10 09:28 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00290	0.00483		mg/Kg-dry	1	01/21/10 04:47 PM
Toluene	ND	0.00483	0.0145		mg/Kg-dry	1	01/21/10 04:47 PM
Ethylbenzene	ND	0.00483	0.0145		mg/Kg-dry	1	01/21/10 04:47 PM
Xylenes, Total	ND	0.00483	0.0145		mg/Kg-dry	1	01/21/10 04:47 PM
Surr: Tetrachloroethene	86.9	0	79 - 135		%REC	1	01/21/10 04:47 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	4.90	0.0898	0.269		mg/Kg-dry	5	02/02/10 06:21 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	3.12	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-003-(14.0-15.0)
Lab ID: 1001116-13
Collection Date: 01/18/10 03:35 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0998	0.200		mg/Kg-dry	1	01/25/10 11:00 PM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	01/25/10 11:00 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00288	0.00481		mg/Kg-dry	1	01/21/10 05:11 PM
Toluene	ND	0.00481	0.0144		mg/Kg-dry	1	01/21/10 05:11 PM
Ethylbenzene	ND	0.00481	0.0144		mg/Kg-dry	1	01/21/10 05:11 PM
Xylenes, Total	ND	0.00481	0.0144		mg/Kg-dry	1	01/21/10 05:11 PM
Surr: Tetrachloroethene	83.9	0	79 - 135		%REC	1	01/21/10 05:11 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	5.96	0.0983	0.295		mg/Kg-dry	5	02/02/10 06:27 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	3.13	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-003-(19.0-20.0)
Lab ID: 1001116-14
Collection Date: 01/18/10 03:50 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0971	0.194		mg/Kg-dry	1	01/25/10 11:22 PM
Surr: Tetrachlorethene	102	0	70 - 134		%REC	1	01/25/10 11:22 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00297	0.00495		mg/Kg-dry	1	01/21/10 05:36 PM
Toluene	ND	0.00495	0.0148		mg/Kg-dry	1	01/21/10 05:36 PM
Ethylbenzene	ND	0.00495	0.0148		mg/Kg-dry	1	01/21/10 05:36 PM
Xylenes, Total	ND	0.00495	0.0148		mg/Kg-dry	1	01/21/10 05:36 PM
Surr: Tetrachloroethene	83.0	0	79 - 135		%REC	1	01/21/10 05:36 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	6.28	0.0926	0.278		mg/Kg-dry	5	02/02/10 06:32 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	3.53	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-RB-001-0110
Lab ID: 1001116-15
Collection Date: 01/18/10 03:55 PM
Matrix: Equip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0600	0.100		mg/L	1	01/28/10 04:45 PM
Surr: Tetrachlorethene	113	0	74 - 138		%REC	1	01/28/10 04:45 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/22/10 11:21 PM
Toluene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:21 PM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:21 PM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/22/10 11:21 PM
Surr: a,a,a-Trifluorotoluene	95.6	0	87 - 113		%REC	1	01/22/10 11:21 PM
Trace Metals: ICP-MS - Water		**SW6020**					**Analyst: CZ**
Lead	ND	0.000300	0.00100		mg/L	1	02/02/10 12:05 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-TB-002-0110
Lab ID: 1001116-16
Collection Date: 01/18/10 03:55 PM
Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/22/10 11:42 PM
Toluene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:42 PM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/22/10 11:42 PM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/22/10 11:42 PM
Surr: a,a,a-Trifluorotoluene	100	0	87 - 113		%REC	1	01/22/10 11:42 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-004-(4.0-5.0)
Lab ID: 1001116-17
Collection Date: 01/18/10 04:23 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.100	0.200		mg/Kg-dry	1	01/25/10 11:45 PM
Surr: Tetrachlorethene	99.7	0	70 - 134		%REC	1	01/25/10 11:45 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00319	0.00532		mg/Kg-dry	1	01/21/10 06:00 PM
Toluene	ND	0.00532	0.0160		mg/Kg-dry	1	01/21/10 06:00 PM
Ethylbenzene	ND	0.00532	0.0160		mg/Kg-dry	1	01/21/10 06:00 PM
Xylenes, Total	ND	0.00532	0.0160		mg/Kg-dry	1	01/21/10 06:00 PM
Surr: Tetrachloroethene	90.0	0	79 - 135		%REC	1	01/21/10 06:00 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	7.54	0.0958	0.288		mg/Kg-dry	5	02/02/10 06:38 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	7.67	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-004-(9.0-10.0)
Lab ID: 1001116-18
Collection Date: 01/18/10 04:31 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.108	0.217		mg/Kg-dry	1	01/26/10 12:09 AM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/26/10 12:09 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00296	0.00493		mg/Kg-dry	1	01/21/10 06:22 PM
Toluene	ND	0.00493	0.0148		mg/Kg-dry	1	01/21/10 06:22 PM
Ethylbenzene	ND	0.00493	0.0148		mg/Kg-dry	1	01/21/10 06:22 PM
Xylenes, Total	ND	0.00493	0.0148		mg/Kg-dry	1	01/21/10 06:22 PM
Surr: Tetrachloroethene	91.2	0	79 - 135		%REC	1	01/21/10 06:22 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	8.77	0.103	0.309		mg/Kg-dry	5	02/02/10 06:43 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	8.54	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-004-(14.0-15.0)
Lab ID: 1001116-19
Collection Date: 01/18/10 04:40 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.102	0.205		mg/Kg-dry	1	01/26/10 12:31 AM
Surr: Tetrachlorethene	101	0	70 - 134		%REC	1	01/26/10 12:31 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00313	0.00522		mg/Kg-dry	1	01/21/10 06:44 PM
Toluene	ND	0.00522	0.0157		mg/Kg-dry	1	01/21/10 06:44 PM
Ethylbenzene	ND	0.00522	0.0157		mg/Kg-dry	1	01/21/10 06:44 PM
Xylenes, Total	ND	0.00522	0.0157		mg/Kg-dry	1	01/21/10 06:44 PM
Surr: Tetrachloroethene	89.1	0	79 - 135		%REC	1	01/21/10 06:44 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	8.05	0.0926	0.278		mg/Kg-dry	5	02/02/10 06:49 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	5.23	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-004-(19.0-20.0)
Lab ID: 1001116-20
Collection Date: 01/18/10 04:52 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.108	0.216		mg/Kg-dry	1	01/26/10 12:54 AM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/26/10 12:54 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00307	0.00512		mg/Kg-dry	1	01/21/10 07:06 PM
Toluene	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 07:06 PM
Ethylbenzene	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 07:06 PM
Xylenes, Total	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 07:06 PM
Surr: Tetrachloroethene	91.1	0	79 - 135		%REC	1	01/21/10 07:06 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: CZ**
Lead	10.7	0.105	0.315		mg/Kg-dry	5	02/02/10 06:54 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	8.41	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-104-(19.0-20.0)
Lab ID: 1001116-21
Collection Date: 01/18/10 04:52 PM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.104	0.208		mg/Kg-dry	1	01/26/10 01:17 AM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	01/26/10 01:17 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00315	0.00525		mg/Kg-dry	1	01/21/10 07:28 PM
Toluene	ND	0.00525	0.0157		mg/Kg-dry	1	01/21/10 07:28 PM
Ethylbenzene	ND	0.00525	0.0157		mg/Kg-dry	1	01/21/10 07:28 PM
Xylenes, Total	ND	0.00525	0.0157		mg/Kg-dry	1	01/21/10 07:28 PM
Surr: Tetrachloroethene	88.9	0	79 - 135		%REC	1	01/21/10 07:28 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	10.1	0.101	0.304		mg/Kg-dry	5	01/27/10 10:12 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	6.98	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-005-(4.0-5.0)
Lab ID: 1001116-22
Collection Date: 01/19/10 08:52 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0992	0.198		mg/Kg-dry	1	01/26/10 10:57 AM
Surr: Tetrachlorethene	111	0	70 - 134		%REC	1	01/26/10 10:57 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00301	0.00502		mg/Kg-dry	1	01/21/10 07:50 PM
Toluene	ND	0.00502	0.0151		mg/Kg-dry	1	01/21/10 07:50 PM
Ethylbenzene	ND	0.00502	0.0151		mg/Kg-dry	1	01/21/10 07:50 PM
Xylenes, Total	ND	0.00502	0.0151		mg/Kg-dry	1	01/21/10 07:50 PM
Surr: Tetrachloroethene	91.8	0	79 - 135		%REC	1	01/21/10 07:50 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	15.7	0.101	0.303		mg/Kg-dry	5	01/29/10 03:50 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	9.17	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-005-(9.0-10.0)
Lab ID: 1001116-23
Collection Date: 01/19/10 09:00 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0989	0.198		mg/Kg-dry	1	01/26/10 11:20 AM
Surr: Tetrachlorethene	97.9	0	70 - 134		%REC	1	01/26/10 11:20 AM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00307	0.00512		mg/Kg-dry	1	01/21/10 08:12 PM
Toluene	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 08:12 PM
Ethylbenzene	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 08:12 PM
Xylenes, Total	ND	0.00512	0.0154		mg/Kg-dry	1	01/21/10 08:12 PM
Surr: Tetrachloroethene	91.6	0	79 - 135		%REC	1	01/21/10 08:12 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	6.89	0.101	0.304		mg/Kg-dry	5	01/29/10 03:56 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	6.07	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-005-(14.0-15.0)
Lab ID: 1001116-24
Collection Date: 01/19/10 09:14 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0993	0.199		mg/Kg-dry	1	01/26/10 03:11 PM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	01/26/10 03:11 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00289	0.00482		mg/Kg-dry	1	01/22/10 11:19 AM
Toluene	ND	0.00482	0.0144		mg/Kg-dry	1	01/22/10 11:19 AM
Ethylbenzene	ND	0.00482	0.0144		mg/Kg-dry	1	01/22/10 11:19 AM
Xylenes, Total	ND	0.00482	0.0144		mg/Kg-dry	1	01/22/10 11:19 AM
Surr: Tetrachloroethene	88.1	0	79 - 135		%REC	1	01/22/10 11:19 AM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	6.34	0.102	0.305		mg/Kg-dry	5	01/27/10 09:14 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	2.60	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-005-(19.0-20.0)
Lab ID: 1001116-25
Collection Date: 01/19/10 09:25 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.104	0.208		mg/Kg-dry	1	01/26/10 03:34 PM
Surr: Tetrachlorethene	107	0	70 - 134		%REC	1	01/26/10 03:34 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00329	0.00548		mg/Kg-dry	1	01/22/10 12:24 PM
Toluene	ND	0.00548	0.0164		mg/Kg-dry	1	01/22/10 12:24 PM
Ethylbenzene	ND	0.00548	0.0164		mg/Kg-dry	1	01/22/10 12:24 PM
Xylenes, Total	ND	0.00548	0.0164		mg/Kg-dry	1	01/22/10 12:24 PM
Surr: Tetrachloroethene	91.5	0	79 - 135		%REC	1	01/22/10 12:24 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	11.4	0.0986	0.296		mg/Kg-dry	5	01/29/10 04:02 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	10.2	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(3.0-4.0)
Lab ID: 1001116-26
Collection Date: 01/19/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.109	0.217		mg/Kg-dry	1	01/26/10 03:58 PM
Surr: Tetrachlorethene	108	0	70 - 134		%REC	1	01/26/10 03:58 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	12.9	0.105	0.316		mg/Kg-dry	5	01/29/10 04:07 PM
Semivolatiles by GC/MS - Soil		**SW8270C**					**Analyst: DO**
1,2,4,5-Tetrachlorobenzene	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1,2,4-Trichlorobenzene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1,2-Dichlorobenzene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1,2-Diphenylhydrazine	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1,3-Dichlorobenzene	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1,4-Dichlorobenzene	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
1-Chloronaphthalene	ND	0.0457	0.152	N	mg/Kg-dry	1	02/03/10 03:26 AM
1-Methylnaphthalene	ND	0.0686	0.152	N	mg/Kg-dry	1	02/03/10 03:26 AM
1-Naphthylamine	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,4,5-Trichlorophenol	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,4,6-Trichlorophenol	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,4-Dichlorophenol	ND	0.0915	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,4-Dimethylphenol	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,4-Dinitrophenol	ND	0.0572	0.755		mg/Kg-dry	1	02/03/10 03:26 AM
2,4-Dinitrotoluene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,6-Dichlorophenol	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2,6-Dinitrotoluene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Chloronaphthalene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Chlorophenol	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Methylnaphthalene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Methylphenol	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Naphthylamine	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Nitroaniline	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Nitrophenol	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
2-Picoline	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
3,3'-Dichlorobenzidine	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
3-Methylcholanthrene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
3-Nitroaniline	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4,6-Dinitro-2-methylphenol	ND	0.0915	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
4-Aminobiphenyl	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Bromophenyl phenyl ether	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Chloro-3-methylphenol	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Chloroaniline	ND	0.0572	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
4-Chlorophenyl phenyl ether	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Methylphenol	ND	0.114	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Nitroaniline	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
4-Nitrophenol	ND	0.160	0.755		mg/Kg-dry	1	02/03/10 03:26 AM
7,12-Dimethylbenz(a)anthracene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Acenaphthene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(3.0-4.0)
Lab ID: 1001116-26
Collection Date: 01/19/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Acenaphthylene	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Acetophenone	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Aniline	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Anthracene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzidine	ND	0.377	0.755		mg/Kg-dry	1	02/03/10 03:26 AM
Benzo[a]anthracene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzo[a]pyrene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzo[b]fluoranthene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzo[g,h,i]perylene	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzo[k]fluoranthene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Benzoic acid	ND	0.149	0.755		mg/Kg-dry	1	02/03/10 03:26 AM
Benzyl alcohol	ND	0.0457	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Biphenyl	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Bis(2-chloroethoxy)methane	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Bis(2-chloroethyl)ether	ND	0.0114	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Bis(2-chloroisopropyl)ether	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Bis(2-ethylhexyl)phthalate	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Butyl benzyl phthalate	ND	0.114	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Carbazole	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Chrysene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Di-n-butyl phthalate	ND	0.114	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Di-n-octyl phthalate	ND	0.114	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Dibenz(a,j)acridine	0.0610	0.0457	0.152	JN	mg/Kg-dry	1	02/03/10 03:26 AM
Dibenz[a,h]anthracene	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Dibenzofuran	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Diethyl phthalate	ND	0.114	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Dimethyl phthalate	ND	0.114	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Dimethylphenethylamine	ND	0.0457	0.152	J	mg/Kg-dry	1	02/03/10 03:26 AM
Diphenylamine	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Ethyl methanesulfonate	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Fluoranthene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Fluorene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Hexachlorobenzene	ND	0.0114	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Hexachlorobutadiene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Hexachlorocyclopentadiene	ND	0.0686	0.377		mg/Kg-dry	1	02/03/10 03:26 AM
Hexachloroethane	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Indeno[1,2,3-cd]pyrene	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Isophorone	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Methyl methanesulfonate	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
N-Nitrosodi-n-propylamine	ND	0.0114	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
N-Nitrosodimethylamine	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
N-Nitrosodiphenylamine	ND	0.0572	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
N-Nitrosopiperidine	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Naphthalene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Nitrobenzene	ND	0.0801	0.152		mg/Kg-dry	1	02/03/10 03:26 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(3.0-4.0)
Lab ID: 1001116-26
Collection Date: 01/19/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
p-Dimethylaminoazobenzene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pentachlorobenzene	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pentachloronitrobenzene	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pentachlorophenol	ND	0.103	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Phenacetin	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Phenanthrene	ND	0.0343	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Phenol	ND	0.0686	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pronamide	ND	0.0457	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pyrene	ND	0.0229	0.152		mg/Kg-dry	1	02/03/10 03:26 AM
Pyridine	ND	0.149	0.755		mg/Kg-dry	1	02/03/10 03:26 AM
Surr: 2,4,6-Tribromophenol	80.6	0	37 - 125		%REC	1	02/03/10 03:26 AM
Surr: 2-Fluorobiphenyl	73.1	0	60 - 135		%REC	1	02/03/10 03:26 AM
Surr: 2-Fluorophenol	51.7	0	60 - 129	S	%REC	1	02/03/10 03:26 AM
Surr: 4-Terphenyl-d14	85.1	0	45 - 125		%REC	1	02/03/10 03:26 AM
Surr: Nitrobenzene-d5	69.2	0	40 - 125		%REC	1	02/03/10 03:26 AM
Surr: Phenol-d6	51.5	0	40 - 125		%REC	1	02/03/10 03:26 AM
8260 Soil Volatiles by GC/MS		**SW8260B**					**Analyst: AJR**
1,1,1,2-Tetrachloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1,1-Trichloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1,2,2-Tetrachloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1,2-Trichloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1-Dichloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1-Dichloroethene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,1-Dichloropropene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2,3-Trichlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2,3-Trichloropropane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2,4-Trichlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2,4-Trimethylbenzene	0.00432	0.00111	0.00556	J	mg/Kg-dry	1	01/25/10 03:51 PM
1,2-Dibromo-3-chloropropane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2-Dibromoethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2-Dichlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2-Dichloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,2-Dichloropropane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,3,5-Trimethylbenzene	0.00117	0.00111	0.00556	J	mg/Kg-dry	1	01/25/10 03:51 PM
1,3-Dichlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,3-Dichloropropane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,4-Dichloro-2-butene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
1,4-Dichlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
2,2-Dichloropropane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
2-Butanone	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
2-Chloroethylvinylether	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
2-Chlorotoluene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
2-Hexanone	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
4-Chlorotoluene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
4-Isopropyltoluene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(3.0-4.0)
Lab ID: 1001116-26
Collection Date: 01/19/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
4-Methyl-2-pentanone	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
Acetone	ND	0.0167	0.0556		mg/Kg-dry	1	01/25/10 03:51 PM
Acrylonitrile	ND	0.00333	0.0111		mg/Kg-dry	1	01/25/10 03:51 PM
Benzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Bromobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Bromochloromethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Bromodichloromethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Bromoform	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Bromomethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Carbon disulfide	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Carbon tetrachloride	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Chlorobenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Chloroethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Chloroform	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Chloromethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
cis-1,2-Dichloroethene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
cis-1,3-Dichloropropene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Dibromochloromethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Dibromomethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Dichlorodifluoromethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Ethylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Hexachlorobutadiene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Iodomethane	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Isopropylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
m,p-Xylene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Methyl tert-butyl ether	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Methylene chloride	ND	0.00556	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
n-Butylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
n-Propylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Naphthalene	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
o-Xylene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
sec-Butylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Styrene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
tert-Butylbenzene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Tetrachloroethene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Toluene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
trans-1,2-Dichloroethene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
trans-1,3-Dichloropropene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Trichloroethene	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Trichlorofluoromethane	ND	0.00556	0.0167		mg/Kg-dry	1	01/25/10 03:51 PM
Vinyl chloride	ND	0.00111	0.00556		mg/Kg-dry	1	01/25/10 03:51 PM
Surr: 1,2-Dichloroethane-d4	103	0	78 - 125		%REC	1	01/25/10 03:51 PM
Surr: 4-Bromofluorobenzene	99.0	0	85 - 120		%REC	1	01/25/10 03:51 PM
Surr: Dibromofluoromethane	100	0	84 - 116		%REC	1	01/25/10 03:51 PM
Surr: Toluene-d8	93.6	0	85 - 115		%REC	1	01/25/10 03:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(3.0-4.0)
Lab ID: 1001116-26
Collection Date: 01/19/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	12.8	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(9.0-10.0)
Lab ID: 1001116-27
Collection Date: 01/19/10 10:23 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0971	0.194		mg/Kg-dry	1	01/26/10 04:20 PM
Surr: Tetrachlorethene	102	0	70 - 134		%REC	1	01/26/10 04:20 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00290	0.00484		mg/Kg-dry	1	01/22/10 12:46 PM
Toluene	ND	0.00484	0.0145		mg/Kg-dry	1	01/22/10 12:46 PM
Ethylbenzene	ND	0.00484	0.0145		mg/Kg-dry	1	01/22/10 12:46 PM
Xylenes, Total	ND	0.00484	0.0145		mg/Kg-dry	1	01/22/10 12:46 PM
Surr: Tetrachloroethene	88.2	0	79 - 135		%REC	1	01/22/10 12:46 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	7.99	0.104	0.312		mg/Kg-dry	5	01/27/10 10:40 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	6.58	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(14.0-15.0)
Lab ID: 1001116-28
Collection Date: 01/19/10 10:33 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.102	0.204		mg/Kg-dry	1	01/26/10 04:43 PM
Surr: Tetrachlorethene	103	0	70 - 134		%REC	1	01/26/10 04:43 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00278	0.00463		mg/Kg-dry	1	01/22/10 01:08 PM
Toluene	ND	0.00463	0.0139		mg/Kg-dry	1	01/22/10 01:08 PM
Ethylbenzene	ND	0.00463	0.0139		mg/Kg-dry	1	01/22/10 01:08 PM
Xylenes, Total	ND	0.00463	0.0139		mg/Kg-dry	1	01/22/10 01:08 PM
Surr: Tetrachloroethene	88.4	0	79 - 135		%REC	1	01/22/10 01:08 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	5.00	0.0960	0.288		mg/Kg-dry	5	01/29/10 04:13 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	2.66	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(19.0-20.0)
Lab ID: 1001116-29
Collection Date: 01/19/10 10:46 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0954	0.191		mg/Kg-dry	1	01/26/10 05:06 PM
Surr: Tetrachlorethene	105	0	70 - 134		%REC	1	01/26/10 05:06 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00292	0.00487		mg/Kg-dry	1	01/22/10 01:31 PM
Toluene	ND	0.00487	0.0146		mg/Kg-dry	1	01/22/10 01:31 PM
Ethylbenzene	ND	0.00487	0.0146		mg/Kg-dry	1	01/22/10 01:31 PM
Xylenes, Total	ND	0.00487	0.0146		mg/Kg-dry	1	01/22/10 01:31 PM
Surr: Tetrachloroethene	85.8	0	79 - 135		%REC	1	01/22/10 01:31 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	5.96	0.0985	0.295		mg/Kg-dry	5	01/29/10 04:19 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	4.19	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-106-(19.0-20.0)
Lab ID: 1001116-30
Collection Date: 01/19/10 10:46 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.101	0.202		mg/Kg-dry	1	01/26/10 05:28 PM
Surr: Tetrachlorethene	107	0	70 - 134		%REC	1	01/26/10 05:28 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.00288	0.00480		mg/Kg-dry	1	01/22/10 01:53 PM
Toluene	ND	0.00480	0.0144		mg/Kg-dry	1	01/22/10 01:53 PM
Ethylbenzene	ND	0.00480	0.0144		mg/Kg-dry	1	01/22/10 01:53 PM
Xylenes, Total	ND	0.00480	0.0144		mg/Kg-dry	1	01/22/10 01:53 PM
Surr: Tetrachloroethene	87.5	0	79 - 135		%REC	1	01/22/10 01:53 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	6.31	0.100	0.301		mg/Kg-dry	5	01/27/10 10:58 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	4.17	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-FB-002-0110
Lab ID: 1001116-31
Collection Date: 01/19/10 10:40 AM
Matrix: Field Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0600	0.100		mg/L	1	01/28/10 05:07 PM
Surr: Tetrachlorethene	107	0	74 - 138		%REC	1	01/28/10 05:07 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/23/10 12:02 AM
Toluene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:02 AM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:02 AM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/23/10 12:02 AM
Surr: a,a,a-Trifluorotoluene	101	0	87 - 113		%REC	1	01/23/10 12:02 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-SB-006-(0.5-1.0)
Lab ID: 1001116-32
Collection Date: 01/19/10 11:20 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	511	2.17	4.34		mg/Kg-dry	20	01/26/10 05:51 PM
Surr: Tetrachlorethene	76.8	0	70 - 134		%REC	20	01/26/10 05:51 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	0.487	0.0651	0.109		mg/Kg-dry	20	01/22/10 02:36 PM
Toluene	17.0	1.09	3.26		mg/Kg-dry	200	01/22/10 02:15 PM
Ethylbenzene	9.68	1.09	3.26		mg/Kg-dry	200	01/22/10 02:15 PM
Xylenes, Total	66.0	1.09	3.26		mg/Kg-dry	200	01/22/10 02:15 PM
Surr: Tetrachloroethene	97.2	0	79 - 135		%REC	200	01/22/10 02:15 PM
Surr: Tetrachloroethene	90.7	0	79 - 135		%REC	20	01/22/10 02:36 PM
Trace Metals: ICP-MS - Solid		**SW6020**					**Analyst: KL**
Lead	8.09	0.102	0.307		mg/Kg-dry	5	01/27/10 11:03 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	7.90	0	0		WT%	1	01/21/10 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 02/05/10

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-RB-002-0110
Lab ID: 1001116-33
Collection Date: 01/19/10 11:30 AM
Matrix: Equip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		**M8015V**					**Analyst: DEW**
Gasoline Range Organics	ND	0.0600	0.100		mg/L	1	01/28/10 05:30 PM
Surr: Tetrachlorethene	106	0	74 - 138		%REC	1	01/28/10 05:30 PM
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/23/10 12:22 AM
Toluene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:22 AM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:22 AM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/23/10 12:22 AM
Surr: a,a,a-Trifluorotoluene	99.8	0	87 - 113		%REC	1	01/23/10 12:22 AM
Trace Metals: ICP-MS - Water		**SW6020**					**Analyst: CZ**
Lead	0.000892	0.000300	0.00100	J	mg/L	1	02/02/10 12:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: Main Post POL
Project No: 17
Lab Order: 1001116

Client Sample ID: MNPA-MPOL-TB-001-0110
Lab ID: 1001116-34
Collection Date: 01/18/10 03:55 PM
Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Volatile Organics by GC		**SW8021B**					**Analyst: DEW**
Benzene	ND	0.000800	0.00200		mg/L	1	01/23/10 12:43 AM
Toluene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:43 AM
Ethylbenzene	ND	0.00200	0.00600		mg/L	1	01/23/10 12:43 AM
Xylenes, Total	ND	0.00300	0.00900		mg/L	1	01/23/10 12:43 AM
Surr: a,a,a-Trifluorotoluene	98.3	0	87 - 113		%REC	1	01/23/10 12:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

zia engineering & environmental consultants, llc

756 S. Telshor Blvd. Ste. F-201
Las Cruces, NM 88011
575-532-1526 u
575-532-1587 f

#1001116

CHAIN OF CUSTODY RECORD

PAGE 1 OF 3 BTO

PROJECT NO.: 17

PROJECT NAME: Main Post POL

SAMPLER'S SIGNATURE:

	DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	BTEX	GRO	Lead								REMARKS
01	1-18-10	1135	MNPA-MPOL-SB-001-(5.0-6.0)	Soil		2	X	X	X								
02	1-18-10	1146	MNPA-MPOL-SB-001-(9.0-10.0)	Soil		2	X	X	X								
03	1-18-10	1205	MNPA-MPOL-SB-001-(14.0-15.0)	Soil		2	X	X	X								
04	1-18-10	1220	MNPA-MPOL-SB-001-(19.0-20.0)	Soil		2	X	X	X								
05	1-18-10	1405	MNPA-MPOL-SB-002-(4.0-5.0)	Soil		2	X	X	X								
06	1-18-10	1418	MNPA-MPOL-SB-002-(9.0-10.0)	Soil		2	X	X	X								
07	1-18-10	1428	MNPA-MPOL-SB-002-(14.0-15.0)	Soil		2	X	X	X								
08	1-18-10	1430	MNPA-MPOL-FB-001-0110	Water		3	X	X									field blank
09	1-18-10	1440	MNPA-MPOL-SB-002-(19.0-20.0)	Soil		2	X	X	X								
10	1-18-10	1440	MNPA-MPOL-SB-102-(19.0-20.0)	Soil		2	X	X	X								
11	1-18-10	1517	MNPA-MPOL-SB-003-(4.0-5.0)	Soil		2	X	X	X								
12	1-18-10	1525	MNPA-MPOL-SB-003-(9.0-10.0)	Soil		2	X	X	X								
13	1-18-10	1535	MNPA-MPOL-SB-003-(14.0-15.0)	Soil		2	X	X	X								
14	1-18-10	1550	MNPA-MPOL-SB-003-(19.0-20.0)	Soil		2	X	X	X								
15	1-18-10	1555	MNPA-MPOL-RB-001-0110	Water		7	X	X	X								Equipment blank
16	1-18-10	1555	MNPA-MPOL-TB-001-0110	Water		2	X										Trip blank

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: Brad Davis	TOTAL NO. OF CONTAINERS		(PRINTED NAME)	(PRINTED NAME) Fed ex	(PRINTED NAME)
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Fed ex	RECEIVED BY: (SIGNATURE)	(COMPANY)
	GOOD CONDITION/CHILLED		(TIME/DATE)	(TIME/DATE) 1/20/10 10:20	(TIME/DATE)
VIA: Fed EX	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS:		Demo 4.3.28 Interim #57

PLEASE USE BALL POINT PEN

DISTRIBUTION: WHITE - PROJECT FILES; YELLOW - LAB; PINK - FIELD COPY

Custody seals intact

zia engineering & environmental consultants, llc
755 S. Telshor Blvd. Ste. F-201
Las Cruces, NM 88011
575-532-1526 u
575-532-1587 f

#1001116

CHAIN OF CUSTODY RECORD

BTF

PAGE 2 OF 3

PROJECT NO.: 17
PROJECT NAME: Main Post POL
SAMPLER'S SIGNATURE:

	DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	BTEX	GRO	Lead								REMARKS
17	1-18-10	1623	MNPA-MPOL-SB-004-(4.0-5.0)	Soil		2	X	X	X								
18	1-18-10	1631	MNPA-MPOL-SB-004-(9.0-10.0)	Soil		2	X	X	X								
19	1-18-10	1640	MNPA-MPOL-SB-004-(14.0-15.0)	Soil		2	X	X	X								
20	1-18-10	1652	MNPA-MPOL-SB-004-(19.0-20.0)	Soil		2	X	X	X								
21	1-18-10	1652	MNPA-MPOL-SB-104-(19.0-20.0)	Soil		2	X	X	X								

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: Brad Davis	TOTAL NO. OF CONTAINERS	(PRINTED NAME) GABRIEL GALVA	(PRINTED NAME) Fed ex	(PRINTED NAME)
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE) Fed ex	RECEIVED BY: (SIGNATURE)	(COMPANY)
	GOOD CONDITION/CHILLED	(TIME/DATE) 1-20-10	(TIME/DATE) 1/20/10 10:20	(TIME/DATE)
VIA: Fed EX	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS / COMMENTS: Temp 4.3°, 2.8 Therm #57 Custody seals intact		

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zia engineering & environmental consultants, llc
755 St. Taylor Blvd. Ste. F-201
Las Cruces, NM 88011
575-532-1526 p
575-532-1587 f

CHAIN OF CUSTODY RECORD

#1001116

PROJECT NO. 17

PROJECT NAME: Main Post POL

SAMPLER'S SIGNATURE: Brad T. Davis

	DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	BTEX	GRO	Lead	8260	8270						REMARKS
22	1-19-10	0852	MNPA-MPOL-SB-005-(4.0-5.0)	Soil		2	X	X	X								
23	1-19-10	0900	MNPA-MPOL-SB-005-(9.0-10.0)	Soil		2	X	X	X								
24	1-19-10	0914	MNPA-MPOL-SB-005-(14.0-15.0)	Soil		2	X	X	X								
25	1-19-10	0925	MNPA-MPOL-SB-005-(19.0-20.0)	Soil		2	X	X	X								
26	1-19-10	1015	MNPA-MPOL-SB-006-~~(4.0-5.0)~~ (3.0-4.0)	Soil		2	X	X	X	X	X						(3.0-4.0)
27	1-19-10	1023	MNPA-MPOL-SB-006-(9.0-10.0)	Soil		2	X	X	X								
28	1-19-10	1033	MNPA-MPOL-SB-006-(14.0-15.0)	Soil		2	X	X	X								
29	1-19-10	1046	MNPA-MPOL-SB-006-(19.0-20.0)	Soil		2	X	X	X								
30	1-19-10	1046	MNPA-MPOL-SB-106-(19.0-20.0)	Soil		2	X	X	X								
31	1-19-10	1040	MNPA-MPOL-FB-002-0110	~~Soil~~ Water DI		3	X	X									Field Blank.
32	1-19-10	1120	MNPA-MPOL-SB-006-(0.5-1.0)	Soil		2	X	X	X								
33	1-19-10	1130	MNPA-MPOL-RB-002-0110	Water		7	X	X	X								Equipment Blank
34	1-18-10	1555	MNPA-MPOL-TB-001-0110	water		2	X										per Brad 1/20/10

B. Davis 1/20/10

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: Brad Davis	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Bradley T. Davis	(PRINTED NAME) Ted [illegible]	(PRINTED NAME)
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Ted [illegible]	RECEIVED BY: (SIGNATURE) [illegible]	(COMPANY)
	GOOD CONDITION/CHILLED		(TIME/DATE)	(TIME/DATE) 1/20/10 10:20	(TIME/DATE)
VIA: FedEX	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: Temp. 4.3, 2.8 Therm #57 custody seals intact		

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April 20, 2010

Brad Davis
Zia Engineering & Environmental
755 S Telshor Blvd Ste F-201
Las Cruces, NM 88011

Order No: 1004089

TEL: (575) 678-3397
FAX: (575) 532-1587

RE: MP POL

Dear Brad Davis:

DHL Analytical received 7 sample(s) on 4/9/2010 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of DoD QSM Ver 4.1 and NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. This report shall not be reproduced except in full without the written approval of DHL Analytical, Inc. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-09-1

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zia engineering & environmental consultants, llc
755 S. Telshor Blvd. Ste. F-201
Las Cruces, NM 88011
575-532-1526 p
575-532-1587 f

1004089

CHAIN OF CUSTODY RECORD

PROJECT NO. #23

PROJECT NAME MP POL

SAMPLER'S SIGNATURE Brad T. Davis

	DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	BTEX	GRO									REMARKS
01	4-6-10	0847	MNPA-MPOL-SB-007-(0.5-1.0)	Soil		2	X	X									
02	4-6-10	0906	MNPA-MPOL-SB-007-(4.5-5.0)	Soil		2	X	X									
03	4-6-10	0916	MNPA-MPOL-SB-008-(0.5-1.0)	Soil		2	X	X									
04	4-6-10	0934	MNPA-MPOL-FB-001-0410	Water		3	X										
05	4-6-10	0940	MNPA-MPOL-SB-008-(4.5-5.0)	Soil		2	X	X									
06	4-6-10	0940	MNPA-MPOL-SB-108-(4.5-5.0)	Soil		2	X	X									
07	4-6-10	0940	MNPA-MPOL-TB-001-0410	Water		2	X										

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: Brad Davis	SAMPLES RECEIVED	✓	Brad T. Davis	FED EX	akuhaneck
	TOTAL NO. OF CONTAINERS	15	(PRINTED NAME) Bradley T. Davis	(PRINTED NAME) FED EX	(PRINTED NAME) Amber Kuhaneck
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS	✓	RECEIVED BY: (SIGNATURE) FED EX	RECEIVED BY: (SIGNATURE) akuhaneck	(COMPANY) DTL Analytical
	GOOD CONDITION/COLD	✓	(TIME/DATE) 4/8/10	(TIME/DATE) 4/9/10 1000	(TIME/DATE) 4/9/10 1000
VIA: FedEX	CONFORMS TO RECORD	✓	SPECIAL INSTRUCTIONS/COMMENTS: Receiving temp: 2.4°C Therm #57	Seals intact Shipped via FED EX	

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From: Origin ID: LRUA (575) 532-1526
Tara Parra
Zia EEC
755 S. Telshor Blvd.

Las Cruces, NM 88011

FedEx Express

J1B101802220224

Ship Date: 08APR10
ActWgt: 75.0 LB
CAD: 100557518/INET3010

Delivery Address Bar Code

Ref # LCS-09-015
Invoice #
PO # BG 22
Dept #

SHIP TO: (512) 388-8222 BILL SENDER

John Dupont
DHL Analytical
2300 DOUBLE CREEK DR

ROUND ROCK, TX 78664

TRK# 0201 7985 4951 7013

FRI - 09 APR A1
PRIORITY OVERNIGHT

78664
TX-US
AUS

XH BSMA

60SG1&B8F26FE8

CUSTODY SEAL
DATE 4-8-10
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

DHL Analytical

Sample Receipt Checklist

Client Name Zia Engineering & Environmental

Date Received: 4/9/2010

Work Order Number 1004089

Received by AK

Checklist completed by: [signature] Signature 4/9/10 Date

Reviewed by SS Initials 4-9-10 Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.4 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Adjusted? _____ Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

CLIENT: Zia Engineering & Environmental
Project: MP POL
Lab Order: 1004089

CASE NARRATIVE

This case narrative describes abnormalities and deviations that may affect the results and summarizes all known issues that need to be highlighted for the data user to assess the results. This case narrative and the report contents are compliant with DoD QSM Ver 4.1 and NELAC.

Samples were analyzed using the methods outlined in the following references:

Method SW8021B - Volatile Organics
Method M8015V - Modified 8015 Gasoline - (GRO)
Method D2216 - Percent Moisture

LOG IN

Samples were received on and log-in performed on 4/9/2010. A total of 7 samples were received and all were analyzed. The samples arrived in good condition and were properly packaged.

A summary of project communication follows:

DHL Analytical received the Project RFQ from the client on 12/29/09. Completed RFQ returned to client via email on 1/07/2010. Purchase Order/Terms and Conditions received and signed and approved by both parties on 01/25/2010.
Brad Davis of ZIA Requested the most recent bottle kit from Jennifer Barker of DHL: via email on 3/2/2010.
Kit sent on 3/2/2010 via Lonestar Overnight, arrive by 3/8/2010.
This sample delivery group arrives at DHL Analytical 4/9/2010. Sample summary sent via email from Log-in to client on 4/9/2010.

All hardcopies for the sample kit request, bill of lading for sample kit sent are kept in the project folder.

DHL Analytical

Date: 04/20/10

CLIENT: Zia Engineering & Environmental
Project: MP POL
Lab Order: 1004089

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recv'd
1004089-01	MNPA-MPOL-SB-007-(0.5-1.0)		04/06/10 08:47 AM	04/09/10
1004089-02	MNPA-MPOL-SB-007-(4.5-5.0)		04/06/10 09:06 AM	04/09/10
1004089-03	MNPA-MPOL-SB-008-(0.5-1.0)		04/06/10 09:16 AM	04/09/10
1004089-04	MNPA-MPOL-FB-001-0410		04/06/10 09:34 AM	04/09/10
1004089-05	MNPA-MPOL-SB-008-(4.5-5.0)		04/06/10 09:40 AM	04/09/10
1004089-06	MNPA-MPOL-SB-108-(4.5-5.0)		04/06/10 09:40 AM	04/09/10
1004089-07	MNPA-MPOL-TB-001-0410		04/06/10 09:40 AM	04/09/10

CLIENT: Zia Engineering & Environmental
Project: MP POL
Lab Order: 1004089

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1004089-01A	MNPA-MPOL-SB-007-(0.5-1.0)	04/06/10 08:47 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	04/12/10 03:18 PM	40513
	MNPA-MPOL-SB-007-(0.5-1.0)	04/06/10 08:47 AM	Soil	SW5030B	Purge and Trap Soils GC	04/12/10 08:45 AM	40489
1004089-01B	MNPA-MPOL-SB-007-(0.5-1.0)	04/06/10 08:47 AM	Soil	D2216	Moisture Preparation	04/13/10 04:30 PM	40533
1004089-02A	MNPA-MPOL-SB-007-(4.5-5.0)	04/06/10 09:06 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	04/12/10 03:18 PM	40513
	MNPA-MPOL-SB-007-(4.5-5.0)	04/06/10 09:06 AM	Soil	SW5030B	Purge and Trap Soils GC	04/12/10 08:45 AM	40489
1004089-02B	MNPA-MPOL-SB-007-(4.5-5.0)	04/06/10 09:06 AM	Soil	D2216	Moisture Preparation	04/13/10 04:30 PM	40533
1004089-03A	MNPA-MPOL-SB-008-(0.5-1.0)	04/06/10 09:16 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	04/12/10 03:18 PM	40513
	MNPA-MPOL-SB-008-(0.5-1.0)	04/06/10 09:16 AM	Soil	SW5030B	Purge and Trap Soils GC	04/12/10 08:45 AM	40489
1004089-03B	MNPA-MPOL-SB-008-(0.5-1.0)	04/06/10 09:16 AM	Soil	D2216	Moisture Preparation	04/13/10 04:30 PM	40533
1004089-04A	MNPA-MPOL-FB-001-0410	04/06/10 09:34 AM	Field Blank	SW5030B	Purge and Trap Water GC	04/12/10 10:15 AM	40501
1004089-05A	MNPA-MPOL-SB-008-(4.5-5.0)	04/06/10 09:40 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	04/12/10 03:18 PM	40513
	MNPA-MPOL-SB-008-(4.5-5.0)	04/06/10 09:40 AM	Soil	SW5030B	Purge and Trap Soils GC	04/12/10 08:45 AM	40489
1004089-05B	MNPA-MPOL-SB-008-(4.5-5.0)	04/06/10 09:40 AM	Soil	D2216	Moisture Preparation	04/13/10 04:30 PM	40533
1004089-06A	MNPA-MPOL-SB-108-(4.5-5.0)	04/06/10 09:40 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	04/12/10 03:18 PM	40513
	MNPA-MPOL-SB-108-(4.5-5.0)	04/06/10 09:40 AM	Soil	SW5030B	Purge and Trap Soils GC	04/12/10 08:45 AM	40489
1004089-06B	MNPA-MPOL-SB-108-(4.5-5.0)	04/06/10 09:40 AM	Soil	D2216	Moisture Preparation	04/13/10 04:30 PM	40533
1004089-07A	MNPA-MPOL-TB-001-0410	04/06/10 09:40 AM	Trip Blank	SW5030B	Purge and Trap Water GC	04/12/10 10:15 AM	40501

CLIENT: Zia Engineering & Environmental
Project: MP POL
Lab Order: 1004089

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1004089-01A	MNPA-MPOL-SB-007-(0.5-1.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	40513	1	04/12/10 05:22 PM	GC4_100412C
	MNPA-MPOL-SB-007-(0.5-1.0)	Soil	SW8021B	Volatile Organics by GC	40489	1	04/12/10 11:13 AM	GC4_100412A
1004089-01B	MNPA-MPOL-SB-007-(0.5-1.0)	Soil	D2216	Percent Moisture	40533	1	04/14/10 11:00 AM	PMOIST_100413A
1004089-02A	MNPA-MPOL-SB-007-(4.5-5.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	40513	1	04/12/10 05:45 PM	GC4_100412C
	MNPA-MPOL-SB-007-(4.5-5.0)	Soil	SW8021B	Volatile Organics by GC	40489	1	04/12/10 12:23 PM	GC4_100412A
1004089-02B	MNPA-MPOL-SB-007-(4.5-5.0)	Soil	D2216	Percent Moisture	40533	1	04/14/10 11:00 AM	PMOIST_100413A
1004089-03A	MNPA-MPOL-SB-008-(0.5-1.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	40513	1	04/12/10 06:08 PM	GC4_100412C
	MNPA-MPOL-SB-008-(0.5-1.0)	Soil	SW8021B	Volatile Organics by GC	40489	1	04/12/10 12:47 PM	GC4_100412A
1004089-03B	MNPA-MPOL-SB-008-(0.5-1.0)	Soil	D2216	Percent Moisture	40533	1	04/14/10 11:00 AM	PMOIST_100413A
1004089-04A	MNPA-MPOL-FB-001-0410	Field Blank	SW8021B	Volatile Organics by GC	40501	1	04/12/10 11:32 AM	GC8_100412A
1004089-05A	MNPA-MPOL-SB-008-(4.5-5.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	40513	1	04/12/10 06:31 PM	GC4_100412C
	MNPA-MPOL-SB-008-(4.5-5.0)	Soil	SW8021B	Volatile Organics by GC	40489	1	04/12/10 01:10 PM	GC4_100412A
1004089-05B	MNPA-MPOL-SB-008-(4.5-5.0)	Soil	D2216	Percent Moisture	40533	1	04/14/10 11:00 AM	PMOIST_100413A
1004089-06A	MNPA-MPOL-SB-108-(4.5-5.0)	Soil	M8015V	Method 8015 Gasoline (GRO)	40513	1	04/12/10 06:55 PM	GC4_100412C
	MNPA-MPOL-SB-108-(4.5-5.0)	Soil	SW8021B	Volatile Organics by GC	40489	1	04/12/10 01:34 PM	GC4_100412A
1004089-06B	MNPA-MPOL-SB-108-(4.5-5.0)	Soil	D2216	Percent Moisture	40533	1	04/14/10 11:00 AM	PMOIST_100413A
1004089-07A	MNPA-MPOL-TB-001-0410	Trip Blank	SW8021B	Volatile Organics by GC	40501	1	04/12/10 11:52 AM	GC8_100412A

DHL Analytical

Date: 04/20/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-SB-007-(0.5-1.0)
Project:	MP POL	Lab ID:	1004089-01
Project No:	#23	Collection Date:	04/06/10 08:47 AM
Lab Order:	1004089	Matrix:	Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		M8015V					Analyst: DEW
Gasoline Range Organics	<0.0987	0.0987	0.197		mg/Kg-dry	1	04/12/10 05:22 PM
Surr: Tetrachlorethene	107	0	70 - 134		%REC	1	04/12/10 05:22 PM
Volatile Organics by GC		SW8021B					Analyst: DEW
Methyl tert-butyl ether	<0.00483	0.00483	0.0145		mg/Kg-dry	1	04/12/10 11:13 AM
Benzene	<0.00290	0.00290	0.00483		mg/Kg-dry	1	04/12/10 11:13 AM
Toluene	<0.00483	0.00483	0.0145		mg/Kg-dry	1	04/12/10 11:13 AM
Ethylbenzene	<0.00483	0.00483	0.0145		mg/Kg-dry	1	04/12/10 11:13 AM
Xylenes, Total	<0.00483	0.00483	0.0145		mg/Kg-dry	1	04/12/10 11:13 AM
Surr: Tetrachloroethene	101	0	79 - 135		%REC	1	04/12/10 11:13 AM
Percent Moisture		D2216					Analyst: RP
Percent Moisture	2.98	0	0		WT%	1	04/14/10 11:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 04/20/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-SB-007-(4.5-5.0)
Project:	MP POL	Lab ID:	1004089-02
Project No:	#23	Collection Date:	04/06/10 09:06 AM
Lab Order:	1004089	Matrix:	Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		M8015V					Analyst: DEW
Gasoline Range Organics	<0.0994	0.0994	0.199		mg/Kg-dry	1	04/12/10 05:45 PM
Surr: Tetrachlorethene	104	0	70 - 134		%REC	1	04/12/10 05:45 PM
Volatile Organics by GC		SW8021B					Analyst: DEW
Methyl tert-butyl ether	<0.00514	0.00514	0.0154		mg/Kg-dry	1	04/12/10 12:23 PM
Benzene	<0.00308	0.00308	0.00514		mg/Kg-dry	1	04/12/10 12:23 PM
Toluene	<0.00514	0.00514	0.0154		mg/Kg-dry	1	04/12/10 12:23 PM
Ethylbenzene	<0.00514	0.00514	0.0154		mg/Kg-dry	1	04/12/10 12:23 PM
Xylenes, Total	<0.00514	0.00514	0.0154		mg/Kg-dry	1	04/12/10 12:23 PM
Surr: Tetrachloroethene	104	0	79 - 135		%REC	1	04/12/10 12:23 PM
Percent Moisture		D2216					Analyst: RP
Percent Moisture	8.00	0	0		WT%	1	04/14/10 11:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
	B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
	C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
	DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
	E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
			S	Spike Recovery outside control limits

DHL Analytical

Date: 04/20/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-SB-008-(0.5-1.0)
Project:	MP POL	Lab ID:	1004089-03
Project No:	#23	Collection Date:	04/06/10 09:16 AM
Lab Order:	1004089	Matrix:	Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		M8015V					Analyst: DEW
Gasoline Range Organics	<0.105	0.105	0.210		mg/Kg-dry	1	04/12/10 06:08 PM
Surr: Tetrachlorethene	106	0	70 - 134		%REC	1	04/12/10 06:08 PM
Volatile Organics by GC		SW8021B					Analyst: DEW
Methyl tert-butyl ether	<0.00487	0.00487	0.0146		mg/Kg-dry	1	04/12/10 12:47 PM
Benzene	<0.00292	0.00292	0.00487		mg/Kg-dry	1	04/12/10 12:47 PM
Toluene	<0.00487	0.00487	0.0146		mg/Kg-dry	1	04/12/10 12:47 PM
Ethylbenzene	<0.00487	0.00487	0.0146		mg/Kg-dry	1	04/12/10 12:47 PM
Xylenes, Total	<0.00487	0.00487	0.0146		mg/Kg-dry	1	04/12/10 12:47 PM
Surr: Tetrachloroethene	104	0	79 - 135		%REC	1	04/12/10 12:47 PM
Percent Moisture		D2216					Analyst: RP
Percent Moisture	6.59	0	0		WT%	1	04/14/10 11:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 04/20/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-FB-001-0410
Project:	MP POL	Lab ID:	1004089-04
Project No:	#23	Collection Date:	04/06/10 09:34 AM
Lab Order:	1004089	Matrix:	Field Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Volatile Organics by GC		SW8021B					Analyst: DEW
Methyl tert-butyl ether	<0.00200	0.00200	0.00600		mg/L	1	04/12/10 11:32 AM
Benzene	<0.000800	0.000800	0.00200		mg/L	1	04/12/10 11:32 AM
Toluene	<0.00200	0.00200	0.00600		mg/L	1	04/12/10 11:32 AM
Ethylbenzene	<0.00200	0.00200	0.00600		mg/L	1	04/12/10 11:32 AM
Xylenes, Total	<0.00300	0.00300	0.00900		mg/L	1	04/12/10 11:32 AM
Surr: a,a,a-Trifluorotoluene	96.0	0	87 - 113		%REC	1	04/12/10 11:32 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 04/20/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-SB-008-(4.5-5.0)
Project:	MP POL	Lab ID:	1004089-05
Project No:	#23	Collection Date:	04/06/10 09:40 AM
Lab Order:	1004089	Matrix:	Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		M8015V					Analyst: DEW
Gasoline Range Organics	<0.101	0.101	0.202		mg/Kg-dry	1	04/12/10 06:31 PM
Surr: Tetrachlorethene	112	0	70 - 134		%REC	1	04/12/10 06:31 PM
Volatile Organics by GC		SW8021B					Analyst: DEW
Methyl tert-butyl ether	<0.00522	0.00522	0.0157		mg/Kg-dry	1	04/12/10 01:10 PM
Benzene	<0.00313	0.00313	0.00522		mg/Kg-dry	1	04/12/10 01:10 PM
Toluene	<0.00522	0.00522	0.0157		mg/Kg-dry	1	04/12/10 01:10 PM
Ethylbenzene	<0.00522	0.00522	0.0157		mg/Kg-dry	1	04/12/10 01:10 PM
Xylenes, Total	<0.00522	0.00522	0.0157		mg/Kg-dry	1	04/12/10 01:10 PM
Surr: Tetrachloroethene	105	0	79 - 135		%REC	1	04/12/10 01:10 PM
Percent Moisture		D2216					Analyst: RP
Percent Moisture	4.48	0	0		WT%	1	04/14/10 11:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
	B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
	C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
	DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
	E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
			S	Spike Recovery outside control limits

DHL Analytical

Date: 04/20/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-SB-108-(4.5-5.0)
Project:	MP POL	Lab ID:	1004089-06
Project No:	#23	Collection Date:	04/06/10 09:40 AM
Lab Order:	1004089	Matrix:	Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		M8015V					Analyst: DEW
Gasoline Range Organics	<0.0978	0.0978	0.196		mg/Kg-dry	1	04/12/10 06:55 PM
Surr: Tetrachlorethene	101	0	70 - 134		%REC	1	04/12/10 06:55 PM
Volatile Organics by GC		SW8021B					Analyst: DEW
Methyl tert-butyl ether	<0.00508	0.00508	0.0152		mg/Kg-dry	1	04/12/10 01:34 PM
Benzene	<0.00305	0.00305	0.00508		mg/Kg-dry	1	04/12/10 01:34 PM
Toluene	<0.00508	0.00508	0.0152		mg/Kg-dry	1	04/12/10 01:34 PM
Ethylbenzene	<0.00508	0.00508	0.0152		mg/Kg-dry	1	04/12/10 01:34 PM
Xylenes, Total	<0.00508	0.00508	0.0152		mg/Kg-dry	1	04/12/10 01:34 PM
Surr: Tetrachloroethene	104	0	79 - 135		%REC	1	04/12/10 01:34 PM
Percent Moisture		D2216					Analyst: RP
Percent Moisture	4.97	0	0		WT%	1	04/14/10 11:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
	B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
	C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
	DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
	E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
			S	Spike Recovery outside control limits

DHL Analytical

Date: 04/20/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-TB-001-0410
Project:	MP POL	Lab ID:	1004089-07
Project No:	#23	Collection Date:	04/06/10 09:40 AM
Lab Order:	1004089	Matrix:	Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Volatile Organics by GC		SW8021B					Analyst: DEW
Methyl tert-butyl ether	<0.00200	0.00200	0.00600		mg/L	1	04/12/10 11:52 AM
Benzene	<0.000800	0.000800	0.00200		mg/L	1	04/12/10 11:52 AM
Toluene	<0.00200	0.00200	0.00600		mg/L	1	04/12/10 11:52 AM
Ethylbenzene	<0.00200	0.00200	0.00600		mg/L	1	04/12/10 11:52 AM
Xylenes, Total	<0.00300	0.00300	0.00900		mg/L	1	04/12/10 11:52 AM
Surr: a,a,a-Trifluorotoluene	95.7	0	87 - 113		%REC	1	04/12/10 11:52 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Work Order: 1004089
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100412A

Sample ID:	LCS-40489	Batch ID:	40489		TestNo:		SW8021B		Units:		mg/Kg
SampType:	LCS	Run ID:	GC4_100412A		Analysis Date:		04/12/10 10:01 AM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		0.100	0.0150	0.1000	0	100	61	123			
Benzene		0.0871	0.00500	0.1000	0	87.1	65	113			
Toluene		0.0858	0.0150	0.1000	0	85.8	73	115			
Ethylbenzene		0.0857	0.0150	0.1000	0	85.7	74	118			
Xylenes, Total		0.256	0.0150	0.3000	0	85.4	73	119			
Surr: Tetrachloroethene		0.225		0.2000		113	79	135			

Sample ID:	MB-40489	Batch ID:	40489		TestNo:		SW8021B		Units:		mg/Kg
SampType:	MBLK	Run ID:	GC4_100412A		Analysis Date:		04/12/10 10:26 AM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		<0.00500	0.0150								
Benzene		<0.00300	0.00500								
Toluene		<0.00500	0.0150								
Ethylbenzene		<0.00500	0.0150								
Xylenes, Total		<0.00500	0.0150								
Surr: Tetrachloroethene		0.233		0.2000		116	79	135			

Sample ID:	1004089-01AMS	Batch ID:	40489		TestNo:		SW8021B		Units:		mg/Kg-dry
SampType:	MS	Run ID:	GC4_100412A		Analysis Date:		04/12/10 11:36 AM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		0.105	0.0147	0.09798	0	107	61	123			
Benzene		0.0933	0.00490	0.09798	0	95.2	65	113			
Toluene		0.0907	0.0147	0.09798	0	92.5	73	115			
Ethylbenzene		0.0897	0.0147	0.09798	0	91.5	74	118			
Xylenes, Total		0.268	0.0147	0.2939	0	91.1	73	119			
Surr: Tetrachloroethene		0.205		0.1960		104	79	135			

Sample ID:	1004089-01AMSD	Batch ID:	40489		TestNo:		SW8021B		Units:		mg/Kg-dry
SampType:	MSD	Run ID:	GC4_100412A		Analysis Date:		04/12/10 12:00 PM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		0.106	0.0151	0.1009	0	105	61	123	0.537	30	
Benzene		0.0946	0.00504	0.1009	0	93.8	65	113	1.41	30	
Toluene		0.0918	0.0151	0.1009	0	91.0	73	115	1.26	30	
Ethylbenzene		0.0912	0.0151	0.1009	0	90.4	74	118	1.68	30	
Xylenes, Total		0.271	0.0151	0.3026	0	89.4	73	119	0.996	30	
Surr: Tetrachloroethene		0.204		0.2017		101	79	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004089
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100412A

Sample ID:	ICV-100412	Batch ID:	R48864		TestNo:		SW8021B		Units:		mg/Kg
SampType:	ICV	Run ID:	GC4_100412A		Analysis Date:		04/12/10 09:37 AM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		0.205	0.0150	0.2000	0	102	80	120			
Benzene		0.196	0.00500	0.2000	0	97.9	80	120			
Toluene		0.193	0.0150	0.2000	0	96.3	80	120			
Ethylbenzene		0.194	0.0150	0.2000	0	97.1	80	120			
Xylenes, Total		0.576	0.0150	0.6000	0	96.0	80	120			
Surr: Tetrachloroethene		0.249		0.2000		124	79	135			

Sample ID:	CCV1-100412	Batch ID:	R48864		TestNo:		SW8021B		Units:		mg/Kg
SampType:	CCV	Run ID:	GC4_100412A		Analysis Date:		04/12/10 02:33 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		0.107	0.0150	0.1000	0	107	80	120			
Benzene		0.0969	0.00500	0.1000	0	96.9	80	120			
Toluene		0.0961	0.0150	0.1000	0	96.1	80	120			
Ethylbenzene		0.0965	0.0150	0.1000	0	96.5	80	120			
Xylenes, Total		0.288	0.0150	0.3000	0	95.9	80	120			
Surr: Tetrachloroethene		0.202		0.2000		101	79	135			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004089
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100412C

Sample ID:	LCS-40513	Batch ID:	40513		TestNo:		M8015V		Units:		mg/Kg
SampType:	LCS	Run ID:	GC4_100412C		Analysis Date:		04/12/10 03:46 PM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		4.87	0.200	5.000	0	97.3	68	126			
Surr: Tetrachlorethene		0.393		0.4000		98.1	70	134			

Sample ID:	MB-40513	Batch ID:	40513		TestNo:		M8015V		Units:		mg/Kg
SampType:	MBLK	Run ID:	GC4_100412C		Analysis Date:		04/12/10 04:58 PM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		<0.100	0.200								
Surr: Tetrachlorethene		0.440		0.4000		110	70	134			

Sample ID:	1004089-01AMS	Batch ID:	40513		TestNo:		M8015V		Units:		mg/Kg-dry
SampType:	MS	Run ID:	GC4_100412C		Analysis Date:		04/12/10 07:18 PM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		3.59	0.201	5.033	0	71.4	68	126			
Surr: Tetrachlorethene		0.437		0.4026		109	70	134			

Sample ID:	1004089-01AMSD	Batch ID:	40513		TestNo:		M8015V		Units:		mg/Kg-dry
SampType:	MSD	Run ID:	GC4_100412C		Analysis Date:		04/12/10 07:42 PM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		3.31	0.196	4.890	0	67.7	68	126	8.16	30	S
Surr: Tetrachlorethene		0.422		0.3912		108	70	134	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004089
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100412C

Sample ID:	ICV-100412	Batch ID:	R48867		TestNo:		M8015V		Units:		mg/Kg
SampType:	ICV	Run ID:	GC4_100412C		Analysis Date:		04/12/10 03:22 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		9.38	0.200	10.00	0	93.8	80	120			
Surr: Tetrachlorethene		0.376		0.4000		94.0	70	134			

Sample ID:	CCV1-100412	Batch ID:	R48867		TestNo:		M8015V		Units:		mg/Kg
SampType:	CCV	Run ID:	GC4_100412C		Analysis Date:		04/12/10 08:07 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		4.66	0.200	5.000	0	93.1	80	120			
Surr: Tetrachlorethene		0.369		0.4000		92.1	70	134			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004089
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC8_100412A

Sample ID:	LCS-40501	Batch ID:	40501		TestNo:		SW8021B		Units:		mg/L
SampType:	LCS	Run ID:	GC8_100412A		Analysis Date:		04/12/10 10:31 AM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		0.0540	0.00600	0.0500	0	108	78	122			
Benzene		0.0497	0.00200	0.0500	0	99.4	81	125			
Toluene		0.0511	0.00600	0.0500	0	102	84	123			
Ethylbenzene		0.0521	0.00600	0.0500	0	104	83	119			
Xylenes, Total		0.156	0.00900	0.150	0	104	81	117			
Surr: a,a,a-Trifluorotoluene		202		200.0		101	87	113			

Sample ID:	MB-40501	Batch ID:	40501		TestNo:		SW8021B		Units:		mg/L
SampType:	MBLK	Run ID:	GC8_100412A		Analysis Date:		04/12/10 10:51 AM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		<0.00200	0.00600								
Benzene		<0.000800	0.00200								
Toluene		<0.00200	0.00600								
Ethylbenzene		<0.00200	0.00600								
Xylenes, Total		<0.00300	0.00900								
Surr: a,a,a-Trifluorotoluene		201		200.0		100	87	113			

Sample ID:	LCSD-40501	Batch ID:	40501		TestNo:		SW8021B		Units:		mg/L
SampType:	LCSD	Run ID:	GC8_100412A		Analysis Date:		04/12/10 12:12 PM		Prep Date:		04/12/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		0.0551	0.00600	0.0500	0	110	78	122	2.00	20	
Benzene		0.0489	0.00200	0.0500	0	97.7	81	125	1.70	20	
Toluene		0.0502	0.00600	0.0500	0	100	84	123	1.94	20	
Ethylbenzene		0.0514	0.00600	0.0500	0	103	83	119	1.35	20	
Xylenes, Total		0.154	0.00900	0.150	0	103	81	117	1.55	20	
Surr: a,a,a-Trifluorotoluene		198		200.0		98.8	87	113	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004089
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC8_100412A

Sample ID:	ICV-100412	Batch ID:	R48870		TestNo:		SW8021B		Units:		mg/L
SampType:	ICV	Run ID:	GC8_100412A		Analysis Date:		04/12/10 10:11 AM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		0.106	0.00600	0.100	0	106	80	120			
Benzene		0.0985	0.00200	0.100	0	98.5	80	120			
Toluene		0.102	0.00600	0.100	0	102	80	120			
Ethylbenzene		0.104	0.00600	0.100	0	104	80	120			
Xylenes, Total		0.312	0.00900	0.300	0	104	80	120			
Surr: a,a,a-Trifluorotoluene		199		200.0		99.5	87	113			

Sample ID:	CCV1-100412	Batch ID:	R48870		TestNo:		SW8021B		Units:		mg/L
SampType:	CCV	Run ID:	GC8_100412A		Analysis Date:		04/12/10 12:33 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Methyl tert-butyl ether		0.0546	0.00600	0.0500	0	109	80	120			
Benzene		0.0499	0.00200	0.0500	0	99.7	80	120			
Toluene		0.0514	0.00600	0.0500	0	103	80	120			
Ethylbenzene		0.0524	0.00600	0.0500	0	105	80	120			
Xylenes, Total		0.159	0.00900	0.150	0	106	80	120			
Surr: a,a,a-Trifluorotoluene		201		200.0		101	87	113			

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004089
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_100413A

Sample ID:	1004090-10A-DUP	Batch ID:	40533	TestNo:	D2216	Units:	WT%
SampType:	DUP	Run ID:	PMOIST_100413A	Analysis Date:	04/14/10 11:00 AM	Prep Date:	04/13/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Percent Moisture	2.25	0	0	2.071				8.31	30	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

WHITE SANDS MISSILE RANGE – NEW MEXICO
ELECTRONIC VALIDATION REVIEW REPORT
SDG: 1004089
Main Post POL April 2010

Analytical data was evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999); site-specific requirements defined in *White Sands Missile Range Site-Wide Quality Assurance Project Plan* (ARCADIS, 2009), and any additional evaluation criteria set forth in the area specific Work Plan. The validation presented in this review was performed at the White Sands defined Level I.

The data review summarized in this report includes a review of all sample collection documentation and the electronic data validation of the analytical data housed in the project database. Sample collection documentation included sample collection logs and chains of custody. The electronic data validation was performed utilizing the EQuIS Data Qualification Module (DQM). DQM checks for the following parameters:

- Holding times and preservation;
- Blank contamination;
  - Method blanks,
  - Trip blanks,
  - Equipment blanks;
- Matrix spike and Duplicate sample recovery;
- Matrix Spike and Matrix Spike Duplicate relative percent differences;
- Laboratory Control Sample and Duplicate recovery;
- Laboratory Control Sample and Duplicate relative percent differences;
- Surrogate recovery (organic analyses only); and
- Field duplicate relative percent difference.

Manually review was performed on the following items:

- Sample dilutions and reporting limits;
- Case Narratives; and

Reviewed data was generated by DHL Analytical. Data qualifiers were applied electronically to the database with any additional qualifiers added manually. A summary of the data as amended by data qualifiers is included with the original hard copy reports.

The attached table summarizes the data that were qualified due to QC deficiencies. The table indicates compounds/analytes qualified based on electronic and manual validation. Refer to the associated method section of the validation checklist for a detailed explanation of qualification. All other data in this SDG are considered usable as reported.

The following list of data qualifiers and definitions were applied in accordance with qualification criteria defined in the greater than guidance documents:

UB Compound/analyte detected in blank or associated blank, qualified as a non-detect at listed value.

J The analyte was positively identified, but the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected greater than the reporting limit; however, the reported quantitation limit is approximate and may, or may not represent the actual limit of quantitation necessary to accurately and precisely measure analyte in the sample.

R The sample result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria; and the presence or absence of the analyte cannot be verified.

DQM RUN BY:	Rachelle Borne	04/28/10
REVIEW PERFORMED BY:	Rachelle Borne	04/28/10
SIGNATURE:	Rachelle Borne	04/28/10
PEER REVIEW:	Dennis Capria	4/29/10

The following samples were included in this SDG:

SDG	Sample ID	Sample Date	Parent Sample
1004089	MNPA-MPOL-FB-001-0410	4/6/2010	
1004089	MNPA-MPOL-SB-007-(0.5-1.0)	4/6/2010	
1004089	MNPA-MPOL-SB-007-(4.5-5.0)	4/6/2010	
1004089	MNPA-MPOL-SB-008-(0.5-1.0)	4/6/2010	
1004089	MNPA-MPOL-SB-008-(4.5-5.0)	4/6/2010	
1004089	MNPA-MPOL-SB-108-(4.5-5.0)	4/6/2010	MNPA-MPOL-SB-008-(4.5-5.0)
1004089	MNPA-MPOL-TB-001-0410	4/6/2010	

ANALYTICAL DATA PACKAGE DOCUMENTATION

GENERAL INFORMATION

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Methods of analysis		X		X	
4. Reporting limits of analysis		X		X	
5. Master tracking list		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preparation/extraction date		X		X	
9. Sample analysis date		X		X	
10. Copy of chain-of-custody form signed by lab sample custodian		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Laboratory Signature		X		X	

QA – quality assurance

The analytical report was complete with the following exceptions or notations.

Comments:

All soils were reported on a dry weight basis.

VOLATILE ORGANIC COMPOUNDS

Items Reviewed	DQM Deficiency		Qualification Applied	
	No	Yes	No	Yes
1. Holding times/Preservation	DQM		DQM	
2. Reporting limits	M		M	
3. Blanks				
A. Method blanks	DQM		DQM	
B. Equipment/Field blanks	DQM		DQM	
C. Trip blanks	DQM		DQM	
4. Surrogate spike recoveries	DQM		DQM	
5. Laboratory control sample (LCS) A. LCS %R	DQM		DQM	
B. LCS duplicate (LCSD) %R	DQM		DQM	
C. LCS/LCSD RPD	DQM		DQM	
6. Matrix spike (MS)				
A. MS %R	DQM		DQM	
B. MS duplicate (MSD) %R	DQM		DQM	
C. MS/MSD precision (RPD)	DQM		DQM	
7. Field Duplicate precision (RPD)	DQM		DQM	

M – Manual Review %R - percent recovery RPD - relative percent difference
DQM – Data Qualification Module

Comments:
This section presents a discussion of any additions or changes to the electronic data validation for compounds analyzed by Method 8021B.

2. No dilutions were required.

6. Sample location MNPA-MPOL-SB-007-(0.5-1.0) was used as the MS/MSD. The recoveries and RPDs were acceptable.

7. Sample location MNPA-MPOL-SB-108-(4.5-5.0) was collected as a field duplicate of MNPA-MPOL-SB-008-(4.5-5.0). The RPDs were acceptable at non-detect.

TPH – GASOLINE RANGE ORGANICS (GRO)

Items Reviewed	DQM Deficiency		Qualification Applied	
	No	Yes	No	Yes
1. Holding times/Preservation	DQM		DQM	
2. Reporting limits	M		M	
3. Blanks				
A. Method blanks	DQM		DQM	
B. Equipment blanks	NA			
4. Surrogate spike recoveries	DQM		DQM	
5. Laboratory control sample (LCS) A. LCS %R	DQM		DQM	
B. LCS duplicate (LCSD) %R	NA			
C. LCS/LCSD RPD	NA			
6. Matrix spike (MS)				
A. MS %R	DQM		DQM	
B. MS duplicate (MSD) %R		DQM		DQM
C. MS/MSD precision (RPD)	DQM		DQM	
7. Field Duplicate precision (RPD)	DQM		DQM	

M – Manual Review %R - percent recovery RPD - relative percent difference
DQM – Data Qualification Module

Comments:
This section presents a discussion of any additions or changes to the electronic data validation for compounds analyzed by Method M8015V.

2. No dilutions were required.

6. Sample location MNPA-MPOL-SB-007-(0.5-1.0) was used as the MS/MSD. The recovery of GRO was slightly below the control limit in the MSD. The parent sample was qualified as estimated for GRO.

7. Sample location MNPA-MPOL-SB-108-(4.5-5.0) was collected as a field duplicate of MNPA-MPOL-SB-008-(4.5-5.0). The RPDs were acceptable at non-detect.

White Sands Missile Range
Qualification Summary
MP POL April 2009

SDG	Sample ID	Method	Analyte	Result	Units	Qualifier	Reason	Dilution
1004089	MNPA-MPOL-SB-007-(0.5-1.0)	M8015V	Gasoline Range Organics	<0.197	mg/kg	UJ	MSD Recovery	1

April 26, 2010

Brad Davis
Zia Engineering & Environmental
755 S Telshor Blvd Ste F-201
Las Cruces, NM 88011

Order No: 1004121

TEL: (575) 678-3397
FAX: (575) 532-1587

RE: MP POL

Dear Brad Davis:

DHL Analytical received 2 sample(s) on 4/14/2010 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of DoD QSM Ver 4.1 and NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. This report shall not be reproduced except in full without the written approval of DHL Analytical, Inc. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-09-1

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Sample Results 12

Analytical QC Summary Report 19

zia engineering & environmental consultants, llc
755 S. Telshor Blvd. Ste. F-201
Las Cruces, NM 88011
575-532-1526 u
575-532-1587 f

001

#1004121

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO. 23

PROJECT NAME MP POL

SAMPLER'S SIGNATURE

	DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Ignitability	GRO	VOCs	SVOCs	RCRA 8 metals						REMARKS
01	4-13-10	1015	MNPA-MPOL-CS-001	Soil		2	X	X	X	X	X						Waste Characterization Composite
02	4-13-10	1015	MNPA-MPOL-TB-001-0410	Water		2			X								

PROJECT INFORMATION	SAMPLES RECEIVED	2	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER Brad Davis	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GALVAN	(PRINTED NAME) 4/14/10 9:15	(PRINTED NAME)
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS	yes	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY)
	GOOD CONDITION/CHILLED	3.9	(TIME/DATE) 4/13/10	(TIME/DATE) 4/14/10 9:15	(TIME/DATE)
VIA: FedEX	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: ~~PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS~~ BTD		

PLEASE USE BALL POINT PEN

DISTRIBUTION: WHITE - PROJECT FILES; YELLOW - LAB; PINK - FIELD COPY

From: Origin ID: LRUA (575) 532-1526
Tara Parra
Zia EEC
755 S. Telshor Blvd.

Las Cruces, NM 88011

FedEx Express

J101013222B324

Ship Date: 13APR10
ActWgt: 40.0 LB
CAD: 100557518/INET3010

Delivery Address Bar Code

Ref # LCS-09-015
Invoice #
PO # BG 23
Dept #

SHIP TO: (512) 388-8222 BILL SENDER
John Dupont
DHL Analytical
2300 DOUBLE CREEK DR

ROUND ROCK, TX 78664

TRK# 0201 7934 4326 1980

WED - 14 APR A1
PRIORITY OVERNIGHT

78664
TX-US
AUS

XH BSMA

CUSTODY SEAL
DATE 4-13-10
SIGNATURE Jara Padilla

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

DHL Analytical

Sample Receipt Checklist

Client Name **Zia Engineering & Environmental** Date Received: **4/14/2010**

Work Order Number **1004121** Received by **JB**

Checklist completed by: Signature [signature] Date 4/14/10 Reviewed by Initials SS Date 4-14-10

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.9 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Adjusted? _____ Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

Manual Integrations Tracking Form - DoD QSM 4.1 Requirement

Instrument ID: GCMS5 **ICAL Folder:** GCMS5_100420W.CAL

Sample ID ICAL, ICV, and CCV QC and Field Samples	Analyte #1 Identification & Reason	Analyte #2 Identification & Reason	Analyte #3 Identification & Reason	Analyte #4 Identification & Reason
	1,4-Dichlorobenzene			
CAL 2 (0.928 PPB)	Wrong peak integrated. Identified and quantitated correct 1,4-Dichlorobenzene peak.			

*Manually Integrated = M1

Analyst Date 4-22-10 Date 4.23.2010

CLIENT:	Zia Engineering & Environmental	CASE NARRATIVE
Project:	MP POL	
Lab Order:	1004121	

This case narrative describes abnormalities and deviations that may affect the results and summarizes all known issues that need to be highlighted for the data user to assess the results. This case narrative and the report contents are compliant with DoD QSM Ver 4.1 and NELAC.

Samples were analyzed using the methods outlined in the following references:

Method SW8260B - Volatile Organics
Method SW8270CB - Semivolatile Organics (The compounds 1-Methylnaphthalene, Dibenz(a,j) acridine and 1-Chloronaphthalene are not NELAC Certified)
Method M8015V - Modified 8015 Gasoline - (GRO)
Method D2216 - Percent Moisture
Method SW7471A - Total Mercury
Method SW6020 - Trace Metals
Method SW1010 - Ignitability

LOG IN

Samples were received on and log-in performed on 4/14/2010. A total of 2 samples were received and all were analyzed. The samples arrived in good condition and were properly packaged.

VOLATILES BY GC/MS

For Volatiles Analysis, the recovery of Carbon Disulfide in the Initial Calibration Verification (ICV-100415) was slightly above the method control limits. This is flagged in the QC Summary Report. This compound was within acceptable control limits in the associated LCS. No further corrective action was taken.

For Volatiles Analysis, the recovery of 1,1,2,2-Tetrachloroethane in the Laboratory Control Spike (LCS-40580) and the Matrix Spike (1004122-01 MS) was slightly above the method control limits. These are flagged in the enclosed QC Summary Report. This compound was within acceptable control limits in the associated ICV and Matrix Spike Duplicate. No further corrective action was taken.

For Volatiles Analysis, some samples and/or standards were manually integrated. Please refer to the table on page 6 of this report for the full list of samples, standards, and the compounds that were manually integrated.

SEMIVOLATILES BY GC/MS

For Semivolatiles Analysis, the recovery of surrogate 2-Fluorophenyl in Sample MNPA-MPOL-CS-001 was below the method control limits. This is flagged in the Analytical Data Report. The remaining surrogates for this sample were within acceptable control limits. No further corrective action was taken.

For Semivolatiles Analysis, the recoveries of a few compounds in the Initial Calibration Verification (ICV-100420) were outside of the method control limits. This is flagged accordingly in the QC Summary Report. These compounds are within acceptable control limits in the associated LCS. No further corrective action was taken.

CLIENT: Zia Engineering & Environmental
Project: MP POL
Lab Order: 1004121

CASE NARRATIVE

For Semivolatiles Analysis, the recoveries of a few compounds in the Laboratory Control Spike (LCS/ LCS2-40577) were outside of the method limits. This is flagged accordingly in the QC Summary Report. These compounds are within acceptable control limits in the associated ICV. No further corrective action was taken.

For Semivolatiles Analysis, the recoveries of several compounds in the Matrix Spike and Matrix Spike Duplicate (1004121-01 MS/MSD) were outside of the method control limits. Additionally, the RPD's of a couple of compounds in the Matrix Spike Duplicate (1004121-01 MSD) were above the method control limit. These are flagged accordingly in the QC Summary Report. No further corrective action was taken.

A summary of project communication follows:

DHL Analytical received the Project RFQ from the client on 12/29/09. Completed RFQ returned to client via email on 1/07/2010. Purchase Order/Terms and Conditions received and signed and approved by both parties on 01/25/2010.
Brad Davis of ZIA Requested the most recent bottle kit from Jennifer Barker of DHL: via email on 3/2/2010.
Kit sent on 3/2/2010 via Lonestar Overnight, arrive by 3/8/2010.
This sample delivery group arrives at DHL Analytical 4/14//2010. The sample summary, sent via email from Log-in to client on 4/14//2010, is kept in the project folder.

All hardcopies for the sample kit request, bill of lading for sample kit sent are kept in the project folder.

DHL Analytical

Date: 04/26/10

CLIENT: Zia Engineering & Environmental
Project: MP POL
Lab Order: 1004121

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recv'd
1004121-01	MNPA-MPOL-CS-001		04/13/10 10:15 AM	04/14/10
1004121-02	MNPA-MPOL-TB-001-0410		04/13/10 10:15 AM	04/14/10

CLIENT: Zia Engineering & Environmental
Project: MP POL
Lab Order: 1004121

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1004121-01A	MNPA-MPOL-CS-001	04/13/10 10:15 AM	Soil	SW5030B	Purge and Trap Soils GC/MS	04/15/10 09:34 AM	40580
1004121-01B	MNPA-MPOL-CS-001	04/13/10 10:15 AM	Soil	SW3550B	Soil Prep Sonication: BNA	04/15/10 02:04 PM	40577
	MNPA-MPOL-CS-001	04/13/10 10:15 AM	Soil	SW3550B	Soil Prep Sonication: BNA	04/15/10 02:04 PM	40577
	MNPA-MPOL-CS-001	04/13/10 10:15 AM	Soil	SW7471A	Mercury Soil Prep, Total	04/15/10 09:00 AM	40549
	MNPA-MPOL-CS-001	04/13/10 10:15 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	04/15/10 09:00 AM	40548
	MNPA-MPOL-CS-001	04/13/10 10:15 AM	Soil	SW1010	Ignitibility Preparation	04/20/10 09:04 AM	40640
	MNPA-MPOL-CS-001	04/13/10 10:15 AM	Soil	SW5030B	Purge and Trap Soils GC- Gas	04/21/10 09:56 AM	40663
	MNPA-MPOL-CS-001	04/13/10 10:15 AM	Soil	D2216	Moisture Preparation	04/21/10 09:00 AM	40658
1004121-02A	MNPA-MPOL-TB-001-0410	04/13/10 10:15 AM	Trip Blank	SW5030B	Purge and Trap Water GC/MS	04/21/10 10:32 AM	40665

CLIENT: Zia Engineering & Environmental
Project: MP POL
Lab Order: 1004121

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1004121-01A	MNPA-MPOL-CS-001	Soil	SW8260B	8260 Soil Volatiles by GC/MS	40580	1	04/15/10 02:41 PM	GCMS1_100415A
1004121-01B	MNPA-MPOL-CS-001	Soil	SW1010	Ignitability	40640	1	04/20/10 04:15 PM	IGN_100420A
	MNPA-MPOL-CS-001	Soil	M8015V	Method 8015 Gasoline (GRO)	40663	1	04/21/10 01:35 PM	GC4_100421B
	MNPA-MPOL-CS-001	Soil	D2216	Percent Moisture	40658	1	04/21/10 04:30 PM	PMOIST_100421A
	MNPA-MPOL-CS-001	Soil	SW8270C	Semivolatiles by GC/MS - Soil	40577	1	04/18/10 06:56 PM	GCMS4_100418C
	MNPA-MPOL-CS-001	Soil	SW8270C	Semivolatiles by GC/MS - Soil	40577	1	04/20/10 06:16 PM	GCMS4_100420C
	MNPA-MPOL-CS-001	Soil	SW7471A	Total Mercury: Soil/Solid	40549	1	04/16/10 10:54 AM	CETAC_HG_100416B
	MNPA-MPOL-CS-001	Soil	SW6020	Trace Metals: ICP-MS - Solid	40548	5	04/22/10 12:38 PM	ICP-MS2_100422A
1004121-02A	MNPA-MPOL-TB-001-0410	Trip Blank	SW8260B	8260 Water Volatiles by GC/MS	40665	1	04/21/10 12:38 PM	GCMS5_100421A

DHL Analytical

Date: 04/26/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-CS-001
Project:	MP POL	Lab ID:	1004121-01
Project No:	23	Collection Date:	04/13/10 10:15 AM
Lab Order:	1004121	Matrix:	Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Method 8015 Gasoline (GRO)		M8015V					Analyst: DEW
Gasoline Range Organics	<0.102	0.102	0.204		mg/Kg-dry	1	04/21/10 01:35 PM
Surr: Tetrachlorethene	102	0	70 - 134		%REC	1	04/21/10 01:35 PM
Total Mercury: Soil/Solid		SW7471A					Analyst: LM
Mercury	<0.0150	0.0150	0.0470		mg/Kg-dry	1	04/16/10 10:54 AM
Trace Metals: ICP-MS - Solid		SW6020					Analyst: KL
Arsenic	2.43	0.464	0.929		mg/Kg-dry	5	04/22/10 12:38 PM
Barium	81.6	0.464	1.86		mg/Kg-dry	5	04/22/10 12:38 PM
Cadmium	0.323	0.0929	0.279		mg/Kg-dry	5	04/22/10 12:38 PM
Chromium	9.13	0.464	1.86		mg/Kg-dry	5	04/22/10 12:38 PM
Lead	27.3	0.0929	0.279		mg/Kg-dry	5	04/22/10 12:38 PM
Selenium	2.30	0.139	0.464		mg/Kg-dry	5	04/22/10 12:38 PM
Silver	<0.0929	0.0929	0.186		mg/Kg-dry	5	04/22/10 12:38 PM
Semivolatiles by GC/MS - Soil		SW8270C					Analyst: DO
1,2,4,5-Tetrachlorobenzene	<0.0638	0.0638	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
1,2,4-Trichlorobenzene	<0.0213	0.0213	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
1,2-Dichlorobenzene	<0.0319	0.0319	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
1,2-Diphenylhydrazine	<0.0638	0.0638	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
1,3-Dichlorobenzene	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
1,4-Dichlorobenzene	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
1-Chloronaphthalene	<0.0425	0.0425	0.141	N	mg/Kg-dry	1	04/18/10 06:56 PM
1-Methylnaphthalene	<0.0638	0.0638	0.141	N	mg/Kg-dry	1	04/20/10 06:16 PM
1-Naphthylamine	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
2,4,5-Trichlorophenol	<0.0744	0.0744	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2,4,6-Trichlorophenol	<0.0638	0.0638	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2,4-Dichlorophenol	<0.0850	0.0850	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2,4-Dimethylphenol	<0.0638	0.0638	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2,4-Dinitrophenol	<0.0531	0.0531	0.701		mg/Kg-dry	1	04/20/10 06:16 PM
2,4-Dinitrotoluene	<0.0319	0.0319	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2,6-Dichlorophenol	<0.0638	0.0638	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2,6-Dinitrotoluene	<0.0319	0.0319	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2-Chloronaphthalene	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2-Chlorophenol	<0.0744	0.0744	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2-Methylnaphthalene	<0.0213	0.0213	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2-Methylphenol	<0.0744	0.0744	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2-Naphthylamine	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
2-Nitroaniline	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2-Nitrophenol	<0.0744	0.0744	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
2-Picoline	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
3,3´-Dichlorobenzidine	<0.0744	0.0744	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
3-Methylcholanthrene	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
3-Nitroaniline	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
4,6-Dinitro-2-methylphenol	<0.0850	0.0850	0.351		mg/Kg-dry	1	04/20/10 06:16 PM
4-Aminobiphenyl	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
4-Bromophenyl phenyl ether	<0.0319	0.0319	0.141		mg/Kg-dry	1	04/20/10 06:16 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 04/26/10

CLIENT: Zia Engineering & Environmental
Project: MP POL
Project No: 23
Lab Order: 1004121

Client Sample ID: MNPA-MPOL-CS-001
Lab ID: 1004121-01
Collection Date: 04/13/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
4-Chloro-3-methylphenol	<0.0638	0.0638	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
4-Chloroaniline	<0.0531	0.0531	0.351		mg/Kg-dry	1	04/20/10 06:16 PM
4-Chlorophenyl phenyl ether	<0.0319	0.0319	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
4-Methylphenol	<0.106	0.106	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
4-Nitroaniline	<0.0744	0.0744	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
4-Nitrophenol	<0.149	0.149	0.701		mg/Kg-dry	1	04/20/10 06:16 PM
7,12-Dimethylbenz(a)anthracene	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
Acenaphthene	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Acenaphthylene	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Acetophenone	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Aniline	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Anthracene	<0.0213	0.0213	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Benzidine	<0.351	0.351	0.701		mg/Kg-dry	1	04/20/10 06:16 PM
Benzo[a]anthracene	<0.0213	0.0213	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Benzo[a]pyrene	<0.0319	0.0319	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Benzo[b]fluoranthene	<0.0319	0.0319	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Benzo[g,h,i]perylene	<0.0638	0.0638	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Benzo[k]fluoranthene	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Benzoic acid	<0.138	0.138	0.701		mg/Kg-dry	1	04/20/10 06:16 PM
Benzyl alcohol	<0.0425	0.0425	0.351		mg/Kg-dry	1	04/20/10 06:16 PM
Biphenyl	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Bis(2-chloroethoxy)methane	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Bis(2-chloroethyl)ether	<0.0106	0.0106	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Bis(2-chloroisopropyl)ether	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Bis(2-ethylhexyl)phthalate	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Butyl benzyl phthalate	<0.106	0.106	0.351		mg/Kg-dry	1	04/20/10 06:16 PM
Carbazole	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Chrysene	0.0354	0.0319	0.141	J	mg/Kg-dry	1	04/20/10 06:16 PM
Di-n-butyl phthalate	<0.106	0.106	0.351		mg/Kg-dry	1	04/20/10 06:16 PM
Di-n-octyl phthalate	<0.106	0.106	0.351		mg/Kg-dry	1	04/20/10 06:16 PM
Dibenz(a,j)acridine	<0.0425	0.0425	0.141	N	mg/Kg-dry	1	04/18/10 06:56 PM
Dibenz[a,h]anthracene	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Dibenzofuran	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Diethyl phthalate	<0.106	0.106	0.351		mg/Kg-dry	1	04/20/10 06:16 PM
Dimethyl phthalate	<0.106	0.106	0.351		mg/Kg-dry	1	04/20/10 06:16 PM
Dimethylphenethylamine	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
Diphenylamine	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
Ethyl methanesulfonate	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
Fluoranthene	0.0638	0.0213	0.141	J	mg/Kg-dry	1	04/20/10 06:16 PM
Fluorene	<0.0319	0.0319	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Hexachlorobenzene	<0.0106	0.0106	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Hexachlorobutadiene	<0.0319	0.0319	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Hexachlorocyclopentadiene	<0.0638	0.0638	0.351		mg/Kg-dry	1	04/20/10 06:16 PM
Hexachloroethane	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Indeno[1,2,3-cd]pyrene	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/20/10 06:16 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: MP POL
Project No: 23
Lab Order: 1004121

Client Sample ID: MNPA-MPOL-CS-001
Lab ID: 1004121-01
Collection Date: 04/13/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Isophorone	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Methyl methanesulfonate	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
N-Nitrosodi-n-propylamine	<0.0106	0.0106	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
N-Nitrosodimethylamine	<0.0638	0.0638	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
N-Nitrosodiphenylamine	<0.0531	0.0531	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
N-Nitrosopiperidine	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
Naphthalene	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Nitrobenzene	<0.0744	0.0744	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
p-Dimethylaminoazobenzene	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
Pentachlorobenzene	<0.0638	0.0638	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Pentachloronitrobenzene	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
Pentachlorophenol	<0.0956	0.0956	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Phenacetin	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
Phenanthrene	0.0425	0.0319	0.141	J	mg/Kg-dry	1	04/20/10 06:16 PM
Phenol	<0.0638	0.0638	0.141		mg/Kg-dry	1	04/20/10 06:16 PM
Pronamide	<0.0425	0.0425	0.141		mg/Kg-dry	1	04/18/10 06:56 PM
Pyrene	0.0496	0.0213	0.141	J	mg/Kg-dry	1	04/20/10 06:16 PM
Pyridine	<0.138	0.138	0.701		mg/Kg-dry	1	04/20/10 06:16 PM
Surr: 2,4,6-Tribromophenol	66.4	0	37 - 125		%REC	1	04/18/10 06:56 PM
Surr: 2,4,6-Tribromophenol	71.9	0	37 - 125		%REC	1	04/20/10 06:16 PM
Surr: 2-Fluorobiphenyl	68.7	0	60 - 135		%REC	1	04/20/10 06:16 PM
Surr: 2-Fluorobiphenyl	62.7	0	60 - 135		%REC	1	04/18/10 06:56 PM
Surr: 2-Fluorophenol	69.7	0	60 - 129		%REC	1	04/20/10 06:16 PM
Surr: 2-Fluorophenol	27.1	0	60 - 129	S	%REC	1	04/18/10 06:56 PM
Surr: 4-Terphenyl-d14	64.7	0	45 - 125		%REC	1	04/18/10 06:56 PM
Surr: 4-Terphenyl-d14	70.4	0	45 - 125		%REC	1	04/20/10 06:16 PM
Surr: Nitrobenzene-d5	65.7	0	40 - 125		%REC	1	04/18/10 06:56 PM
Surr: Nitrobenzene-d5	70.1	0	40 - 125		%REC	1	04/20/10 06:16 PM
Surr: Phenol-d6	62.9	0	40 - 125		%REC	1	04/20/10 06:16 PM
Surr: Phenol-d6	60.0	0	40 - 125		%REC	1	04/18/10 06:56 PM
8260 Soil Volatiles by GC/MS		**SW8260B**					**Analyst: AJR**
1,1,1,2-Tetrachloroethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,1,1-Trichloroethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,1,2,2-Tetrachloroethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,1,2-Trichloroethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,1-Dichloroethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,1-Dichloroethene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,1-Dichloropropene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,2,3-Trichlorobenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,2,3-Trichloropropane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,2,4-Trichlorobenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,2,4-Trimethylbenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,2-Dibromo-3-chloropropane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,2-Dibromoethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,2-Dichlorobenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 04/26/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-CS-001
Project:	MP POL	Lab ID:	1004121-01
Project No:	23	Collection Date:	04/13/10 10:15 AM
Lab Order:	1004121	Matrix:	Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
1,2-Dichloroethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,2-Dichloropropane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,3,5-Trimethylbenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,3-Dichlorobenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,3-Dichloropropane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,4-Dichloro-2-butene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
1,4-Dichlorobenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
2,2-Dichloropropane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
2-Butanone	<0.00475	0.00475	0.0143		mg/Kg-dry	1	04/15/10 02:41 PM
2-Chloroethylvinylether	<0.00475	0.00475	0.0143		mg/Kg-dry	1	04/15/10 02:41 PM
2-Chlorotoluene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
2-Hexanone	<0.00475	0.00475	0.0143		mg/Kg-dry	1	04/15/10 02:41 PM
4-Chlorotoluene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
4-Methyl-2-pentanone	<0.00475	0.00475	0.0143		mg/Kg-dry	1	04/15/10 02:41 PM
Acetone	<0.0143	0.0143	0.0475		mg/Kg-dry	1	04/15/10 02:41 PM
Acrylonitrile	<0.00285	0.00285	0.00950		mg/Kg-dry	1	04/15/10 02:41 PM
Benzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Bromobenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Bromochloromethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Bromodichloromethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Bromoform	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Bromomethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Carbon disulfide	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Carbon tetrachloride	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Chlorobenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Chloroethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Chloroform	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Chloromethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
cis-1,2-Dichloroethene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
cis-1,3-Dichloropropene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Dibromochloromethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Dibromomethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Dichlorodifluoromethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Ethylbenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Hexachlorobutadiene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Iodomethane	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Isopropylbenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
m,p-Xylene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Methyl tert-butyl ether	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Methylene chloride	<0.00475	0.00475	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
n-Butylbenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
n-Propylbenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Naphthalene	<0.00475	0.00475	0.0143		mg/Kg-dry	1	04/15/10 02:41 PM
o-Xylene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
p-Isopropyltoluene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Project: MP POL
Project No: 23
Lab Order: 1004121

Client Sample ID: MNPA-MPOL-CS-001
Lab ID: 1004121-01
Collection Date: 04/13/10 10:15 AM
Matrix: Soil

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
sec-Butylbenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Styrene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
tert-Butylbenzene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Tetrachloroethene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Toluene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
trans-1,2-Dichloroethene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
trans-1,3-Dichloropropene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Trichloroethene	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Trichlorofluoromethane	<0.00475	0.00475	0.0143		mg/Kg-dry	1	04/15/10 02:41 PM
Vinyl chloride	<0.000950	0.000950	0.00475		mg/Kg-dry	1	04/15/10 02:41 PM
Surr: 1,2-Dichloroethane-d4	111	0	78 - 125		%REC	1	04/15/10 02:41 PM
Surr: 4-Bromofluorobenzene	102	0	85 - 120		%REC	1	04/15/10 02:41 PM
Surr: Dibromofluoromethane	106	0	84 - 116		%REC	1	04/15/10 02:41 PM
Surr: Toluene-d8	95.5	0	85 - 115		%REC	1	04/15/10 02:41 PM
Ignitability		**SW1010**					**Analyst: SW**
Ignitability	>100	0	0		°C	1	04/20/10 04:15 PM
Percent Moisture		**D2216**					**Analyst: RP**
Percent Moisture	7.18	0	0		WT%	1	04/21/10 04:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 04/26/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-TB-001-0410
Project:	MP POL	Lab ID:	1004121-02
Project No:	23	Collection Date:	04/13/10 10:15 AM
Lab Order:	1004121	Matrix:	Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 Water Volatiles by GC/MS		SW8260B					Analyst: AJR
1,1,1,2-Tetrachloroethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
1,1,1-Trichloroethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
1,1,2,2-Tetrachloroethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
1,1,2-Trichloroethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
1,1-Dichloroethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
1,1-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
1,1-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
1,2,3-Trichlorobenzene	<0.00150	0.00150	0.00500		mg/L	1	04/21/10 12:38 PM
1,2,3-Trichloropropane	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
1,2,4-Trichlorobenzene	<0.00150	0.00150	0.00500		mg/L	1	04/21/10 12:38 PM
1,2,4-Trimethylbenzene	<0.00150	0.00150	0.00500		mg/L	1	04/21/10 12:38 PM
1,2-Dibromo-3-chloropropane	<0.00300	0.00300	0.0100		mg/L	1	04/21/10 12:38 PM
1,2-Dibromoethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
1,2-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
1,2-Dichloroethane	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
1,2-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
1,3,5-Trimethylbenzene	<0.00150	0.00150	0.00500		mg/L	1	04/21/10 12:38 PM
1,3-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
1,3-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
1,4-Dichloro-2-butene	<0.00200	0.00200	0.00200		mg/L	1	04/21/10 12:38 PM
1,4-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
2,2-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
2-Butanone	<0.00500	0.00500	0.0150		mg/L	1	04/21/10 12:38 PM
2-Chloroethylvinylether	<0.00500	0.00500	0.0150		mg/L	1	04/21/10 12:38 PM
2-Chlorotoluene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
2-Hexanone	<0.00500	0.00500	0.0150		mg/L	1	04/21/10 12:38 PM
4-Chlorotoluene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
4-Methyl-2-pentanone	<0.00500	0.00500	0.0150		mg/L	1	04/21/10 12:38 PM
Acetone	<0.00500	0.00500	0.0150		mg/L	1	04/21/10 12:38 PM
Acrylonitrile	<0.00100	0.00100	0.00300		mg/L	1	04/21/10 12:38 PM
Benzene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Bromobenzene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Bromochloromethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Bromodichloromethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Bromoform	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Bromomethane	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
Carbon disulfide	<0.00500	0.00500	0.0150		mg/L	1	04/21/10 12:38 PM
Carbon tetrachloride	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Chlorobenzene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Chloroethane	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
Chloroform	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
Chloromethane	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
cis-1,2-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
cis-1,3-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

DHL Analytical

Date: 04/26/10

CLIENT:	Zia Engineering & Environmental	Client Sample ID:	MNPA-MPOL-TB-001-0410
Project:	MP POL	Lab ID:	1004121-02
Project No:	23	Collection Date:	04/13/10 10:15 AM
Lab Order:	1004121	Matrix:	Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
Dibromochloromethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Dibromomethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Dichlorodifluoromethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
Hexachlorobutadiene	<0.00100	0.00100	0.00300		mg/L	1	04/21/10 12:38 PM
Iodomethane	<0.00500	0.00500	0.0150		mg/L	1	04/21/10 12:38 PM
Isopropylbenzene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	04/21/10 12:38 PM
Methyl tert-butyl ether	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
Methylene chloride	<0.00250	0.00250	0.00250		mg/L	1	04/21/10 12:38 PM
n-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
n-Propylbenzene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
Naphthalene	<0.00500	0.00500	0.0150		mg/L	1	04/21/10 12:38 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
p-Isopropyltoluene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
sec-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
Styrene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
tert-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	04/21/10 12:38 PM
Tetrachloroethene	<0.000600	0.000600	0.00200		mg/L	1	04/21/10 12:38 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	04/21/10 12:38 PM
trans-1,2-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
trans-1,3-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Trichloroethene	<0.000600	0.000600	0.00200		mg/L	1	04/21/10 12:38 PM
Trichlorofluoromethane	<0.000200	0.000200	0.00100		mg/L	1	04/21/10 12:38 PM
Vinyl chloride	<0.000100	0.000100	0.00100		mg/L	1	04/21/10 12:38 PM
Surr: 1,2-Dichloroethane-d4	96.3	0	70 - 120		%REC	1	04/21/10 12:38 PM
Surr: 4-Bromofluorobenzene	105	0	75 - 120		%REC	1	04/21/10 12:38 PM
Surr: Dibromofluoromethane	98.5	0	85 - 115		%REC	1	04/21/10 12:38 PM
Surr: Toluene-d8	99.9	0	85 - 120		%REC	1	04/21/10 12:38 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	J	Analyte detected between MDL and RL
B	Analyte detected in the associated Method Blank	MDL	Method Detection Limit
C	Sample Result or QC discussed in the Case Narrative	N	Parameter not NELAC certified
DF	Dilution Factor	ND	Not Detected at the Method Detection Limit
E	TPH pattern not Gas or Diesel Range Pattern	RL	Reporting Limit
		S	Spike Recovery outside control limits

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100421B

Sample ID:	LCS-40663	Batch ID:	40663		TestNo:		M8015V			Units:	mg/Kg
SampType:	LCS	Run ID:	GC4_100421B		Analysis Date:		04/21/10 12:23 PM			Prep Date:	04/21/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		4.97	0.200	5.000	0	99.4	68	126			
Surr: Tetrachlorethene		0.378		0.4000		94.6	70	134			

Sample ID:	MB-40663	Batch ID:	40663		TestNo:		M8015V			Units:	mg/Kg
SampType:	MBLK	Run ID:	GC4_100421B		Analysis Date:		04/21/10 01:10 PM			Prep Date:	04/21/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		<0.100	0.200								
Surr: Tetrachlorethene		0.409		0.4000		102	70	134			

Sample ID:	1004121-01B-MS	Batch ID:	40663		TestNo:		M8015V			Units:	mg/Kg-dry
SampType:	MS	Run ID:	GC4_100421B		Analysis Date:		04/21/10 01:58 PM			Prep Date:	04/21/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		3.73	0.192	4.810	0	77.6	68	126			
Surr: Tetrachlorethene		0.377		0.3848		98.1	70	134			

Sample ID:	1004121-01B-MSD	Batch ID:	40663		TestNo:		M8015V			Units:	mg/Kg-dry
SampType:	MSD	Run ID:	GC4_100421B		Analysis Date:		04/21/10 02:21 PM			Prep Date:	04/21/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		3.56	0.191	4.767	0	74.7	68	126	4.58	30	
Surr: Tetrachlorethene		0.378		0.3814		99.2	70	134	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_100421B

Sample ID:	ICV-100421	Batch ID:	R49002		TestNo:		M8015V		Units:		mg/Kg
SampType:	ICV	Run ID:	GC4_100421B		Analysis Date:		04/21/10 09:14 AM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		9.81	0.200	10.00	0	98.1	80	120			
Surr: Tetrachlorethene		0.446		0.4000		111	70	134			

Sample ID:	CCV1-100421	Batch ID:	R49002		TestNo:		M8015V		Units:		mg/Kg
SampType:	CCV	Run ID:	GC4_100421B		Analysis Date:		04/21/10 02:45 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Gasoline Range Organics		4.85	0.200	5.000	0	97.0	80	120			
Surr: Tetrachlorethene		0.372		0.4000		93.0	70	134			

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC_HG_100416B

Sample ID:	MB-40549	Batch ID:	40549		TestNo:		SW7471A		Units:		mg/Kg
SampType:	MBLK	Run ID:	CETAC_HG_100416B		Analysis Date:		04/16/10 10:27 AM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Mercury		<0.0160	0.0500								

Sample ID:	LCS-40549	Batch ID:	40549		TestNo:		SW7471A		Units:		mg/Kg
SampType:	LCS	Run ID:	CETAC_HG_100416B		Analysis Date:		04/16/10 10:31 AM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Mercury		0.204	0.0500	0.2000	0	102	85	115			

Sample ID:	LCSD-40549	Batch ID:	40549		TestNo:		SW7471A		Units:		mg/Kg
SampType:	LCSD	Run ID:	CETAC_HG_100416B		Analysis Date:		04/16/10 10:33 AM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Mercury		0.201	0.0500	0.2000	0	101	85	115	1.48	25	

Sample ID:	1004122-01B SD	Batch ID:	40549		TestNo:		SW7471A		Units:		mg/Kg-dry
SampType:	SD	Run ID:	CETAC_HG_100416B		Analysis Date:		04/16/10 10:41 AM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Mercury		<0.0808	0.253	0	0				0	10	

Sample ID:	1004122-01B PDS	Batch ID:	40549		TestNo:		SW7471A		Units:		mg/Kg-dry
SampType:	PDS	Run ID:	CETAC_HG_100416B		Analysis Date:		04/16/10 10:43 AM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Mercury		0.273	0.0505	0.2526	0	108	85	115			

Sample ID:	1004122-01B MS	Batch ID:	40549		TestNo:		SW7471A		Units:		mg/Kg-dry
SampType:	MS	Run ID:	CETAC_HG_100416B		Analysis Date:		04/16/10 10:45 AM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Mercury		0.223	0.0508	0.2034	0	110	80	120			

Sample ID:	1004122-01B MSD	Batch ID:	40549		TestNo:		SW7471A		Units:		mg/Kg-dry
SampType:	MSD	Run ID:	CETAC_HG_100416B		Analysis Date:		04/16/10 10:52 AM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Mercury		0.218	0.0506	0.2024	0	108	80	120	2.31	25	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC_HG_100416B

Sample ID:	ICV-100416	Batch ID:	R48936		TestNo:		SW7471A		Units:		mg/Kg
SampType:	ICV	Run ID:	CETAC_HG_100416B		Analysis Date:		04/16/10 10:23 AM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Mercury		0.00378	0.0500	0.004000	0	94.5	90	110			

Sample ID:	CCV1-100416	Batch ID:	R48936		TestNo:		SW7471A		Units:		mg/Kg
SampType:	CCV	Run ID:	CETAC_HG_100416B		Analysis Date:		04/16/10 10:47 AM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Mercury		0.00197	0.0500	0.002000	0	98.5	90	110			

Sample ID:	CCV2-100416	Batch ID:	R48936		TestNo:		SW7471A		Units:		mg/Kg
SampType:	CCV	Run ID:	CETAC_HG_100416B		Analysis Date:		04/16/10 11:13 AM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Mercury		0.00199	0.0500	0.002000	0	99.5	90	110			

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS2_100422A

Sample ID:	MB-40548	Batch ID:	40548		TestNo:		SW6020		Units:		mg/Kg
SampType:	MBLK	Run ID:	ICP-MS2_100422A		Analysis Date:		04/22/10 12:16 PM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Arsenic		<0.500	1.00								
Barium		<0.500	2.00								
Cadmium		<0.100	0.300								
Chromium		<0.500	2.00								
Lead		<0.100	0.300								
Selenium		<0.150	0.500								
Silver		<0.100	0.200								

Sample ID:	LCS-40548	Batch ID:	40548		TestNo:		SW6020		Units:		mg/Kg
SampType:	LCS	Run ID:	ICP-MS2_100422A		Analysis Date:		04/22/10 12:22 PM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Arsenic		49.0	1.00	50.00	0	97.9	80	120			
Barium		50.3	2.00	50.00	0	101	80	120			
Cadmium		48.8	0.300	50.00	0	97.7	80	120			
Chromium		52.6	2.00	50.00	0	105	80	120			
Lead		49.1	0.300	50.00	0	98.1	80	120			
Selenium		47.2	0.500	50.00	0	94.5	80	120			
Silver		49.5	0.200	50.00	0	99.0	80	120			

Sample ID:	LCSD-40548	Batch ID:	40548		TestNo:		SW6020		Units:		mg/Kg
SampType:	LCSD	Run ID:	ICP-MS2_100422A		Analysis Date:		04/22/10 12:27 PM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Arsenic		49.6	1.00	50.00	0	99.3	80	120	1.42	20	
Barium		50.4	2.00	50.00	0	101	80	120	0.248	20	
Cadmium		48.8	0.300	50.00	0	97.6	80	120	0.154	20	
Chromium		51.4	2.00	50.00	0	103	80	120	2.36	20	
Lead		49.1	0.300	50.00	0	98.1	80	120	0	20	
Selenium		48.2	0.500	50.00	0	96.3	80	120	1.89	20	
Silver		49.5	0.200	50.00	0	99.0	80	120	0	20	

Sample ID:	1004122-01B SD	Batch ID:	40548		TestNo:		SW6020		Units:		mg/Kg-dry
SampType:	SD	Run ID:	ICP-MS2_100422A		Analysis Date:		04/22/10 12:49 PM		Prep Date:		04/15/10
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Arsenic		<2.49	4.98	0	1.508				0	10	
Barium		90.4	9.97	0	92.67				2.45	10	
Cadmium		<0.498	1.50	0	0.1533				0	10	
Chromium		10.1	9.97	0	9.387				7.51	10	
Lead		5.18	1.50	0	5.116				1.16	10	
Selenium		1.61	2.49	0	1.670				3.85	10	
Silver		<0.498	0.997	0	0				0	10	

Sample ID:	1004122-01B PDS	Batch ID:	40548		TestNo:		SW6020		Units:		mg/Kg-dry
SampType:	PDS	Run ID:	ICP-MS2_100422A		Analysis Date:		04/22/10 12:54 PM		Prep Date:		04/15/10

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS2_100422A

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Arsenic	51.7	0.997	49.84	1.508	101	75	125			
Barium	142	1.99	49.84	92.67	99.3	75	125			
Cadmium	47.8	0.299	49.84	0.1533	95.5	75	125			
Chromium	59.0	1.99	49.84	9.387	99.6	75	125			
Lead	53.7	0.299	49.84	5.116	97.4	75	125			
Selenium	48.7	0.498	49.84	1.670	94.4	75	125			
Silver	49.3	0.199	49.84	0	98.8	75	125			

Sample ID: 1004122-01B MS Batch ID: 40548 TestNo: SW6020 Units: mg/Kg-dry
SampType: MS Run ID: ICP-MS2_100422A Analysis Date: 04/22/10 01:00 PM Prep Date: 04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Arsenic	47.9	0.978	48.90	1.508	94.9	80	120			
Barium	134	1.96	48.90	92.67	83.6	80	120			
Cadmium	47.9	0.293	48.90	0.1533	97.6	80	120			
Chromium	54.5	1.96	48.90	9.387	92.3	80	120			
Lead	53.3	0.293	48.90	5.116	98.5	80	120			
Selenium	44.8	0.489	48.90	1.670	88.2	80	120			
Silver	48.2	0.196	48.90	0	98.5	80	120			

Sample ID: 1004122-01B MSD Batch ID: 40548 TestNo: SW6020 Units: mg/Kg-dry
SampType: MSD Run ID: ICP-MS2_100422A Analysis Date: 04/22/10 01:05 PM Prep Date: 04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Arsenic	47.4	0.978	48.90	1.508	93.9	80	120	1.08	20	
Barium	146	1.96	48.90	92.67	109	80	120	8.87	20	
Cadmium	47.8	0.293	48.90	0.1533	97.5	80	120	0.102	20	
Chromium	55.1	1.96	48.90	9.387	93.6	80	120	1.11	20	
Lead	53.7	0.293	48.90	5.116	99.4	80	120	0.777	20	
Selenium	44.2	0.489	48.90	1.670	87.0	80	120	1.32	20	
Silver	47.3	0.196	48.90	0	96.6	80	120	1.90	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS2_100422A

Sample ID:	ICV1-100422	Batch ID:	R49039		TestNo:		SW6020		Units:	mg/L	
SampType:	ICV	Run ID:	ICP-MS2_100422A		Analysis Date:		04/22/10 12:00 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Arsenic		0.0997	0.00600	0.100	0	99.7	90	110			
Barium		0.0993	0.0100	0.100	0	99.3	90	110			
Cadmium		0.0965	0.00100	0.100	0	96.5	90	110			
Chromium		0.0980	0.00600	0.100	0	98.0	90	110			
Lead		0.0960	0.00100	0.100	0	96.0	90	110			
Selenium		0.0992	0.00600	0.100	0	99.2	90	110			
Silver		0.0982	0.00200	0.100	0	98.2	90	110			

Sample ID:	CCV1-100422	Batch ID:	R49039		TestNo:		SW6020		Units:	mg/L	
SampType:	CCV	Run ID:	ICP-MS2_100422A		Analysis Date:		04/22/10 01:10 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Arsenic		0.198	0.00600	0.200	0	98.8	90	110			
Barium		0.201	0.0100	0.200	0	100	90	110			
Cadmium		0.195	0.00100	0.200	0	97.4	90	110			
Chromium		0.202	0.00600	0.200	0	101	90	110			
Lead		0.196	0.00100	0.200	0	98.2	90	110			
Selenium		0.193	0.00600	0.200	0	96.7	90	110			
Silver		0.189	0.00200	0.200	0	94.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100418C

Sample ID:	LCS2-40577	Batch ID:	40577	TestNo:	SW8270C	Units:	mg/Kg
SampType:	LCS	Run ID:	GCMS4_100418C	Analysis Date:	04/18/10 12:53 PM	Prep Date:	04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1-Chloronaphthalene	1.09	0.133	1.340	0	81.6	40	125			N
1-Naphthylamine	0.647	0.133	1.340	0	48.3	40	125			
2-Naphthylamine	0.687	0.133	1.340	0	51.2	40	125			
2-Picoline	0.907	0.133	1.340	0	67.7	40	125			
3-Methylcholanthrene	1.26	0.133	1.340	0	94.0	40	125			
4-Aminobiphenyl	0.607	0.133	1.340	0	45.3	40	125			
7,12-Dimethylbenz(a)anthracene	1.63	0.133	1.340	0	122	40	125			
Dibenz(a,j)acridine	1.15	0.133	1.340	0	85.6	40	125			N
Dimethylphenethylamine	0.307	0.133	1.340	0	22.9	40	125			S
Diphenylamine	1.13	0.133	1.340	0	84.6	40	125			
Ethyl methanesulfonate	1.07	0.133	1.340	0	80.1	40	125			
Methyl methanesulfonate	1.11	0.133	1.340	0	82.6	40	125			
N-Nitrosopiperidine	1.19	0.133	1.340	0	88.6	40	125			
p-Dimethylaminoazobenzene	1.11	0.133	1.340	0	83.1	40	125			
Pentachloronitrobenzene	1.17	0.133	1.340	0	87.1	40	125			
Phenacetin	1.31	0.133	1.340	0	97.5	40	125			
Pronamide	1.13	0.133	1.340	0	84.6	40	125			
Surr: 2,4,6-Tribromophenol	1.89		2.680		70.6	45	138			
Surr: 2-Fluorobiphenyl	1.76		2.680		65.7	37	125			
Surr: 2-Fluorophenol	1.69		2.680		62.9	60	135			
Surr: 4-Terphenyl-d14	1.77		2.680		65.9	60	129			
Surr: Nitrobenzene-d5	1.75		2.680		65.2	45	125			
Surr: Phenol-d6	1.77		2.680		65.9	40	125			

Sample ID:	1004121-01B-MS	Batch ID:	40577	TestNo:	SW8270C	Units:	mg/Kg-dry
SampType:	MS	Run ID:	GCMS4_100418C	Analysis Date:	04/18/10 02:54 PM	Prep Date:	04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1-Chloronaphthalene	1.20	0.140	1.408	0	85.6	40	125			N
1-Naphthylamine	0.434	0.140	1.408	0	30.8	40	125			S
2-Naphthylamine	0.581	0.140	1.408	0	41.3	40	125			
2-Picoline	0.897	0.140	1.408	0	63.7	40	125			
3-Methylcholanthrene	1.34	0.140	1.408	0	95.0	40	125			
4-Aminobiphenyl	0.350	0.140	1.408	0	24.9	40	125			S
7,12-Dimethylbenz(a)anthracene	1.51	0.140	1.408	0	107	40	125			
Dibenz(a,j)acridine	0.953	0.140	1.408	0	67.7	40	125			N
Dimethylphenethylamine	<0.0420	0.140	1.408	0	0	40	125			S
Diphenylamine	2.18	0.140	2.774	0	78.5	40	125			
Ethyl methanesulfonate	1.21	0.140	1.408	0	86.1	40	125			
Methyl methanesulfonate	1.27	0.140	1.408	0	90.5	40	125			
N-Nitrosopiperidine	1.29	0.140	1.408	0	91.5	40	125			
p-Dimethylaminoazobenzene	1.22	0.140	1.408	0	86.6	40	125			
Pentachloronitrobenzene	1.34	0.140	1.408	0	95.0	40	125			
Phenacetin	1.38	0.140	1.408	0	98.0	40	125			
Pronamide	1.30	0.140	1.408	0	92.0	40	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100418C

Surr: 2,4,6-Tribromophenol	2.02	2.816	71.9	45	138
Surr: 2-Fluorobiphenyl	1.84	2.816	65.4	37	125
Surr: 2-Fluorophenol	1.86	2.816	65.9	60	135
Surr: 4-Terphenyl-d14	1.80	2.816	63.9	60	129
Surr: Nitrobenzene-d5	1.87	2.816	66.4	45	125
Surr: Phenol-d6	1.81	2.816	64.4	40	125

Sample ID: 1004121-01B-MSD Batch ID: 40577 TestNo: SW8270C Units: mg/Kg-dry
SampType: MSD Run ID: GCMS4_100418C Analysis Date: 04/18/10 03:19 PM Prep Date: 04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1-Chloronaphthalene	1.16	0.141	1.423	0	81.6	40	125	3.72	30	N
1-Naphthylamine	0.439	0.141	1.423	0	30.8	40	125	1.05	30	S
2-Naphthylamine	0.580	0.141	1.423	0	40.8	40	125	0.166	30	
2-Picoline	0.885	0.141	1.423	0	62.2	40	125	1.33	30	
3-Methylcholanthrene	1.30	0.141	1.423	0	91.0	40	125	3.23	30	
4-Aminobiphenyl	0.297	0.141	1.423	0	20.9	40	125	16.4	30	S
7,12-Dimethylbenz(a)anthracene	1.37	0.141	1.423	0	96.0	40	125	9.74	30	
Dibenz(a,j)acridine	1.06	0.141	1.423	0	74.6	40	125	10.8	30	N
Dimethylphenethylamine	<0.0425	0.141	1.423	0	0	40	125	0	30	S
Diphenylamine	2.18	0.141	2.803	0	77.8	40	125	0.076	30	
Ethyl methanesulfonate	1.18	0.141	1.423	0	82.6	40	125	3.08	30	
Methyl methanesulfonate	1.24	0.141	1.423	0	87.1	40	125	2.88	30	
N-Nitrosopiperidine	1.30	0.141	1.423	0	91.5	40	125	1.05	30	
p-Dimethylaminoazobenzene	1.18	0.141	1.423	0	83.1	40	125	3.06	30	
Pentachloronitrobenzene	1.30	0.141	1.423	0	91.5	40	125	2.69	30	
Phenacetin	1.32	0.141	1.423	0	92.5	40	125	4.70	30	
Pronamide	1.27	0.141	1.423	0	89.6	40	125	1.69	30	
Surr: 2,4,6-Tribromophenol	2.00		2.846		70.4	45	138	0	0	
Surr: 2-Fluorobiphenyl	1.85		2.846		64.9	37	125	0	0	
Surr: 2-Fluorophenol	1.87		2.846		65.7	60	135	0	0	
Surr: 4-Terphenyl-d14	1.83		2.846		64.4	60	129	0	0	
Surr: Nitrobenzene-d5	1.95		2.846		68.7	45	125	0	0	
Surr: Phenol-d6	1.78		2.846		62.7	40	125	0	0	

Sample ID: MB-40577 Batch ID: 40577 TestNo: SW8270C Units: mg/Kg
SampType: MBLK Run ID: GCMS4_100418C Analysis Date: 04/18/10 05:43 PM Prep Date: 04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1-Chloronaphthalene	<0.0400	0.133								N
1-Naphthylamine	<0.0400	0.133								
2-Naphthylamine	<0.0400	0.133								
2-Picoline	<0.0500	0.133								
3-Methylcholanthrene	<0.0400	0.133								
4-Aminobiphenyl	<0.0400	0.133								
7,12-Dimethylbenz(a)anthracene	<0.0400	0.133								
Dibenz(a,j)acridine	<0.0400	0.133								N
Dimethylphenethylamine	<0.0400	0.133								
Diphenylamine	<0.0400	0.133								

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100418C

Ethyl methanesulfonate	<0.0400	0.133				
Methyl methanesulfonate	<0.0400	0.133				
N-Nitrosopiperidine	<0.0400	0.133				
p-Dimethylaminoazobenzene	<0.0400	0.133				
Pentachloronitrobenzene	<0.0400	0.133				
Phenacetin	<0.0400	0.133				
Pronamide	<0.0400	0.133				
Surr: 2,4,6-Tribromophenol	1.79		2.680	66.9	45	138
Surr: 2-Fluorobiphenyl	1.71		2.680	63.7	37	125
Surr: 2-Fluorophenol	1.72		2.680	64.2	60	135
Surr: 4-Terphenyl-d14	1.75		2.680	65.4	60	129
Surr: Nitrobenzene-d5	1.81		2.680	67.4	45	125
Surr: Phenol-d6	1.65		2.680	61.4	40	125

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100418C

Sample ID:	ICV-100418	Batch ID:	R49050	TestNo:	SW8270C		Units:	mg/Kg	
SampType:	ICV	Run ID:	GCMS4_100418C	Analysis Date:	04/18/10 12:05 PM		Prep Date:		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1-Chloronaphthalene	3.85	0.133	4.000	0	96.2	80	120			N
1-Naphthylamine	4.15	0.133	4.000	0	104	80	120			
2-Naphthylamine	4.50	0.133	4.000	0	112	80	120			
2-Picoline	4.31	0.133	4.000	0	108	80	120			
3-Methylcholanthrene	4.20	0.133	4.000	0	105	80	120			
4-Aminobiphenyl	3.85	0.133	4.000	0	96.2	80	120			
7,12-Dimethylbenz(a)anthracene	4.42	0.133	4.000	0	110	80	120			
Dibenz(a,j)acridine	3.75	0.133	4.000	0	93.8	80	120			N
Dimethylphenethylamine	3.80	0.133	4.000	0	95.0	80	120			
Diphenylamine	3.89	0.133	4.000	0	97.2	80	120			
Ethyl methanesulfonate	3.59	0.133	4.000	0	89.8	80	120			
Methyl methanesulfonate	3.94	0.133	4.000	0	98.5	80	120			
N-Nitrosopiperidine	4.15	0.133	4.000	0	104	80	120			
p-Dimethylaminoazobenzene	3.87	0.133	4.000	0	96.8	80	120			
Pentachloronitrobenzene	4.17	0.133	4.000	0	104	80	120			
Phenacetin	3.96	0.133	4.000	0	99.0	80	120			
Pronamide	3.58	0.133	4.000	0	89.5	80	120			
Surr: 2,4,6-Tribromophenol	3.76		4.000		94.0	80	120			
Surr: 2-Fluorobiphenyl	3.81		4.000		95.2	80	120			
Surr: 2-Fluorophenol	4.50		4.000		112	80	120			
Surr: 4-Terphenyl-d14	3.66		4.000		91.5	80	120			
Surr: Nitrobenzene-d5	4.04		4.000		101	80	120			
Surr: Phenol-d6	4.13		4.000		103	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100420C

Sample ID:	LCS-40577	Batch ID:	40577	TestNo:	SW8270C	Units:	mg/Kg
SampType:	LCS	Run ID:	GCMS4_100420C	Analysis Date:	04/20/10 02:47 PM	Prep Date:	04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,2,4,5-Tetrachlorobenzene	1.81	0.133	2.640	0	68.7	35	125			
1,2,4-Trichlorobenzene	0.833	0.133	1.340	0	62.2	45	110			
1,2-Dichlorobenzene	0.787	0.133	1.340	0	58.7	45	100			
1,2-Diphenylhydrazine	0.960	0.133	1.340	0	71.6	38	125			
1,3-Dichlorobenzene	0.767	0.133	1.340	0	57.2	40	100			
1,4-Dichlorobenzene	0.780	0.133	1.340	0	58.2	35	105			
1-Methylnaphthalene	1.03	0.133	1.340	0	77.1	45	105			N
2,4,5-Trichlorophenol	0.920	0.133	1.340	0	68.7	50	110			
2,4,6-Trichlorophenol	0.940	0.133	1.340	0	70.1	45	110			
2,4-Dichlorophenol	0.973	0.133	1.340	0	72.6	45	110			
2,4-Dimethylphenol	1.49	0.133	1.340	0	111	30	105			S
2,4-Dinitrophenol	1.07	0.660	1.340	0	79.6	15	130			
2,4-Dinitrotoluene	0.900	0.133	1.340	0	67.2	50	115			
2,6-Dichlorophenol	1.00	0.133	1.340	0	74.6	35	125			
2,6-Dinitrotoluene	0.867	0.133	1.340	0	64.7	50	110			
2-Chloronaphthalene	1.05	0.133	1.340	0	78.1	45	105			
2-Chlorophenol	1.02	0.133	1.340	0	76.1	45	105			
2-Methylnaphthalene	0.900	0.133	1.340	0	67.2	45	105			
2-Methylphenol	1.09	0.133	1.340	0	81.6	40	105			
2-Nitroaniline	0.880	0.133	1.340	0	65.7	45	120			
2-Nitrophenol	1.03	0.133	1.340	0	77.1	40	110			
3,3´-Dichlorobenzidine	0.813	0.133	1.340	0	60.7	25	128			
3-Nitroaniline	0.900	0.133	1.340	0	67.2	25	110			
4,6-Dinitro-2-methylphenol	1.15	0.330	1.340	0	86.1	30	135			
4-Bromophenyl phenyl ether	0.893	0.133	1.340	0	66.7	45	115			
4-Chloro-3-methylphenol	0.880	0.133	1.340	0	65.7	45	115			
4-Chloroaniline	0.533	0.330	1.340	0	39.8	25	125			
4-Chlorophenyl phenyl ether	0.833	0.133	1.340	0	62.2	45	110			
4-Methylphenol	1.05	0.133	1.340	0	78.6	40	105			
4-Nitroaniline	0.800	0.133	1.340	0	59.7	35	115			
4-Nitrophenol	1.09	0.660	1.340	0	81.1	15	140			
Acenaphthene	0.873	0.133	1.340	0	65.2	45	110			
Acenaphthylene	0.927	0.133	1.340	0	69.2	45	105			
Acetophenone	0.847	0.133	1.340	0	63.2	40	125			
Aniline	0.647	0.133	1.340	0	48.3	40	125			
Anthracene	0.933	0.133	1.340	0	69.7	55	105			
Benzidine	0.313	0.660	1.340	0	23.4	20	125			
Benzo[a]anthracene	0.953	0.133	1.340	0	71.1	50	110			
Benzo[a]pyrene	0.913	0.133	1.340	0	68.2	50	110			
Benzo[b]fluoranthene	0.940	0.133	1.340	0	70.1	45	115			
Benzo[g,h,i]perylene	0.913	0.133	1.340	0	68.2	40	125			
Benzo[k]fluoranthene	0.933	0.133	1.340	0	69.7	45	125			
Benzoic acid	0.580	0.660	1.340	0	43.3	25	125			
Benzyl alcohol	0.873	0.330	1.340	0	65.2	20	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100420C

Biphenyl	0.880	0.133	1.340	0	65.7	60	140
Bis(2-chloroethoxy)methane	0.893	0.133	1.340	0	66.7	45	110
Bis(2-chloroethyl)ether	0.867	0.133	1.340	0	64.7	40	105
Bis(2-chloroisopropyl)ether	0.907	0.133	1.340	0	67.7	20	115
Bis(2-ethylhexyl)phthalate	0.900	0.133	1.340	0	67.2	45	125
Butyl benzyl phthalate	0.927	0.330	1.340	0	69.2	50	125
Carbazole	0.953	0.133	1.340	0	71.1	45	115
Chrysene	0.947	0.133	1.340	0	70.6	55	110
Di-n-butyl phthalate	0.980	0.330	1.340	0	73.1	55	110
Di-n-octyl phthalate	0.913	0.330	1.340	0	68.2	40	130
Dibenz[a,h]anthracene	0.927	0.133	1.340	0	69.2	40	125
Dibenzofuran	0.880	0.133	1.340	0	65.7	50	105
Diethyl phthalate	0.853	0.330	1.340	0	63.7	50	115
Dimethyl phthalate	0.833	0.330	1.340	0	62.2	50	110
Fluoranthene	0.933	0.133	1.340	0	69.7	55	115
Fluorene	0.840	0.133	1.340	0	62.7	50	110
Hexachlorobenzene	0.893	0.133	1.340	0	66.7	45	120
Hexachlorobutadiene	0.800	0.133	1.340	0	59.7	40	115
Hexachlorocyclopentadiene	0.933	0.330	1.340	0	69.7	34	125
Hexachloroethane	0.780	0.133	1.340	0	58.2	35	110
Indeno[1,2,3-cd]pyrene	0.920	0.133	1.340	0	68.7	40	120
Isophorone	0.900	0.133	1.340	0	67.2	45	110
N-Nitrosodi-n-propylamine	0.907	0.133	1.340	0	67.7	40	115
N-Nitrosodimethylamine	0.833	0.133	1.340	0	62.2	20	115
N-Nitrosodiphenylamine	1.99	0.133	2.640	0	75.3	50	115
Naphthalene	0.887	0.133	1.340	0	66.2	40	105
Nitrobenzene	0.900	0.133	1.340	0	67.2	40	115
Pentachlorobenzene	2.05	0.133	2.640	0	77.8	35	125
Pentachlorophenol	1.05	0.133	1.340	0	78.1	25	120
Phenanthrene	0.887	0.133	1.340	0	66.2	50	110
Phenol	1.11	0.133	1.340	0	82.6	40	100
Pyrene	0.853	0.133	1.340	0	63.7	45	125
Pyridine	0.647	0.660	1.340	0	48.3	20	125
Surr: 2,4,6-Tribromophenol	2.03		2.680		75.9	45	138
Surr: 2-Fluorobiphenyl	1.96		2.680		73.1	37	125
Surr: 2-Fluorophenol	2.06		2.680		76.9	60	135
Surr: 4-Terphenyl-d14	1.93		2.680		72.1	60	129
Surr: Nitrobenzene-d5	1.95		2.680		72.9	45	125
Surr: Phenol-d6	1.98		2.680		73.9	40	125

Sample ID:	1004121-01B-MS	Batch ID:	40577	TestNo:	SW8270C	Units:	mg/Kg-dry
SampType:	MS	Run ID:	GCMS4_100420C	Analysis Date:	04/20/10 03:38 PM	Prep Date:	04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,2,4,5-Tetrachlorobenzene	2.28	0.140	2.774	0	82.3	35	125			
1,2,4-Trichlorobenzene	0.904	0.140	1.408	0	64.2	45	110			
1,2-Dichlorobenzene	0.848	0.140	1.408	0	60.2	45	100			
1,2-Diphenylhydrazine	1.02	0.140	1.408	0	72.1	38	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100420C

1,3-Dichlorobenzene	0.827	0.140	1.408	0	58.7	40	100	
1,4-Dichlorobenzene	0.841	0.140	1.408	0	59.7	35	105	
1-Methylnaphthalene	1.02	0.140	1.408	0	72.1	45	105	N
2,4,5-Trichlorophenol	0.988	0.140	1.408	0	70.1	50	110	
2,4,6-Trichlorophenol	1.00	0.140	1.408	0	71.1	45	110	
2,4-Dichlorophenol	0.869	0.140	1.408	0	61.7	45	110	
2,4-Dimethylphenol	1.37	0.140	1.408	0	97.0	30	105	
2,4-Dinitrophenol	0.960	0.694	1.408	0	68.2	15	130	
2,4-Dinitrotoluene	1.00	0.140	1.408	0	71.1	50	115	
2,6-Dichlorophenol	0.967	0.140	1.408	0	68.7	35	125	
2,6-Dinitrotoluene	0.974	0.140	1.408	0	69.2	50	110	
2-Chloronaphthalene	1.11	0.140	1.408	0	79.1	45	105	
2-Chlorophenol	1.04	0.140	1.408	0	73.6	45	105	
2-Methylnaphthalene	0.932	0.140	1.408	0	66.2	45	105	
2-Methylphenol	1.06	0.140	1.408	0	75.1	40	105	
2-Nitroaniline	1.00	0.140	1.408	0	71.1	45	120	
2-Nitrophenol	1.01	0.140	1.408	0	71.6	40	110	
3,3´-Dichlorobenzidine	0.785	0.140	1.408	0	55.7	25	128	
3-Nitroaniline	0.897	0.140	1.408	0	63.7	25	110	
4,6-Dinitro-2-methylphenol	1.06	0.347	1.408	0	75.1	30	135	
4-Bromophenyl phenyl ether	0.967	0.140	1.408	0	68.7	45	115	
4-Chloro-3-methylphenol	0.890	0.140	1.408	0	63.2	45	115	
4-Chloroaniline	0.476	0.347	1.408	0	33.8	25	125	
4-Chlorophenyl phenyl ether	0.946	0.140	1.408	0	67.2	45	110	
4-Methylphenol	1.00	0.140	1.408	0	71.1	40	105	
4-Nitroaniline	0.953	0.140	1.408	0	67.7	35	115	
4-Nitrophenol	1.22	0.694	1.408	0	86.6	15	140	
Acenaphthene	0.960	0.140	1.408	0	68.2	45	110	
Acenaphthylene	0.953	0.140	1.408	0	67.7	45	105	
Acetophenone	1.86	0.140	1.408	0	132	40	125	S
Aniline	0.750	0.140	1.408	0	53.2	40	125	
Anthracene	1.00	0.140	1.408	0	71.1	55	105	
Benzidine	<0.347	0.694	1.408	0	0	20	125	S
Benzo[a]anthracene	1.03	0.140	1.408	0	73.1	50	110	
Benzo[a]pyrene	1.02	0.140	1.408	0	72.1	50	110	
Benzo[b]fluoranthene	1.01	0.140	1.408	0	71.6	45	115	
Benzo[g,h,i]perylene	1.04	0.140	1.408	0	73.6	40	125	
Benzo[k]fluoranthene	1.04	0.140	1.408	0	74.1	45	125	
Benzoic acid	0.918	0.694	1.408	0	65.2	25	125	
Benzyl alcohol	0.981	0.347	1.408	0	69.7	20	125	
Biphenyl	0.995	0.140	1.408	0	70.6	60	140	
Bis(2-chloroethoxy)methane	0.981	0.140	1.408	0	69.7	45	110	
Bis(2-chloroethyl)ether	0.939	0.140	1.408	0	66.7	40	105	
Bis(2-chloroisopropyl)ether	1.00	0.140	1.408	0	71.1	20	115	
Bis(2-ethylhexyl)phthalate	0.960	0.140	1.408	0	68.2	45	125	
Butyl benzyl phthalate	0.988	0.347	1.408	0	70.1	50	125	
Carbazole	1.08	0.140	1.408	0	76.6	45	115	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100420C

Chrysene	1.02	0.140	1.408	0.03542	70.1	55	110
Di-n-butyl phthalate	1.08	0.347	1.408	0	76.6	55	110
Di-n-octyl phthalate	1.02	0.347	1.408	0	72.6	40	130
Dibenz[a,h]anthracene	1.04	0.140	1.408	0	74.1	40	125
Dibenzofuran	0.988	0.140	1.408	0	70.1	50	105
Diethyl phthalate	0.995	0.347	1.408	0	70.6	50	115
Dimethyl phthalate	0.960	0.347	1.408	0	68.2	50	110
Fluoranthene	1.11	0.140	1.408	0.06375	74.1	55	115
Fluorene	0.946	0.140	1.408	0	67.2	50	110
Hexachlorobenzene	0.946	0.140	1.408	0	67.2	45	120
Hexachlorobutadiene	0.904	0.140	1.408	0	64.2	40	115
Hexachlorocyclopentadiene	1.18	0.347	1.408	0	84.1	34	125
Hexachloroethane	0.855	0.140	1.408	0	60.7	35	110
Indeno[1,2,3-cd]pyrene	1.04	0.140	1.408	0	74.1	40	120
Isophorone	1.04	0.140	1.408	0	74.1	45	110
N-Nitrosodi-n-propylamine	0.988	0.140	1.408	0	70.1	40	115
N-Nitrosodimethylamine	0.904	0.140	1.408	0	64.2	20	115
N-Nitrosodiphenylamine	2.08	0.140	2.774	0	75.0	50	115
Naphthalene	0.981	0.140	1.408	0	69.7	40	105
Nitrobenzene	0.995	0.140	1.408	0	70.6	40	115
Pentachlorobenzene	2.59	0.140	2.774	0	93.4	35	125
Pentachlorophenol	1.16	0.140	1.408	0	82.1	25	120
Phenanthrene	1.00	0.140	1.408	0.04250	68.1	50	110
Phenol	1.06	0.140	1.408	0	75.6	40	100
Pyrene	0.995	0.140	1.408	0.04958	67.1	45	125
Pyridine	0.651	0.694	1.408	0	46.3	20	125
Surr: 2,4,6-Tribromophenol	2.13		2.816		75.6	45	138
Surr: 2-Fluorobiphenyl	2.03		2.816		72.1	37	125
Surr: 2-Fluorophenol	2.00		2.816		70.9	60	135
Surr: 4-Terphenyl-d14	2.03		2.816		72.1	60	129
Surr: Nitrobenzene-d5	2.06		2.816		73.1	45	125
Surr: Phenol-d6	1.94		2.816		68.9	40	125

Sample ID:	1004121-01B-MSD	Batch ID:	40577	TestNo:	SW8270C	Units:	mg/Kg-dry
SampType:	MSD	Run ID:	GCMS4_100420C	Analysis Date:	04/20/10 04:02 PM	Prep Date:	04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,2,4,5-Tetrachlorobenzene	1.93	0.141	2.803	0	68.9	35	125	16.7	30	
1,2,4-Trichlorobenzene	0.765	0.141	1.423	0	53.7	45	110	16.7	30	
1,2-Dichlorobenzene	0.708	0.141	1.423	0	49.8	45	100	18.0	30	
1,2-Diphenylhydrazine	0.842	0.141	1.423	0	59.2	38	125	18.7	30	
1,3-Dichlorobenzene	0.680	0.141	1.423	0	47.8	40	100	19.5	30	
1,4-Dichlorobenzene	0.708	0.141	1.423	0	49.8	35	105	17.1	30	
1-Methylnaphthalene	0.871	0.141	1.423	0	61.2	45	105	15.4	30	N
2,4,5-Trichlorophenol	0.920	0.141	1.423	0	64.7	50	110	7.07	30	
2,4,6-Trichlorophenol	0.906	0.141	1.423	0	63.7	45	110	10.0	30	
2,4-Dichlorophenol	0.779	0.141	1.423	0	54.7	45	110	10.9	30	
2,4-Dimethylphenol	1.17	0.141	1.423	0	82.1	30	105	15.6	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100420C

2,4-Dinitrophenol	0.637	0.701	1.423	0	44.8	15	130	40.4	30	R
2,4-Dinitrotoluene	0.878	0.141	1.423	0	61.7	50	115	13.2	30	
2,6-Dichlorophenol	0.821	0.141	1.423	0	57.7	35	125	16.3	30	
2,6-Dinitrotoluene	0.835	0.141	1.423	0	58.7	50	110	15.3	30	
2-Chloronaphthalene	0.934	0.141	1.423	0	65.7	45	105	17.5	30	
2-Chlorophenol	0.885	0.141	1.423	0	62.2	45	105	15.8	30	
2-Methylnaphthalene	0.765	0.141	1.423	0	53.7	45	105	19.7	30	
2-Methylphenol	0.885	0.141	1.423	0	62.2	40	105	17.8	30	
2-Nitroaniline	0.864	0.141	1.423	0	60.7	45	120	14.8	30	
2-Nitrophenol	0.842	0.141	1.423	0	59.2	40	110	18.0	30	
3,3´-Dichlorobenzidine	0.743	0.141	1.423	0	52.2	25	128	5.41	30	
3-Nitroaniline	0.828	0.141	1.423	0	58.2	25	110	7.94	30	
4,6-Dinitro-2-methylphenol	0.765	0.350	1.423	0	53.7	30	135	32.2	30	R
4-Bromophenyl phenyl ether	0.793	0.141	1.423	0	55.7	45	115	19.8	30	
4-Chloro-3-methylphenol	0.814	0.141	1.423	0	57.2	45	115	8.87	30	
4-Chloroaniline	0.496	0.350	1.423	0	34.8	25	125	3.94	30	
4-Chlorophenyl phenyl ether	0.814	0.141	1.423	0	57.2	45	110	15.0	30	
4-Methylphenol	0.842	0.141	1.423	0	59.2	40	105	17.3	30	
4-Nitroaniline	0.864	0.141	1.423	0	60.7	35	115	9.81	30	
4-Nitrophenol	1.03	0.701	1.423	0	72.1	15	140	17.1	30	
Acenaphthene	0.814	0.141	1.423	0	57.2	45	110	16.4	30	
Acenaphthylene	0.807	0.141	1.423	0	56.7	45	105	16.6	30	
Acetophenone	1.64	0.141	1.423	0	115	40	125	12.7	30	
Aniline	0.609	0.141	1.423	0	42.8	40	125	20.7	30	
Anthracene	0.842	0.141	1.423	0	59.2	55	105	17.3	30	
Benzidine	<0.350	0.701	1.423	0	0	20	125	0	30	S
Benzo[a]anthracene	0.878	0.141	1.423	0	61.7	50	110	15.9	30	
Benzo[a]pyrene	0.857	0.141	1.423	0	60.2	50	110	17.0	30	
Benzo[b]fluoranthene	0.864	0.141	1.423	0	60.7	45	115	15.5	30	
Benzo[g,h,i]perylene	0.828	0.141	1.423	0	58.2	40	125	22.4	30	
Benzo[k]fluoranthene	0.857	0.141	1.423	0	60.2	45	125	19.7	30	
Benzoic acid	0.743	0.701	1.423	0	52.2	25	125	21.0	30	
Benzyl alcohol	0.765	0.350	1.423	0	53.7	20	125	24.8	30	
Biphenyl	0.849	0.141	1.423	0	59.7	60	140	15.8	30	
Bis(2-chloroethoxy)methane	0.835	0.141	1.423	0	58.7	45	110	16.0	30	
Bis(2-chloroethyl)ether	0.779	0.141	1.423	0	54.7	40	105	18.6	30	
Bis(2-chloroisopropyl)ether	0.842	0.141	1.423	0	59.2	20	115	17.3	30	
Bis(2-ethylhexyl)phthalate	0.828	0.141	1.423	0	58.2	45	125	14.7	30	
Butyl benzyl phthalate	0.835	0.350	1.423	0	58.7	50	125	16.7	30	
Carbazole	0.871	0.141	1.423	0	61.2	45	115	21.3	30	
Chrysene	0.878	0.141	1.423	0.03542	59.2	55	110	15.3	30	
Di-n-butyl phthalate	0.885	0.350	1.423	0	62.2	55	110	19.8	30	
Di-n-octyl phthalate	0.864	0.350	1.423	0	60.7	40	130	16.9	30	
Dibenz[a,h]anthracene	0.857	0.141	1.423	0	60.2	40	125	19.7	30	
Dibenzofuran	0.842	0.141	1.423	0	59.2	50	105	15.9	30	
Diethyl phthalate	0.878	0.350	1.423	0	61.7	50	115	12.5	30	
Dimethyl phthalate	0.828	0.350	1.423	0	58.2	50	110	14.7	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100420C

Fluoranthene	0.871	0.141	1.423	0.06375	56.7	55	115	23.9	30
Fluorene	0.821	0.141	1.423	0	57.7	50	110	14.1	30
Hexachlorobenzene	0.793	0.141	1.423	0	55.7	45	120	17.6	30
Hexachlorobutadiene	0.750	0.141	1.423	0	52.7	40	115	18.5	30
Hexachlorocyclopentadiene	0.913	0.350	1.423	0	64.2	34	125	25.8	30
Hexachloroethane	0.722	0.141	1.423	0	50.7	35	110	16.8	30
Indeno[1,2,3-cd]pyrene	0.849	0.141	1.423	0	59.7	40	120	20.5	30
Isophorone	0.885	0.141	1.423	0	62.2	45	110	16.5	30
N-Nitrosodi-n-propylamine	0.828	0.141	1.423	0	58.2	40	115	17.6	30
N-Nitrosodimethylamine	0.694	0.141	1.423	0	48.8	20	115	26.3	30
N-Nitrosodiphenylamine	1.81	0.141	2.803	0	64.4	50	115	14.2	30
Naphthalene	0.821	0.141	1.423	0	57.7	40	105	17.7	30
Nitrobenzene	0.842	0.141	1.423	0	59.2	40	115	16.6	30
Pentachlorobenzene	2.16	0.141	2.803	0	77.0	35	125	18.2	30
Pentachlorophenol	0.934	0.141	1.423	0	65.7	25	120	21.2	30
Phenanthrene	0.835	0.141	1.423	0.04250	55.7	50	110	18.1	30
Phenol	0.906	0.141	1.423	0	63.7	40	100	16.1	30
Pyrene	0.849	0.141	1.423	0.04958	56.2	45	125	15.8	30
Pyridine	0.481	0.701	1.423	0	33.8	20	125	30.0	30
Surr: 2,4,6-Tribromophenol	1.79		2.846		62.9	45	138	0	0
Surr: 2-Fluorobiphenyl	1.73		2.846		60.7	37	125	0	0
Surr: 2-Fluorophenol	1.73		2.846		60.7	60	135	0	0
Surr: 4-Terphenyl-d14	1.76		2.846		61.7	60	129	0	0
Surr: Nitrobenzene-d5	1.78		2.846		62.7	45	125	0	0
Surr: Phenol-d6	1.64		2.846		57.5	40	125	0	0

Sample ID:	MB-40577	Batch ID:	40577	TestNo:	SW8270C	Units:	mg/Kg
SampType:	MBLK	Run ID:	GCMS4_100420C	Analysis Date:	04/20/10 05:28 PM	Prep Date:	04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,2,4,5-Tetrachlorobenzene	<0.0600	0.133								
1,2,4-Trichlorobenzene	<0.0200	0.133								
1,2-Dichlorobenzene	<0.0300	0.133								
1,2-Diphenylhydrazine	<0.0600	0.133								
1,3-Dichlorobenzene	<0.0500	0.133								
1,4-Dichlorobenzene	<0.0500	0.133								
1-Methylnaphthalene	<0.0600	0.133								N
2,4,5-Trichlorophenol	<0.0700	0.133								
2,4,6-Trichlorophenol	<0.0600	0.133								
2,4-Dichlorophenol	<0.0800	0.133								
2,4-Dimethylphenol	<0.0600	0.133								
2,4-Dinitrophenol	<0.0500	0.660								
2,4-Dinitrotoluene	<0.0300	0.133								
2,6-Dichlorophenol	<0.0600	0.133								
2,6-Dinitrotoluene	<0.0300	0.133								
2-Chloronaphthalene	<0.0400	0.133								
2-Chlorophenol	<0.0700	0.133								
2-Methylnaphthalene	<0.0200	0.133								

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100420C

2-Methylphenol	<0.0700	0.133
2-Nitroaniline	<0.0500	0.133
2-Nitrophenol	<0.0700	0.133
3,3´-Dichlorobenzidine	<0.0700	0.133
3-Nitroaniline	<0.0400	0.133
4,6-Dinitro-2-methylphenol	<0.0800	0.330
4-Bromophenyl phenyl ether	<0.0300	0.133
4-Chloro-3-methylphenol	<0.0600	0.133
4-Chloroaniline	<0.0500	0.330
4-Chlorophenyl phenyl ether	<0.0300	0.133
4-Methylphenol	<0.100	0.133
4-Nitroaniline	<0.0700	0.133
4-Nitrophenol	<0.140	0.660
Acenaphthene	<0.0400	0.133
Acenaphthylene	<0.0500	0.133
Acetophenone	<0.0400	0.133
Aniline	<0.0400	0.133
Anthracene	<0.0200	0.133
Benzidine	<0.330	0.660
Benzo[a]anthracene	<0.0200	0.133
Benzo[a]pyrene	<0.0300	0.133
Benzo[b]fluoranthene	<0.0300	0.133
Benzo[g,h,i]perylene	<0.0600	0.133
Benzo[k]fluoranthene	<0.0400	0.133
Benzoic acid	<0.130	0.660
Benzyl alcohol	<0.0400	0.330
Biphenyl	<0.0400	0.133
Bis(2-chloroethoxy)methane	<0.0500	0.133
Bis(2-chloroethyl)ether	<0.0100	0.133
Bis(2-chloroisopropyl)ether	<0.0400	0.133
Bis(2-ethylhexyl)phthalate	<0.0500	0.133
Butyl benzyl phthalate	<0.100	0.330
Carbazole	<0.0400	0.133
Chrysene	<0.0300	0.133
Di-n-butyl phthalate	<0.100	0.330
Di-n-octyl phthalate	<0.100	0.330
Dibenz[a,h]anthracene	<0.0500	0.133
Dibenzofuran	<0.0400	0.133
Diethyl phthalate	<0.100	0.330
Dimethyl phthalate	<0.100	0.330
Fluoranthene	<0.0200	0.133
Fluorene	<0.0300	0.133
Hexachlorobenzene	<0.0100	0.133
Hexachlorobutadiene	<0.0300	0.133
Hexachlorocyclopentadiene	<0.0600	0.330
Hexachloroethane	<0.0500	0.133
Indeno[1,2,3-cd]pyrene	<0.0500	0.133

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100420C

Isophorone	<0.0400	0.133				
N-Nitrosodi-n-propylamine	<0.0100	0.133				
N-Nitrosodimethylamine	<0.0600	0.133				
N-Nitrosodiphenylamine	<0.0500	0.133				
Naphthalene	<0.0400	0.133				
Nitrobenzene	<0.0700	0.133				
Pentachlorobenzene	<0.0600	0.133				
Pentachlorophenol	<0.0900	0.133				
Phenanthrene	<0.0300	0.133				
Phenol	<0.0600	0.133				
Pyrene	<0.0200	0.133				
Pyridine	<0.130	0.660				
Surr: 2,4,6-Tribromophenol	1.74		2.680	64.9	45	138
Surr: 2-Fluorobiphenyl	1.58		2.680	59.0	37	125
Surr: 2-Fluorophenol	1.71		2.680	63.7	60	135
Surr: 4-Terphenyl-d14	1.73		2.680	64.4	60	129
Surr: Nitrobenzene-d5	1.73		2.680	64.4	45	125
Surr: Phenol-d6	1.55		2.680	58.0	40	125

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100420C

Sample ID:	ICV-100420	Batch ID:	R49069	TestNo:	SW8270C	Units:	mg/Kg		
SampType:	ICV	Run ID:	GCMS4_100420C	Analysis Date:	04/20/10 02:22 PM	Prep Date:			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,2,4,5-Tetrachlorobenzene	5.08	0.133	4.000	0	127	80	120			S
1,2,4-Trichlorobenzene	3.30	0.133	4.000	0	82.5	80	120			
1,2-Dichlorobenzene	3.24	0.133	4.000	0	81.0	80	120			
1,2-Diphenylhydrazine	3.47	0.133	4.000	0	86.8	80	120			
1,3-Dichlorobenzene	3.29	0.133	4.000	0	82.2	80	120			
1,4-Dichlorobenzene	3.25	0.133	4.000	0	81.2	80	120			
1-Methylnaphthalene	3.68	0.133	4.000	0	92.0	80	120			N
2,4,5-Trichlorophenol	3.46	0.133	4.000	0	86.5	80	120			
2,4,6-Trichlorophenol	3.50	0.133	4.000	0	87.5	80	120			
2,4-Dichlorophenol	3.41	0.133	4.000	0	85.2	80	120			
2,4-Dimethylphenol	4.28	0.133	4.000	0	107	80	120			
2,4-Dinitrophenol	3.45	0.660	4.000	0	86.2	80	120			
2,4-Dinitrotoluene	3.56	0.133	4.000	0	89.0	80	120			
2,6-Dichlorophenol	3.52	0.133	4.000	0	88.0	80	120			
2,6-Dinitrotoluene	3.53	0.133	4.000	0	88.2	80	120			
2-Chloronaphthalene	3.32	0.133	4.000	0	83.0	80	120			
2-Chlorophenol	3.75	0.133	4.000	0	93.8	80	120			
2-Methylnaphthalene	3.40	0.133	4.000	0	85.0	80	120			
2-Methylphenol	3.77	0.133	4.000	0	94.2	80	120			
2-Nitroaniline	3.44	0.133	4.000	0	86.0	80	120			
2-Nitrophenol	3.72	0.133	4.000	0	93.0	80	120			
3,3´-Dichlorobenzidine	5.21	0.133	4.000	0	130	80	120			S
3-Nitroaniline	3.34	0.133	4.000	0	83.5	80	120			
4,6-Dinitro-2-methylphenol	3.67	0.330	4.000	0	91.8	80	120			
4-Bromophenyl phenyl ether	3.48	0.133	4.000	0	87.0	80	120			
4-Chloro-3-methylphenol	3.41	0.133	4.000	0	85.2	80	120			
4-Chloroaniline	3.30	0.330	4.000	0	82.5	80	120			
4-Chlorophenyl phenyl ether	3.32	0.133	4.000	0	83.0	80	120			
4-Methylphenol	3.64	0.133	4.000	0	91.0	80	120			
4-Nitroaniline	3.57	0.133	4.000	0	89.2	80	120			
4-Nitrophenol	3.61	0.660	4.000	0	90.2	80	120			
Acenaphthene	3.25	0.133	4.000	0	81.2	80	120			
Acenaphthylene	3.24	0.133	4.000	0	81.0	80	120			
Acetophenone	3.35	0.133	4.000	0	83.8	80	120			
Aniline	3.89	0.133	4.000	0	97.2	80	120			
Anthracene	3.28	0.133	4.000	0	82.0	80	120			
Benzidine	4.22	0.660	4.000	0	106	80	120			
Benzo[a]anthracene	3.61	0.133	4.000	0	90.2	80	120			
Benzo[a]pyrene	3.43	0.133	4.000	0	85.8	80	120			
Benzo[b]fluoranthene	3.51	0.133	4.000	0	87.8	80	120			
Benzo[g,h,i]perylene	3.59	0.133	4.000	0	89.8	80	120			
Benzo[k]fluoranthene	3.41	0.133	4.000	0	85.2	80	120			
Benzoic acid	3.26	0.660	4.000	0	81.5	80	120			
Benzyl alcohol	3.38	0.330	4.000	0	84.5	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS4_100420C

Biphenyl	3.29	0.133	4.000	0	82.2	80	120	
Bis(2-chloroethoxy)methane	3.41	0.133	4.000	0	85.2	80	120	
Bis(2-chloroethyl)ether	3.39	0.133	4.000	0	84.8	80	120	
Bis(2-chloroisopropyl)ether	3.53	0.133	4.000	0	88.2	80	120	
Bis(2-ethylhexyl)phthalate	3.44	0.133	4.000	0	86.0	80	120	
Butyl benzyl phthalate	3.45	0.330	4.000	0	86.2	80	120	
Carbazole	3.38	0.133	4.000	0	84.5	80	120	
Chrysene	3.46	0.133	4.000	0	86.5	80	120	
Di-n-butyl phthalate	3.46	0.330	4.000	0	86.5	80	120	
Di-n-octyl phthalate	3.50	0.330	4.000	0	87.5	80	120	
Dibenz[a,h]anthracene	3.65	0.133	4.000	0	91.2	80	120	
Dibenzofuran	3.29	0.133	4.000	0	82.2	80	120	
Diethyl phthalate	3.23	0.330	4.000	0	80.8	80	120	
Dimethyl phthalate	3.20	0.330	4.000	0	80.0	80	120	
Fluoranthene	3.41	0.133	4.000	0	85.2	80	120	
Fluorene	3.28	0.133	4.000	0	82.0	80	120	
Hexachlorobenzene	3.39	0.133	4.000	0	84.8	80	120	
Hexachlorobutadiene	3.32	0.133	4.000	0	83.0	80	120	
Hexachlorocyclopentadiene	3.58	0.330	4.000	0	89.5	80	120	
Hexachloroethane	3.36	0.133	4.000	0	84.0	80	120	
Indeno[1,2,3-cd]pyrene	3.61	0.133	4.000	0	90.2	80	120	
Isophorone	3.54	0.133	4.000	0	88.5	80	120	
N-Nitrosodi-n-propylamine	3.49	0.133	4.000	0	87.2	80	120	
N-Nitrosodimethylamine	3.54	0.133	4.000	0	88.5	80	120	
N-Nitrosodiphenylamine	3.28	0.133	4.000	0	82.0	80	120	
Naphthalene	3.46	0.133	4.000	0	86.5	80	120	
Nitrobenzene	3.45	0.133	4.000	0	86.2	80	120	
Pentachlorobenzene	5.60	0.133	4.000	0	140	80	120	S
Pentachlorophenol	3.92	0.133	4.000	0	98.0	80	120	
Phenanthrene	3.22	0.133	4.000	0	80.5	80	120	
Phenol	4.04	0.133	4.000	0	101	80	120	
Pyrene	3.33	0.133	4.000	0	83.2	80	120	
Pyridine	3.66	0.660	4.000	0	91.5	80	120	
Surr: 2,4,6-Tribromophenol	4.45		4.000		111	80	120	
Surr: 2-Fluorobiphenyl	4.18		4.000		104	80	120	
Surr: 2-Fluorophenol	4.45		4.000		111	80	120	
Surr: 4-Terphenyl-d14	4.45		4.000		111	80	120	
Surr: Nitrobenzene-d5	4.58		4.000		114	80	120	
Surr: Phenol-d6	4.61		4.000		115	80	120	

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS1_100415A

Sample ID:	LCS-40580	Batch ID:	40580	TestNo:	SW8260B	Units:	mg/Kg
SampType:	LCS	Run ID:	GCMS1_100415A	Analysis Date:	04/15/10 12:02 PM	Prep Date:	04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.0250	0.00500	0.0232	0	108	75	125			
1,1,1-Trichloroethane	0.0256	0.00500	0.0232	0	111	70	130			
1,1,2,2-Tetrachloroethane	0.0331	0.00500	0.0232	0	143	59	130			S
1,1,2-Trichloroethane	0.0265	0.00500	0.0232	0	114	62	125			
1,1-Dichloroethane	0.0254	0.00500	0.0232	0	109	75	125			
1,1-Dichloroethene	0.0257	0.00500	0.0232	0	111	65	135			
1,1-Dichloropropene	0.0256	0.00500	0.0232	0	110	70	135			
1,2,3-Trichlorobenzene	0.0275	0.00500	0.0232	0	118	62	133			
1,2,3-Trichloropropane	0.0265	0.00500	0.0232	0	114	65	130			
1,2,4-Trichlorobenzene	0.0265	0.00500	0.0232	0	114	65	130			
1,2,4-Trimethylbenzene	0.0250	0.00500	0.0232	0	108	65	135			
1,2-Dibromo-3-chloropropane	0.0265	0.00500	0.0232	0	114	49	135			
1,2-Dibromoethane	0.0253	0.00500	0.0232	0	109	70	124			
1,2-Dichlorobenzene	0.0257	0.00500	0.0232	0	111	75	120			
1,2-Dichloroethane	0.0264	0.00500	0.0232	0	114	72	135			
1,2-Dichloropropane	0.0258	0.00500	0.0232	0	111	71	120			
1,3,5-Trimethylbenzene	0.0247	0.00500	0.0232	0	107	65	133			
1,3-Dichlorobenzene	0.0254	0.00500	0.0232	0	109	72	124			
1,3-Dichloropropane	0.0250	0.00500	0.0232	0	108	76	123			
1,4-Dichloro-2-butene	0.0268	0.00500	0.0232	0	116	50	150			
1,4-Dichlorobenzene	0.0254	0.00500	0.0232	0	109	72	125			
2,2-Dichloropropane	0.0271	0.00500	0.0232	0	117	67	134			
2-Butanone	0.0687	0.0150	0.0580	0	119	60	135			
2-Chloroethylvinylether	0.0266	0.0150	0.0232	0	115	50	150			
2-Chlorotoluene	0.0267	0.00500	0.0232	0	115	70	128			
2-Hexanone	0.0701	0.0150	0.0580	0	121	50	145			
4-Chlorotoluene	0.0254	0.00500	0.0232	0	109	75	125			
4-Isopropyltoluene	0.0250	0.00500	0.0232	0	108	75	133			
4-Methyl-2-pentanone	0.0681	0.0150	0.0580	0	117	60	135			
Acetone	0.0761	0.0500	0.0580	0	131	40	141			
Acrylonitrile	0.0526	0.0100	0.0464	0	113	40	160			
Benzene	0.0251	0.00500	0.0232	0	108	75	125			
Bromobenzene	0.0254	0.00500	0.0232	0	110	66	120			
Bromochloromethane	0.0255	0.00500	0.0232	0	110	71	125			
Bromodichloromethane	0.0260	0.00500	0.0232	0	112	72	128			
Bromoform	0.0250	0.00500	0.0232	0	108	66	137			
Bromomethane	0.0247	0.00500	0.0232	0	106	45	141			
Carbon disulfide	0.0191	0.00500	0.0232	0	82.2	50	150			
Carbon tetrachloride	0.0256	0.00500	0.0232	0	110	67	133			
Chlorobenzene	0.0249	0.00500	0.0232	0	107	75	123			
Chloroethane	0.0251	0.00500	0.0232	0	108	41	141			
Chloroform	0.0257	0.00500	0.0232	0	111	72	124			
Chloromethane	0.0224	0.00500	0.0232	0	96.7	51	129			
cis-1,2-Dichloroethene	0.0256	0.00500	0.0232	0	110	67	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS1_100415A

cis-1,3-Dichloropropene	0.0259	0.00500	0.0232	0	112	72	125
Dibromochloromethane	0.0254	0.00500	0.0232	0	109	66	130
Dibromomethane	0.0262	0.00500	0.0232	0	113	75	128
Dichlorodifluoromethane	0.0201	0.00500	0.0232	0	86.4	80	121
Ethylbenzene	0.0250	0.00500	0.0232	0	108	75	125
Hexachlorobutadiene	0.0249	0.00500	0.0232	0	107	55	140
Iodomethane	0.0195	0.00500	0.0232	0	84.1	50	150
Isopropylbenzene	0.0246	0.00500	0.0232	0	106	77	129
m,p-Xylene	0.0505	0.00500	0.0464	0	109	80	125
Methyl tert-butyl ether	0.0292	0.00500	0.0232	0	126	68	130
Methylene chloride	0.0264	0.00500	0.0232	0	114	63	137
n-Butylbenzene	0.0252	0.00500	0.0232	0	109	65	138
n-Propylbenzene	0.0249	0.00500	0.0232	0	107	65	135
Naphthalene	0.0275	0.0150	0.0232	0	119	51	125
o-Xylene	0.0248	0.00500	0.0232	0	107	77	125
sec-Butylbenzene	0.0250	0.00500	0.0232	0	108	65	130
Styrene	0.0235	0.00500	0.0232	0	101	75	125
tert-Butylbenzene	0.0252	0.00500	0.0232	0	109	65	130
Tetrachloroethene	0.0250	0.00500	0.0232	0	108	67	139
Toluene	0.0254	0.00500	0.0232	0	109	75	125
trans-1,2-Dichloroethene	0.0251	0.00500	0.0232	0	108	66	134
trans-1,3-Dichloropropene	0.0264	0.00500	0.0232	0	114	65	125
Trichloroethene	0.0236	0.00500	0.0232	0	102	77	124
Trichlorofluoromethane	0.0253	0.0150	0.0232	0	109	49	139
Vinyl chloride	0.0242	0.00500	0.0232	0	104	60	125
Surr: 1,2-Dichloroethane-d4	51.7		50.00		103	78	125
Surr: 4-Bromofluorobenzene	51.2		50.00		102	85	120
Surr: Dibromofluoromethane	52.9		50.00		106	84	116
Surr: Toluene-d8	48.2		50.00		96.4	85	115

Sample ID:	MB-40580	Batch ID:	40580	TestNo:	SW8260B	Units:	mg/Kg
SampType:	MBLK	Run ID:	GCMS1_100415A	Analysis Date:	04/15/10 01:05 PM	Prep Date:	04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	<0.00100	0.00500								
1,1,1-Trichloroethane	<0.00100	0.00500								
1,1,2,2-Tetrachloroethane	<0.00100	0.00500								
1,1,2-Trichloroethane	<0.00100	0.00500								
1,1-Dichloroethane	<0.00100	0.00500								
1,1-Dichloroethene	<0.00100	0.00500								
1,1-Dichloropropene	<0.00100	0.00500								
1,2,3-Trichlorobenzene	<0.00100	0.00500								
1,2,3-Trichloropropane	<0.00100	0.00500								
1,2,4-Trichlorobenzene	<0.00100	0.00500								
1,2,4-Trimethylbenzene	<0.00100	0.00500								
1,2-Dibromo-3-chloropropane	<0.00100	0.00500								
1,2-Dibromoethane	<0.00100	0.00500								
1,2-Dichlorobenzene	<0.00100	0.00500								

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS1_100415A

1,2-Dichloroethane	<0.00100	0.00500
1,2-Dichloropropane	<0.00100	0.00500
1,3,5-Trimethylbenzene	<0.00100	0.00500
1,3-Dichlorobenzene	<0.00100	0.00500
1,3-Dichloropropane	<0.00100	0.00500
1,4-Dichloro-2-butene	<0.00100	0.00500
1,4-Dichlorobenzene	<0.00100	0.00500
2,2-Dichloropropane	<0.00100	0.00500
2-Butanone	<0.00500	0.0150
2-Chloroethylvinylether	<0.00500	0.0150
2-Chlorotoluene	<0.00100	0.00500
2-Hexanone	<0.00500	0.0150
4-Chlorotoluene	<0.00100	0.00500
4-Isopropyltoluene	<0.00100	0.00500
4-Methyl-2-pentanone	<0.00500	0.0150
Acetone	<0.0150	0.0500
Acrylonitrile	<0.00300	0.0100
Benzene	<0.00100	0.00500
Bromobenzene	<0.00100	0.00500
Bromochloromethane	<0.00100	0.00500
Bromodichloromethane	<0.00100	0.00500
Bromoform	<0.00100	0.00500
Bromomethane	<0.00100	0.00500
Carbon disulfide	<0.00100	0.00500
Carbon tetrachloride	<0.00100	0.00500
Chlorobenzene	<0.00100	0.00500
Chloroethane	<0.00100	0.00500
Chloroform	<0.00100	0.00500
Chloromethane	<0.00100	0.00500
cis-1,2-Dichloroethene	<0.00100	0.00500
cis-1,3-Dichloropropene	<0.00100	0.00500
Dibromochloromethane	<0.00100	0.00500
Dibromomethane	<0.00100	0.00500
Dichlorodifluoromethane	<0.00100	0.00500
Ethylbenzene	<0.00100	0.00500
Hexachlorobutadiene	<0.00100	0.00500
Iodomethane	<0.00100	0.00500
Isopropylbenzene	<0.00100	0.00500
m,p-Xylene	<0.00100	0.00500
Methyl tert-butyl ether	<0.00100	0.00500
Methylene chloride	<0.00500	0.00500
n-Butylbenzene	<0.00100	0.00500
n-Propylbenzene	<0.00100	0.00500
Naphthalene	<0.00500	0.0150
o-Xylene	<0.00100	0.00500
sec-Butylbenzene	<0.00100	0.00500
Styrene	<0.00100	0.00500

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS1_100415A

tert-Butylbenzene	<0.00100	0.00500				
Tetrachloroethene	<0.00100	0.00500				
Toluene	<0.00100	0.00500				
trans-1,2-Dichloroethene	<0.00100	0.00500				
trans-1,3-Dichloropropene	<0.00100	0.00500				
Trichloroethene	<0.00100	0.00500				
Trichlorofluoromethane	<0.00500	0.0150				
Vinyl chloride	<0.00100	0.00500				
Surr: 1,2-Dichloroethane-d4	50.1		50.00	100	78	125
Surr: 4-Bromofluorobenzene	49.8		50.00	99.6	85	120
Surr: Dibromofluoromethane	51.5		50.00	103	84	116
Surr: Toluene-d8	48.8		50.00	97.6	85	115

Sample ID:	1004122-01AMS	Batch ID:	40580	TestNo:	SW8260B	Units:	mg/Kg-dry
SampType:	MS	Run ID:	GCMS1_100415A	Analysis Date:	04/15/10 03:56 PM	Prep Date:	04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.0232	0.00497	0.0231	0	100	75	125			
1,1,1-Trichloroethane	0.0253	0.00497	0.0231	0	110	70	130			
1,1,2,2-Tetrachloroethane	0.0313	0.00497	0.0231	0	136	59	130			S
1,1,2-Trichloroethane	0.0247	0.00497	0.0231	0	107	62	125			
1,1-Dichloroethane	0.0256	0.00497	0.0231	0	111	75	125			
1,1-Dichloroethene	0.0244	0.00497	0.0231	0	106	65	135			
1,1-Dichloropropene	0.0253	0.00497	0.0231	0	110	70	135			
1,2,3-Trichlorobenzene	0.0199	0.00497	0.0231	0	86.2	62	133			
1,2,3-Trichloropropane	0.0239	0.00497	0.0231	0	104	65	130			
1,2,4-Trichlorobenzene	0.0211	0.00497	0.0231	0	91.6	65	130			
1,2,4-Trimethylbenzene	0.0230	0.00497	0.0231	0	99.5	65	135			
1,2-Dibromo-3-chloropropane	0.0229	0.00497	0.0231	0	99.2	49	135			
1,2-Dibromoethane	0.0231	0.00497	0.0231	0	100	70	124			
1,2-Dichlorobenzene	0.0230	0.00497	0.0231	0	99.7	75	120			
1,2-Dichloroethane	0.0254	0.00497	0.0231	0	110	72	135			
1,2-Dichloropropane	0.0252	0.00497	0.0231	0	109	71	120			
1,3,5-Trimethylbenzene	0.0233	0.00497	0.0231	0	101	65	133			
1,3-Dichlorobenzene	0.0230	0.00497	0.0231	0	99.7	72	124			
1,3-Dichloropropane	0.0233	0.00497	0.0231	0	101	76	123			
1,4-Dichloro-2-butene	0.0226	0.00497	0.0231	0	97.8	50	150			
1,4-Dichlorobenzene	0.0229	0.00497	0.0231	0	99.4	72	125			
2,2-Dichloropropane	0.0275	0.00497	0.0231	0	119	67	134			
2-Butanone	0.0640	0.0149	0.0577	0	111	60	135			
2-Chloroethylvinylether	0.0236	0.0149	0.0231	0	102	50	150			
2-Chlorotoluene	0.0234	0.00497	0.0231	0	101	70	128			
2-Hexanone	0.0566	0.0149	0.0577	0	98.2	50	145			
4-Chlorotoluene	0.0234	0.00497	0.0231	0	101	75	125			
4-Isopropyltoluene	0.0230	0.00497	0.0231	0	99.7	75	133			
4-Methyl-2-pentanone	0.0598	0.0149	0.0577	0	104	60	135			
Acetone	0.0622	0.0497	0.0577	0	108	40	141			
Acrylonitrile	0.0497	0.00995	0.0462	0	108	40	160			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS1_100415A

Benzene	0.0245	0.00497	0.0231	0	106	75	125
Bromobenzene	0.0232	0.00497	0.0231	0	101	66	120
Bromochloromethane	0.0246	0.00497	0.0231	0	107	71	125
Bromodichloromethane	0.0254	0.00497	0.0231	0	110	72	128
Bromoform	0.0224	0.00497	0.0231	0	97.1	66	137
Bromomethane	0.0232	0.00497	0.0231	0	100	45	141
Carbon disulfide	0.0175	0.00497	0.0231	0	75.9	50	150
Carbon tetrachloride	0.0255	0.00497	0.0231	0	110	67	133
Chlorobenzene	0.0233	0.00497	0.0231	0	101	75	123
Chloroethane	0.0253	0.00497	0.0231	0	110	41	141
Chloroform	0.0261	0.00497	0.0231	0	113	72	124
Chloromethane	0.0231	0.00497	0.0231	0	100	51	129
cis-1,2-Dichloroethene	0.0249	0.00497	0.0231	0	108	67	125
cis-1,3-Dichloropropene	0.0247	0.00497	0.0231	0	107	72	125
Dibromochloromethane	0.0232	0.00497	0.0231	0	100	66	130
Dibromomethane	0.0245	0.00497	0.0231	0	106	75	128
Dichlorodifluoromethane	0.0206	0.00497	0.0231	0	89.1	80	121
Ethylbenzene	0.0235	0.00497	0.0231	0	102	75	125
Hexachlorobutadiene	0.0201	0.00497	0.0231	0	86.9	55	140
Iodomethane	0.0165	0.00497	0.0231	0	71.3	50	150
Isopropylbenzene	0.0231	0.00497	0.0231	0	100	77	129
m,p-Xylene	0.0475	0.00497	0.0462	0	103	80	125
Methyl tert-butyl ether	0.0263	0.00497	0.0231	0	114	68	130
Methylene chloride	0.0266	0.00497	0.0231	0	115	63	137
n-Butylbenzene	0.0228	0.00497	0.0231	0	98.9	65	138
n-Propylbenzene	0.0235	0.00497	0.0231	0	102	65	135
Naphthalene	0.0200	0.0149	0.0231	0	86.7	51	125
o-Xylene	0.0233	0.00497	0.0231	0	101	77	125
sec-Butylbenzene	0.0228	0.00497	0.0231	0	98.9	65	130
Styrene	0.0222	0.00497	0.0231	0	96.1	75	125
tert-Butylbenzene	0.0230	0.00497	0.0231	0	99.8	65	130
Tetrachloroethene	0.0235	0.00497	0.0231	0	102	67	139
Toluene	0.0250	0.00497	0.0231	0	108	75	125
trans-1,2-Dichloroethene	0.0251	0.00497	0.0231	0	109	66	134
trans-1,3-Dichloropropene	0.0248	0.00497	0.0231	0	108	65	125
Trichloroethene	0.0229	0.00497	0.0231	0	99.1	77	124
Trichlorofluoromethane	0.0253	0.0149	0.0231	0	110	49	139
Vinyl chloride	0.0247	0.00497	0.0231	0	107	60	125
Surr: 1,2-Dichloroethane-d4	51.9		49.74		104	78	125
Surr: 4-Bromofluorobenzene	49.7		49.74		99.9	85	120
Surr: Dibromofluoromethane	52.8		49.74		106	84	116
Surr: Toluene-d8	48.6		49.74		97.7	85	115

Sample ID:	1004122-01AMSD	Batch ID:	40580	TestNo:	SW8260B	Units:	mg/Kg-dry
SampType:	MSD	Run ID:	GCMS1_100415A	Analysis Date:	04/15/10 04:28 PM	Prep Date:	04/15/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.0227	0.00505	0.0234	0	97.0	75	125	1.86	30	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS1_100415A

1,1,1-Trichloroethane	0.0247	0.00505	0.0234	0	106	70	130	2.34	30
1,1,2,2-Tetrachloroethane	0.0243	0.00505	0.0234	0	103	59	130	25.4	30
1,1,2-Trichloroethane	0.0238	0.00505	0.0234	0	102	62	125	3.58	30
1,1-Dichloroethane	0.0245	0.00505	0.0234	0	104	75	125	4.54	30
1,1-Dichloroethene	0.0238	0.00505	0.0234	0	102	65	135	2.28	30
1,1-Dichloropropene	0.0242	0.00505	0.0234	0	103	70	135	4.61	30
1,2,3-Trichlorobenzene	0.0210	0.00505	0.0234	0	89.5	62	133	5.28	30
1,2,3-Trichloropropane	0.0219	0.00505	0.0234	0	93.3	65	130	9.01	30
1,2,4-Trichlorobenzene	0.0211	0.00505	0.0234	0	90.0	65	130	0.210	30
1,2,4-Trimethylbenzene	0.0222	0.00505	0.0234	0	94.9	65	135	3.20	30
1,2-Dibromo-3-chloropropane	0.0214	0.00505	0.0234	0	91.3	49	135	6.69	30
1,2-Dibromoethane	0.0220	0.00505	0.0234	0	93.8	70	124	4.94	30
1,2-Dichlorobenzene	0.0221	0.00505	0.0234	0	94.3	75	120	4.01	30
1,2-Dichloroethane	0.0245	0.00505	0.0234	0	104	72	135	3.80	30
1,2-Dichloropropane	0.0240	0.00505	0.0234	0	102	71	120	4.77	30
1,3,5-Trimethylbenzene	0.0222	0.00505	0.0234	0	94.9	65	133	4.49	30
1,3-Dichlorobenzene	0.0223	0.00505	0.0234	0	95.0	72	124	3.32	30
1,3-Dichloropropane	0.0223	0.00505	0.0234	0	95.3	76	123	4.38	30
1,4-Dichloro-2-butene	0.0218	0.00505	0.0234	0	93.1	50	150	3.42	30
1,4-Dichlorobenzene	0.0223	0.00505	0.0234	0	95.1	72	125	2.84	30
2,2-Dichloropropane	0.0257	0.00505	0.0234	0	110	67	134	6.74	30
2-Butanone	0.0583	0.0152	0.0586	0	99.5	60	135	9.32	30
2-Chloroethylvinylether	0.0227	0.0152	0.0234	0	97.0	50	150	3.73	30
2-Chlorotoluene	0.0227	0.00505	0.0234	0	96.6	70	128	3.33	30
2-Hexanone	0.0552	0.0152	0.0586	0	94.2	50	145	2.56	30
4-Chlorotoluene	0.0228	0.00505	0.0234	0	97.2	75	125	2.79	30
4-Isopropyltoluene	0.0220	0.00505	0.0234	0	93.9	75	133	4.51	30
4-Methyl-2-pentanone	0.0561	0.0152	0.0586	0	95.7	60	135	6.38	30
Acetone	0.0539	0.0505	0.0586	0	92.0	40	141	14.2	30
Acrylonitrile	0.0466	0.0101	0.0469	0	99.4	40	160	6.36	30
Benzene	0.0237	0.00505	0.0234	0	101	75	125	3.32	30
Bromobenzene	0.0221	0.00505	0.0234	0	94.2	66	120	5.05	30
Bromochloromethane	0.0234	0.00505	0.0234	0	99.8	71	125	5.13	30
Bromodichloromethane	0.0244	0.00505	0.0234	0	104	72	128	3.73	30
Bromoform	0.0214	0.00505	0.0234	0	91.2	66	137	4.77	30
Bromomethane	0.0229	0.00505	0.0234	0	97.7	45	141	1.15	30
Carbon disulfide	0.0180	0.00505	0.0234	0	76.8	50	150	2.73	30
Carbon tetrachloride	0.0242	0.00505	0.0234	0	103	67	133	4.95	30
Chlorobenzene	0.0228	0.00505	0.0234	0	97.2	75	123	2.28	30
Chloroethane	0.0237	0.00505	0.0234	0	101	41	141	6.26	30
Chloroform	0.0243	0.00505	0.0234	0	104	72	124	7.17	30
Chloromethane	0.0217	0.00505	0.0234	0	92.7	51	129	6.32	30
cis-1,2-Dichloroethene	0.0238	0.00505	0.0234	0	101	67	125	4.60	30
cis-1,3-Dichloropropene	0.0239	0.00505	0.0234	0	102	72	125	3.61	30
Dibromochloromethane	0.0224	0.00505	0.0234	0	95.7	66	130	3.20	30
Dibromomethane	0.0236	0.00505	0.0234	0	100	75	128	4.08	30
Dichlorodifluoromethane	0.0196	0.00505	0.0234	0	83.5	80	121	5.00	30

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS1_100415A

Ethylbenzene	0.0230	0.00505	0.0234	0	98.3	75	125	1.81	30
Hexachlorobutadiene	0.0184	0.00505	0.0234	0	78.5	55	140	8.57	30
Iodomethane	0.0156	0.00505	0.0234	0	66.5	50	150	5.40	30
Isopropylbenzene	0.0225	0.00505	0.0234	0	96.2	77	129	2.58	30
m,p-Xylene	0.0463	0.00505	0.0469	0	98.9	80	125	2.55	30
Methyl tert-butyl ether	0.0248	0.00505	0.0234	0	106	68	130	5.79	30
Methylene chloride	0.0254	0.00505	0.0234	0	108	63	137	4.63	30
n-Butylbenzene	0.0220	0.00505	0.0234	0	93.7	65	138	3.91	30
n-Propylbenzene	0.0225	0.00505	0.0234	0	96.0	65	135	4.46	30
Naphthalene	0.0205	0.0152	0.0234	0	87.4	51	125	2.34	30
o-Xylene	0.0224	0.00505	0.0234	0	95.6	77	125	3.93	30
sec-Butylbenzene	0.0219	0.00505	0.0234	0	93.6	65	130	3.92	30
Styrene	0.0215	0.00505	0.0234	0	91.8	75	125	3.04	30
tert-Butylbenzene	0.0223	0.00505	0.0234	0	95.1	65	130	3.28	30
Tetrachloroethene	0.0228	0.00505	0.0234	0	97.1	67	139	3.26	30
Toluene	0.0238	0.00505	0.0234	0	102	75	125	4.70	30
trans-1,2-Dichloroethene	0.0244	0.00505	0.0234	0	104	66	134	2.87	30
trans-1,3-Dichloropropene	0.0236	0.00505	0.0234	0	101	65	125	4.87	30
Trichloroethene	0.0232	0.00505	0.0234	0	99.1	77	124	1.50	30
Trichlorofluoromethane	0.0244	0.0152	0.0234	0	104	49	139	3.54	30
Vinyl chloride	0.0233	0.00505	0.0234	0	99.6	60	125	5.55	30
Surr: 1,2-Dichloroethane-d4	54.4		50.52		108	78	125	0	0
Surr: 4-Bromofluorobenzene	50.2		50.52		99.3	85	120	0	0
Surr: Dibromofluoromethane	52.9		50.52		105	84	116	0	0
Surr: Toluene-d8	49.8		50.52		98.5	85	115	0	0

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS1_100415A

Sample ID:	ICV-100415	Batch ID:	R48911		TestNo:		SW8260B		Units:		mg/Kg
SampType:	ICV	Run ID:	GCMS1_100415A		Analysis Date:		04/15/10 10:06 AM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane		0.0482	0.00500	0.0464	0	104	80	120			
1,1,1-Trichloroethane		0.0516	0.00500	0.0464	0	111	80	120			
1,1,2,2-Tetrachloroethane		0.0532	0.00500	0.0464	0	115	80	120			
1,1,2-Trichloroethane		0.0489	0.00500	0.0464	0	105	80	120			
1,1-Dichloroethane		0.0499	0.00500	0.0464	0	108	80	120			
1,1-Dichloroethene		0.0520	0.00500	0.0464	0	112	80	120			
1,1-Dichloropropene		0.0509	0.00500	0.0464	0	110	80	120			
1,2,3-Trichlorobenzene		0.0448	0.00500	0.0464	0	96.6	80	120			
1,2,3-Trichloropropane		0.0470	0.00500	0.0464	0	101	80	120			
1,2,4-Trichlorobenzene		0.0461	0.00500	0.0464	0	99.4	80	120			
1,2,4-Trimethylbenzene		0.0487	0.00500	0.0464	0	105	80	120			
1,2-Dibromo-3-chloropropane		0.0462	0.00500	0.0464	0	99.5	80	120			
1,2-Dibromoethane		0.0471	0.00500	0.0464	0	102	80	120			
1,2-Dichlorobenzene		0.0472	0.00500	0.0464	0	102	80	120			
1,2-Dichloroethane		0.0503	0.00500	0.0464	0	108	80	120			
1,2-Dichloropropane		0.0505	0.00500	0.0464	0	109	80	120			
1,3,5-Trimethylbenzene		0.0484	0.00500	0.0464	0	104	80	120			
1,3-Dichlorobenzene		0.0483	0.00500	0.0464	0	104	80	120			
1,3-Dichloropropane		0.0464	0.00500	0.0464	0	99.9	80	120			
1,4-Dichloro-2-butene		0.0471	0.00500	0.0464	0	101	80	120			
1,4-Dichlorobenzene		0.0475	0.00500	0.0464	0	102	80	120			
2,2-Dichloropropane		0.0546	0.00500	0.0464	0	118	80	120			
2-Butanone		0.123	0.0150	0.116	0	106	80	120			
2-Chloroethylvinylether		0.0503	0.0150	0.0464	0	108	80	120			
2-Chlorotoluene		0.0483	0.00500	0.0464	0	104	80	120			
2-Hexanone		0.115	0.0150	0.116	0	99.0	80	120			
4-Chlorotoluene		0.0484	0.00500	0.0464	0	104	80	120			
4-Isopropyltoluene		0.0492	0.00500	0.0464	0	106	80	120			
4-Methyl-2-pentanone		0.119	0.0150	0.116	0	102	80	120			
Acetone		0.128	0.0500	0.116	0	110	80	120			
Acrylonitrile		0.0943	0.0100	0.0928	0	102	80	120			
Benzene		0.0500	0.00500	0.0464	0	108	80	120			
Bromobenzene		0.0475	0.00500	0.0464	0	102	80	120			
Bromochloromethane		0.0494	0.00500	0.0464	0	107	80	120			
Bromodichloromethane		0.0514	0.00500	0.0464	0	111	80	120			
Bromoform		0.0468	0.00500	0.0464	0	101	80	120			
Bromomethane		0.0451	0.00500	0.0464	0	97.1	80	120			
Carbon disulfide		0.0572	0.00500	0.0464	0	123	80	120			S
Carbon tetrachloride		0.0518	0.00500	0.0464	0	112	80	120			
Chlorobenzene		0.0472	0.00500	0.0464	0	102	80	120			
Chloroethane		0.0471	0.00500	0.0464	0	102	80	120			
Chloroform		0.0500	0.00500	0.0464	0	108	80	120			
Chloromethane		0.0441	0.00500	0.0464	0	95.0	80	120			
cis-1,2-Dichloroethene		0.0500	0.00500	0.0464	0	108	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS1_100415A

cis-1,3-Dichloropropene	0.0508	0.00500	0.0464	0	110	80	120
Dibromochloromethane	0.0475	0.00500	0.0464	0	102	80	120
Dibromomethane	0.0497	0.00500	0.0464	0	107	80	120
Dichlorodifluoromethane	0.0401	0.00500	0.0464	0	86.5	80	120
Ethylbenzene	0.0482	0.00500	0.0464	0	104	80	120
Hexachlorobutadiene	0.0464	0.00500	0.0464	0	99.9	80	120
Iodomethane	0.0440	0.00500	0.0464	0	94.8	80	120
Isopropylbenzene	0.0481	0.00500	0.0464	0	104	80	120
m,p-Xylene	0.0969	0.00500	0.0928	0	104	80	120
Methyl tert-butyl ether	0.0533	0.00500	0.0464	0	115	80	120
Methylene chloride	0.0518	0.00500	0.0464	0	112	80	120
n-Butylbenzene	0.0488	0.00500	0.0464	0	105	80	120
n-Propylbenzene	0.0487	0.00500	0.0464	0	105	80	120
Naphthalene	0.0433	0.0150	0.0464	0	93.3	80	120
o-Xylene	0.0476	0.00500	0.0464	0	102	80	120
sec-Butylbenzene	0.0487	0.00500	0.0464	0	105	80	120
Styrene	0.0461	0.00500	0.0464	0	99.4	80	120
tert-Butylbenzene	0.0485	0.00500	0.0464	0	105	80	120
Tetrachloroethene	0.0482	0.00500	0.0464	0	104	80	120
Toluene	0.0503	0.00500	0.0464	0	108	80	120
trans-1,2-Dichloroethene	0.0503	0.00500	0.0464	0	108	80	120
trans-1,3-Dichloropropene	0.0505	0.00500	0.0464	0	109	80	120
Trichloroethene	0.0483	0.00500	0.0464	0	104	80	120
Trichlorofluoromethane	0.0494	0.0150	0.0464	0	106	80	120
Vinyl chloride	0.0470	0.00500	0.0464	0	101	80	120
Surr: 1,2-Dichloroethane-d4	51.5		50.00		103	78	125
Surr: 4-Bromofluorobenzene	51.4		50.00		103	85	120
Surr: Dibromofluoromethane	52.4		50.00		105	84	116
Surr: Toluene-d8	48.6		50.00		97.1	85	115

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_100421A

Sample ID:	LCS-40665	Batch ID:	40665	TestNo:	SW8260B			Units:	mg/L
SampType:	LCS	Run ID:	GCMS5_100421A	Analysis Date:	04/21/10 10:58 AM			Prep Date:	04/21/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.0237	0.00100	0.0232	0	102	80	130			
1,1,1-Trichloroethane	0.0222	0.00100	0.0232	0	95.6	65	130			
1,1,2,2-Tetrachloroethane	0.0253	0.00100	0.0232	0	109	65	130			
1,1,2-Trichloroethane	0.0244	0.00100	0.0232	0	105	75	125			
1,1-Dichloroethane	0.0232	0.00100	0.0232	0	100	70	135			
1,1-Dichloroethene	0.0227	0.00100	0.0232	0	97.8	70	130			
1,1-Dichloropropene	0.0238	0.00100	0.0232	0	103	75	130			
1,2,3-Trichlorobenzene	0.0268	0.00500	0.0232	0	116	55	140			
1,2,3-Trichloropropane	0.0248	0.00100	0.0232	0	107	75	125			
1,2,4-Trichlorobenzene	0.0245	0.00500	0.0232	0	105	65	135			
1,2,4-Trimethylbenzene	0.0242	0.00500	0.0232	0	104	75	130			
1,2-Dibromo-3-chloropropane	0.0228	0.0100	0.0232	0	98.4	50	130			
1,2-Dibromoethane	0.0248	0.00100	0.0232	0	107	80	120			
1,2-Dichlorobenzene	0.0245	0.00100	0.0232	0	106	70	120			
1,2-Dichloroethane	0.0218	0.00100	0.0232	0	93.8	70	130			
1,2-Dichloropropane	0.0248	0.00100	0.0232	0	107	75	125			
1,3,5-Trimethylbenzene	0.0240	0.00500	0.0232	0	103	75	130			
1,3-Dichlorobenzene	0.0239	0.00100	0.0232	0	103	75	125			
1,3-Dichloropropane	0.0243	0.00100	0.0232	0	105	75	125			
1,4-Dichloro-2-butene	0.0222	0.00200	0.0232	0	95.5	50	150			
1,4-Dichlorobenzene	0.0236	0.00100	0.0232	0	102	75	125			
2,2-Dichloropropane	0.0235	0.00100	0.0232	0	101	70	135			
2-Butanone	0.0250	0.0150	0.0232	0	108	30	150			
2-Chloroethylvinylether	0.0261	0.0150	0.0232	0	112	50	150			
2-Chlorotoluene	0.0242	0.00100	0.0232	0	104	75	125			
2-Hexanone	0.0262	0.0150	0.0232	0	113	55	130			
4-Chlorotoluene	0.0243	0.00100	0.0232	0	105	75	130			
4-Methyl-2-pentanone	0.0253	0.0150	0.0232	0	109	60	135			
Acetone	0.0220	0.0150	0.0232	0	94.9	40	140			
Acrylonitrile	0.0521	0.00300	0.0464	0	112	50	150			
Benzene	0.0241	0.00100	0.0232	0	104	80	120			
Bromobenzene	0.0232	0.00100	0.0232	0	100	75	125			
Bromochloromethane	0.0237	0.00100	0.0232	0	102	65	130			
Bromodichloromethane	0.0231	0.00100	0.0232	0	99.5	75	120			
Bromoform	0.0253	0.00100	0.0232	0	109	70	130			
Bromomethane	0.0215	0.00100	0.0232	0	92.8	30	145			
Carbon disulfide	0.0216	0.0150	0.0232	0	92.9	35	160			
Carbon tetrachloride	0.0222	0.00100	0.0232	0	95.9	65	140			
Chlorobenzene	0.0234	0.00100	0.0232	0	101	80	120			
Chloroethane	0.0217	0.00100	0.0232	0	93.6	60	135			
Chloroform	0.0224	0.00100	0.0232	0	96.6	65	135			
Chloromethane	0.0248	0.00100	0.0232	0	107	40	125			
cis-1,2-Dichloroethene	0.0241	0.00100	0.0232	0	104	70	125			
cis-1,3-Dichloropropene	0.0256	0.00100	0.0232	0	110	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_100421A

Dibromochloromethane	0.0239	0.00100	0.0232	0	103	60	135
Dibromomethane	0.0229	0.00100	0.0232	0	98.5	75	125
Dichlorodifluoromethane	0.0226	0.00100	0.0232	0	97.2	30	155
Ethylbenzene	0.0235	0.00100	0.0232	0	101	75	125
Hexachlorobutadiene	0.0214	0.00300	0.0232	0	92.2	50	140
Iodomethane	0.0206	0.0150	0.0232	0	88.8	50	150
Isopropylbenzene	0.0258	0.00100	0.0232	0	111	75	125
m,p-Xylene	0.0474	0.00200	0.0464	0	102	75	130
Methyl tert-butyl ether	0.0237	0.00100	0.0232	0	102	65	125
Methylene chloride	0.0228	0.00250	0.0232	0	98.3	55	140
n-Butylbenzene	0.0233	0.00100	0.0232	0	100	70	135
n-Propylbenzene	0.0243	0.00100	0.0232	0	105	70	130
Naphthalene	0.0261	0.0150	0.0232	0	113	55	138
o-Xylene	0.0256	0.00100	0.0232	0	110	80	120
p-Isopropyltoluene	0.0241	0.00100	0.0232	0	104	75	130
sec-Butylbenzene	0.0256	0.00100	0.0232	0	110	70	125
Styrene	0.0238	0.00100	0.0232	0	103	65	135
tert-Butylbenzene	0.0253	0.00100	0.0232	0	109	70	130
Tetrachloroethene	0.0232	0.00200	0.0232	0	100	45	150
Toluene	0.0240	0.00200	0.0232	0	103	75	120
trans-1,2-Dichloroethene	0.0235	0.00100	0.0232	0	101	60	140
trans-1,3-Dichloropropene	0.0224	0.00100	0.0232	0	96.3	55	140
Trichloroethene	0.0231	0.00200	0.0232	0	99.4	70	125
Trichlorofluoromethane	0.0215	0.00100	0.0232	0	92.7	60	145
Vinyl chloride	0.0236	0.00100	0.0232	0	102	50	145
Surr: 1,2-Dichloroethane-d4	189		200.0		94.4	70	120
Surr: 4-Bromofluorobenzene	199		200.0		99.7	75	120
Surr: Dibromofluoromethane	197		200.0		98.5	85	115
Surr: Toluene-d8	201		200.0		101	85	120

Sample ID:	MB-40665	Batch ID:	40665	TestNo:	SW8260B	Units:	mg/L
SampType:	MBLK	Run ID:	GCMS5_100421A	Analysis Date:	04/21/10 12:12 PM	Prep Date:	04/21/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	<0.000200	0.00100								
1,1,1-Trichloroethane	<0.000200	0.00100								
1,1,2,2-Tetrachloroethane	<0.000200	0.00100								
1,1,2-Trichloroethane	<0.000200	0.00100								
1,1-Dichloroethane	<0.000200	0.00100								
1,1-Dichloroethene	<0.000200	0.00100								
1,1-Dichloropropene	<0.000200	0.00100								
1,2,3-Trichlorobenzene	<0.00150	0.00500								
1,2,3-Trichloropropane	<0.000300	0.00100								
1,2,4-Trichlorobenzene	<0.00150	0.00500								
1,2,4-Trimethylbenzene	<0.00150	0.00500								
1,2-Dibromo-3-chloropropane	<0.00300	0.0100								
1,2-Dibromoethane	<0.000200	0.00100								
1,2-Dichlorobenzene	<0.000300	0.00100								

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_100421A

1,2-Dichloroethane	<0.000300	0.00100
1,2-Dichloropropane	<0.000200	0.00100
1,3,5-Trimethylbenzene	<0.00150	0.00500
1,3-Dichlorobenzene	<0.000300	0.00100
1,3-Dichloropropane	<0.000200	0.00100
1,4-Dichloro-2-butene	<0.00200	0.00200
1,4-Dichlorobenzene	<0.000300	0.00100
2,2-Dichloropropane	<0.000200	0.00100
2-Butanone	<0.00500	0.0150
2-Chloroethylvinylether	<0.00500	0.0150
2-Chlorotoluene	<0.000300	0.00100
2-Hexanone	<0.00500	0.0150
4-Chlorotoluene	<0.000300	0.00100
4-Methyl-2-pentanone	<0.00500	0.0150
Acetone	<0.00500	0.0150
Acrylonitrile	<0.00100	0.00300
Benzene	<0.000200	0.00100
Bromobenzene	<0.000200	0.00100
Bromochloromethane	<0.000200	0.00100
Bromodichloromethane	<0.000200	0.00100
Bromoform	<0.000200	0.00100
Bromomethane	<0.000300	0.00100
Carbon disulfide	<0.00500	0.0150
Carbon tetrachloride	<0.000200	0.00100
Chlorobenzene	<0.000200	0.00100
Chloroethane	<0.000300	0.00100
Chloroform	<0.000300	0.00100
Chloromethane	<0.000300	0.00100
cis-1,2-Dichloroethene	<0.000200	0.00100
cis-1,3-Dichloropropene	<0.000200	0.00100
Dibromochloromethane	<0.000200	0.00100
Dibromomethane	<0.000200	0.00100
Dichlorodifluoromethane	<0.000200	0.00100
Ethylbenzene	<0.000300	0.00100
Hexachlorobutadiene	<0.00100	0.00300
Iodomethane	<0.00500	0.0150
Isopropylbenzene	<0.000200	0.00100
m,p-Xylene	<0.000600	0.00200
Methyl tert-butyl ether	<0.000300	0.00100
Methylene chloride	<0.00250	0.00250
n-Butylbenzene	<0.000300	0.00100
n-Propylbenzene	<0.000300	0.00100
Naphthalene	<0.00500	0.0150
o-Xylene	<0.000300	0.00100
p-Isopropyltoluene	<0.000300	0.00100
sec-Butylbenzene	<0.000300	0.00100
Styrene	<0.000200	0.00100

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_100421A

tert-Butylbenzene	<0.000300	0.00100				
Tetrachloroethene	<0.000600	0.00200				
Toluene	<0.000600	0.00200				
trans-1,2-Dichloroethene	<0.000200	0.00100				
trans-1,3-Dichloropropene	<0.000200	0.00100				
Trichloroethene	<0.000600	0.00200				
Trichlorofluoromethane	<0.000200	0.00100				
Vinyl chloride	<0.000100	0.00100				
Surr: 1,2-Dichloroethane-d4	193		200.0	96.6	70	120
Surr: 4-Bromofluorobenzene	210		200.0	105	75	120
Surr: Dibromofluoromethane	201		200.0	100	85	115
Surr: Toluene-d8	203		200.0	101	85	120

Sample ID:	1004181-01AMS	Batch ID:	40665	TestNo:	SW8260B	Units:	mg/L
SampType:	MS	Run ID:	GCMS5_100421A	Analysis Date:	04/21/10 07:27 PM	Prep Date:	04/21/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	11.4	0.500	11.6	0	98.3	80	130			
1,1,1-Trichloroethane	10.6	0.500	11.6	0	91.6	65	130			
1,1,2,2-Tetrachloroethane	13.0	0.500	11.6	0	112	65	130			
1,1,2-Trichloroethane	11.9	0.500	11.6	0	102	75	125			
1,1-Dichloroethane	11.0	0.500	11.6	0	94.4	70	135			
1,1-Dichloroethene	11.0	0.500	11.6	0	94.9	70	130			
1,1-Dichloropropene	11.7	0.500	11.6	0	101	75	130			
1,2,3-Trichlorobenzene	12.4	2.50	11.6	0	107	55	140			
1,2,3-Trichloropropane	12.0	0.500	11.6	0	104	75	125			
1,2,4-Trichlorobenzene	11.6	2.50	11.6	0	100	65	135			
1,2,4-Trimethylbenzene	11.8	2.50	11.6	0	101	75	130			
1,2-Dibromo-3-chloropropane	10.3	5.00	11.6	0	88.9	50	130			
1,2-Dibromoethane	11.9	0.500	11.6	0	103	80	120			
1,2-Dichlorobenzene	11.9	0.500	11.6	0	103	70	120			
1,2-Dichloroethane	10.3	0.500	11.6	0	88.4	70	130			
1,2-Dichloropropane	12.0	0.500	11.6	0	104	75	125			
1,3,5-Trimethylbenzene	11.6	2.50	11.6	0	100	75	130			
1,3-Dichlorobenzene	11.8	0.500	11.6	0	102	75	125			
1,3-Dichloropropane	11.7	0.500	11.6	0	101	75	125			
1,4-Dichloro-2-butene	10.7	1.00	11.6	0	92.5	50	150			
1,4-Dichlorobenzene	11.4	0.500	11.6	0	98.2	75	125			
2,2-Dichloropropane	11.0	0.500	11.6	0	95.0	70	135			
2-Butanone	13.6	7.50	11.6	0	117	30	150			
2-Chloroethylvinylether	12.4	7.50	11.6	0	107	50	150			
2-Chlorotoluene	11.9	0.500	11.6	0	103	75	125			
2-Hexanone	12.7	7.50	11.6	0	109	55	130			
4-Chlorotoluene	12.2	0.500	11.6	0	105	75	130			
4-Methyl-2-pentanone	12.2	7.50	11.6	0	105	60	135			
Acetone	11.4	7.50	11.6	0	98.2	40	140			
Acrylonitrile	24.8	1.50	23.2	0	107	50	150			
Benzene	11.8	0.500	11.6	0	102	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_100421A

Bromobenzene	11.7	0.500	11.6	0	101	75	125
Bromochloromethane	11.9	0.500	11.6	0	103	65	130
Bromodichloromethane	11.1	0.500	11.6	0	95.4	75	120
Bromoform	11.3	0.500	11.6	0	97.1	70	130
Bromomethane	7.76	0.500	11.6	0	66.9	30	145
Carbon disulfide	10.1	7.50	11.6	0	87.5	35	160
Carbon tetrachloride	10.5	0.500	11.6	0	90.9	65	140
Chlorobenzene	11.4	0.500	11.6	0	97.9	80	120
Chloroethane	10.4	0.500	11.6	0	89.2	60	135
Chloroform	11.0	0.500	11.6	0	94.4	65	135
Chloromethane	12.1	0.500	11.6	0	104	40	125
cis-1,2-Dichloroethene	11.7	0.500	11.6	0	101	70	125
cis-1,3-Dichloropropene	12.2	0.500	11.6	0	106	70	130
Dibromochloromethane	11.2	0.500	11.6	0	96.2	60	135
Dibromomethane	11.0	0.500	11.6	0	95.1	75	125
Dichlorodifluoromethane	10.8	0.500	11.6	0	93.4	30	155
Ethylbenzene	11.6	0.500	11.6	0	100	75	125
Hexachlorobutadiene	10.6	1.50	11.6	0	91.8	50	140
Iodomethane	8.51	7.50	11.6	0	73.4	50	150
Isopropylbenzene	12.4	0.500	11.6	0	107	75	125
m,p-Xylene	23.8	1.00	23.2	0	103	75	130
Methyl tert-butyl ether	11.6	0.500	11.6	0	100	65	125
Methylene chloride	11.1	1.25	11.6	0	95.4	55	140
n-Butylbenzene	11.2	0.500	11.6	0	96.1	70	135
n-Propylbenzene	12.2	0.500	11.6	0	105	70	130
Naphthalene	12.4	7.50	11.6	0	107	55	138
o-Xylene	12.5	0.500	11.6	0	108	80	120
p-Isopropyltoluene	11.5	0.500	11.6	0	99.3	75	130
sec-Butylbenzene	12.4	0.500	11.6	0	107	70	125
Styrene	11.4	0.500	11.6	0	98.7	65	135
tert-Butylbenzene	12.3	0.500	11.6	0	106	70	130
Tetrachloroethene	11.4	1.00	11.6	0	98.3	45	150
Toluene	11.9	1.00	11.6	0	103	75	120
trans-1,2-Dichloroethene	11.1	0.500	11.6	0	95.9	60	140
trans-1,3-Dichloropropene	10.6	0.500	11.6	0	91.2	55	140
Trichloroethene	11.2	1.00	11.6	0	96.3	70	125
Trichlorofluoromethane	10.2	0.500	11.6	0	87.5	60	145
Vinyl chloride	11.6	0.500	11.6	0	99.7	50	145
Surr: 1,2-Dichloroethane-d4	89600		100000		89.6	70	120
Surr: 4-Bromofluorobenzene	102000		100000		102	75	120
Surr: Dibromofluoromethane	97700		100000		97.7	85	115
Surr: Toluene-d8	102000		100000		102	85	120

Sample ID:	1004181-01AMSD	Batch ID:	40665	TestNo:	SW8260B	Units:	mg/L
SampType:	MSD	Run ID:	GCMS5_100421A	Analysis Date:	04/21/10 07:51 PM	Prep Date:	04/21/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	11.9	0.500	11.6	0	103	80	130	4.37	20	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_100421A

1,1,1-Trichloroethane	10.9	0.500	11.6	0	93.8	65	130	2.32	20
1,1,2,2-Tetrachloroethane	13.4	0.500	11.6	0	115	65	130	2.46	20
1,1,2-Trichloroethane	12.4	0.500	11.6	0	107	75	125	4.37	20
1,1-Dichloroethane	11.5	0.500	11.6	0	99.2	70	135	4.94	20
1,1-Dichloroethene	11.2	0.500	11.6	0	96.4	70	130	1.58	20
1,1-Dichloropropene	12.0	0.500	11.6	0	104	75	130	2.61	20
1,2,3-Trichlorobenzene	14.0	2.50	11.6	0	121	55	140	12.4	20
1,2,3-Trichloropropane	12.5	0.500	11.6	0	107	75	125	3.39	20
1,2,4-Trichlorobenzene	12.7	2.50	11.6	0	110	65	135	9.08	20
1,2,4-Trimethylbenzene	12.2	2.50	11.6	0	105	75	130	3.55	20
1,2-Dibromo-3-chloropropane	11.5	5.00	11.6	0	99.3	50	130	11.1	20
1,2-Dibromoethane	12.4	0.500	11.6	0	107	80	120	4.16	20
1,2-Dichlorobenzene	12.4	0.500	11.6	0	107	70	120	3.95	20
1,2-Dichloroethane	10.8	0.500	11.6	0	92.9	70	130	4.95	20
1,2-Dichloropropane	12.5	0.500	11.6	0	108	75	125	3.71	20
1,3,5-Trimethylbenzene	11.9	2.50	11.6	0	103	75	130	2.50	20
1,3-Dichlorobenzene	12.1	0.500	11.6	0	105	75	125	2.97	20
1,3-Dichloropropane	12.3	0.500	11.6	0	106	75	125	5.12	20
1,4-Dichloro-2-butene	11.6	1.00	11.6	0	100	50	150	7.83	20
1,4-Dichlorobenzene	11.8	0.500	11.6	0	101	75	125	3.15	20
2,2-Dichloropropane	11.1	0.500	11.6	0	95.6	70	135	0.588	20
2-Butanone	15.1	7.50	11.6	0	130	30	150	10.5	20
2-Chloroethylvinylether	12.6	7.50	11.6	0	108	50	150	1.61	20
2-Chlorotoluene	12.2	0.500	11.6	0	105	75	125	1.95	20
2-Hexanone	14.2	7.50	11.6	0	122	55	130	10.8	20
4-Chlorotoluene	12.4	0.500	11.6	0	107	75	130	1.79	20
4-Methyl-2-pentanone	13.3	7.50	11.6	0	115	60	135	9.09	20
Acetone	12.3	7.50	11.6	0	106	40	140	7.80	20
Acrylonitrile	27.2	1.50	23.2	0	117	50	150	9.48	20
Benzene	12.2	0.500	11.6	0	105	80	120	3.59	20
Bromobenzene	12.1	0.500	11.6	0	104	75	125	3.23	20
Bromochloromethane	12.1	0.500	11.6	0	104	65	130	1.92	20
Bromodichloromethane	11.5	0.500	11.6	0	98.8	75	120	3.51	20
Bromoform	11.9	0.500	11.6	0	102	70	130	5.23	20
Bromomethane	9.02	0.500	11.6	0	77.7	30	145	15.0	20
Carbon disulfide	10.5	7.50	11.6	0	90.1	35	160	2.96	20
Carbon tetrachloride	10.8	0.500	11.6	0	92.9	65	140	2.16	20
Chlorobenzene	11.6	0.500	11.6	0	100	80	120	2.13	20
Chloroethane	10.6	0.500	11.6	0	91.8	60	135	2.86	20
Chloroform	11.2	0.500	11.6	0	96.3	65	135	1.99	20
Chloromethane	12.1	0.500	11.6	0	104	40	125	0.082	20
cis-1,2-Dichloroethene	12.3	0.500	11.6	0	106	70	125	5.29	20
cis-1,3-Dichloropropene	12.7	0.500	11.6	0	109	70	130	3.53	20
Dibromochloromethane	11.6	0.500	11.6	0	99.7	60	135	3.57	20
Dibromomethane	11.7	0.500	11.6	0	101	75	125	5.85	20
Dichlorodifluoromethane	11.0	0.500	11.6	0	94.4	30	155	1.10	20
Ethylbenzene	11.9	0.500	11.6	0	102	75	125	2.08	20

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_100421A

Hexachlorobutadiene	11.6	1.50	11.6	0	99.8	50	140	8.37	20
Iodomethane	10.5	7.50	11.6	0	90.1	50	150	20.5	20
Isopropylbenzene	12.6	0.500	11.6	0	109	75	125	1.64	20
m,p-Xylene	24.6	1.00	23.2	0	106	75	130	3.12	20
Methyl tert-butyl ether	12.1	0.500	11.6	0	104	65	125	4.30	20
Methylene chloride	11.8	1.25	11.6	0	102	55	140	6.26	20
n-Butylbenzene	11.6	0.500	11.6	0	100	70	135	4.39	20
n-Propylbenzene	12.5	0.500	11.6	0	108	70	130	2.35	20
Naphthalene	14.2	7.50	11.6	0	123	55	138	13.4	20
o-Xylene	12.9	0.500	11.6	0	111	80	120	2.68	20
p-Isopropyltoluene	12.0	0.500	11.6	0	103	75	130	3.96	20
sec-Butylbenzene	12.7	0.500	11.6	0	109	70	125	2.28	20
Styrene	11.8	0.500	11.6	0	102	65	135	2.84	20
tert-Butylbenzene	12.8	0.500	11.6	0	110	70	130	3.78	20
Tetrachloroethene	11.7	1.00	11.6	0	101	45	150	2.34	20
Toluene	12.2	1.00	11.6	0	105	75	120	2.53	20
trans-1,2-Dichloroethene	11.9	0.500	11.6	0	102	60	140	6.56	20
trans-1,3-Dichloropropene	11.1	0.500	11.6	0	95.4	55	140	4.53	20
Trichloroethene	11.6	1.00	11.6	0	99.9	70	125	3.65	20
Trichlorofluoromethane	10.4	0.500	11.6	0	89.2	60	145	1.95	20
Vinyl chloride	11.9	0.500	11.6	0	103	50	145	3.07	20
Surr: 1,2-Dichloroethane-d4	90300		100000		90.3	70	120	0	0
Surr: 4-Bromofluorobenzene	101000		100000		101	75	120	0	0
Surr: Dibromofluoromethane	97900		100000		97.9	85	115	0	0
Surr: Toluene-d8	101000		100000		101	85	120	0	0

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_100421A

Sample ID:	ICV-100421	Batch ID:	R48997		TestNo:		SW8260B		Units:		mg/L
SampType:	ICV	Run ID:	GCMS5_100421A		Analysis Date:		04/21/10 10:33 AM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane		0.0474	0.00100	0.0464	0	102	80	120			
1,1,1-Trichloroethane		0.0449	0.00100	0.0464	0	96.7	80	120			
1,1,2,2-Tetrachloroethane		0.0474	0.00100	0.0464	0	102	80	120			
1,1,2-Trichloroethane		0.0469	0.00100	0.0464	0	101	80	120			
1,1-Dichloroethane		0.0449	0.00100	0.0464	0	96.9	80	120			
1,1-Dichloroethene		0.0455	0.00100	0.0464	0	98.1	80	120			
1,1-Dichloropropene		0.0471	0.00100	0.0464	0	101	80	120			
1,2,3-Trichlorobenzene		0.0501	0.00500	0.0464	0	108	80	120			
1,2,3-Trichloropropane		0.0458	0.00100	0.0464	0	98.8	80	120			
1,2,4-Trichlorobenzene		0.0485	0.00500	0.0464	0	105	80	120			
1,2,4-Trimethylbenzene		0.0477	0.00500	0.0464	0	103	80	120			
1,2-Dibromo-3-chloropropane		0.0399	0.0100	0.0464	0	86.0	80	120			
1,2-Dibromoethane		0.0485	0.00100	0.0464	0	105	80	120			
1,2-Dichlorobenzene		0.0479	0.00100	0.0464	0	103	80	120			
1,2-Dichloroethane		0.0427	0.00100	0.0464	0	92.0	80	120			
1,2-Dichloropropane		0.0478	0.00100	0.0464	0	103	80	120			
1,3,5-Trimethylbenzene		0.0478	0.00500	0.0464	0	103	80	120			
1,3-Dichlorobenzene		0.0476	0.00100	0.0464	0	103	80	120			
1,3-Dichloropropane		0.0463	0.00100	0.0464	0	99.7	80	120			
1,4-Dichloro-2-butene		0.0434	0.00200	0.0464	0	93.6	80	120			
1,4-Dichlorobenzene		0.0452	0.00100	0.0464	0	97.3	80	120			
2,2-Dichloropropane		0.0500	0.00100	0.0464	0	108	80	120			
2-Butanone		0.0462	0.0150	0.0464	0	99.5	80	120			
2-Chloroethylvinylether		0.0489	0.0150	0.0464	0	105	80	120			
2-Chlorotoluene		0.0480	0.00100	0.0464	0	103	80	120			
2-Hexanone		0.0480	0.0150	0.0464	0	103	80	120			
4-Chlorotoluene		0.0486	0.00100	0.0464	0	105	80	120			
4-Methyl-2-pentanone		0.0464	0.0150	0.0464	0	100	80	120			
Acetone		0.0409	0.0150	0.0464	0	88.1	80	120			
Acrylonitrile		0.0944	0.00300	0.0928	0	102	60	140			
Benzene		0.0464	0.00100	0.0464	0	99.9	80	120			
Bromobenzene		0.0472	0.00100	0.0464	0	102	80	120			
Bromochloromethane		0.0462	0.00100	0.0464	0	99.5	80	120			
Bromodichloromethane		0.0467	0.00100	0.0464	0	101	80	120			
Bromoform		0.0501	0.00100	0.0464	0	108	80	120			
Bromomethane		0.0427	0.00100	0.0464	0	92.0	80	120			
Carbon disulfide		0.0435	0.0150	0.0464	0	93.7	80	120			
Carbon tetrachloride		0.0448	0.00100	0.0464	0	96.5	80	120			
Chlorobenzene		0.0447	0.00100	0.0464	0	96.4	80	120			
Chloroethane		0.0429	0.00100	0.0464	0	92.5	80	120			
Chloroform		0.0448	0.00100	0.0464	0	96.6	80	120			
Chloromethane		0.0472	0.00100	0.0464	0	102	80	120			
cis-1,2-Dichloroethene		0.0471	0.00100	0.0464	0	102	80	120			
cis-1,3-Dichloropropene		0.0511	0.00100	0.0464	0	110	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_100421A

Dibromochloromethane	0.0476	0.00100	0.0464	0	103	80	120
Dibromomethane	0.0436	0.00100	0.0464	0	93.9	80	120
Dichlorodifluoromethane	0.0441	0.00100	0.0464	0	95.0	80	120
Ethylbenzene	0.0461	0.00100	0.0464	0	99.3	80	120
Hexachlorobutadiene	0.0439	0.00300	0.0464	0	94.6	80	120
Iodomethane	0.0450	0.0150	0.0464	0	97.0	80	120
Isopropylbenzene	0.0498	0.00100	0.0464	0	107	80	120
m,p-Xylene	0.0946	0.00200	0.0928	0	102	80	120
Methyl tert-butyl ether	0.0474	0.00100	0.0464	0	102	80	120
Methylene chloride	0.0448	0.00250	0.0464	0	96.6	80	120
n-Butylbenzene	0.0469	0.00100	0.0464	0	101	80	120
n-Propylbenzene	0.0489	0.00100	0.0464	0	105	80	120
Naphthalene	0.0478	0.0150	0.0464	0	103	80	120
o-Xylene	0.0506	0.00100	0.0464	0	109	80	120
p-Isopropyltoluene	0.0468	0.00100	0.0464	0	101	80	120
sec-Butylbenzene	0.0504	0.00100	0.0464	0	109	80	120
Styrene	0.0471	0.00100	0.0464	0	102	80	120
tert-Butylbenzene	0.0503	0.00100	0.0464	0	108	80	120
Tetrachloroethene	0.0451	0.00200	0.0464	0	97.2	80	120
Toluene	0.0470	0.00200	0.0464	0	101	80	120
trans-1,2-Dichloroethene	0.0465	0.00100	0.0464	0	100	80	120
trans-1,3-Dichloropropene	0.0449	0.00100	0.0464	0	96.7	80	120
Trichloroethene	0.0450	0.00200	0.0464	0	96.9	80	120
Trichlorofluoromethane	0.0430	0.00100	0.0464	0	92.7	80	120
Vinyl chloride	0.0471	0.00100	0.0464	0	101	80	120
Surr: 1,2-Dichloroethane-d4	194		200.0		96.8	70	120
Surr: 4-Bromofluorobenzene	203		200.0		101	75	120
Surr: Dibromofluoromethane	198		200.0		98.8	85	115
Surr: Toluene-d8	201		200.0		100	85	120

Qualifiers:

B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
DF	Dilution Factor	RL	Reporting Limit
J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
MDL	Method Detection Limit	J	Analyte detected between SDL and RL
ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: IGN_100420A

Sample ID:	MB-40640	Batch ID:	40640	TestNo:	SW1010	Units:	°C
SampType:	MBLK	Run ID:	IGN_100420A	Analysis Date:	04/20/10 04:15 PM	Prep Date:	04/20/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Ignitability	>100	0								

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: IGN_100420A

Sample ID:	ICV-100420	Batch ID:	IGN_S-4/20/10		TestNo:		SW1010		Units:	°C	
SampType:	ICV	Run ID:	IGN_100420A		Analysis Date:		04/20/10 04:15 PM		Prep Date:	04/20/10	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Ignitability		60	0	66.00	0	90.9	90	110			

Sample ID:	CCV-100420	Batch ID:	IGN_S-4/20/10		TestNo:		SW1010		Units:	°C	
SampType:	CCV	Run ID:	IGN_100420A		Analysis Date:		04/20/10 04:15 PM		Prep Date:	04/20/10	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Ignitability		60	0	66.00	0	90.9	90	110			

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

CLIENT: Zia Engineering & Environmental
Work Order: 1004121
Project: MP POL

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_100421A

Sample ID:	1004122-01B-DUP	Batch ID:	40658	TestNo:	D2216	Units:	WT%
SampType:	DUP	Run ID:	PMOIST_100421A	Analysis Date:	04/21/10 04:30 PM	Prep Date:	04/21/10

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPD Limit	Qual
Percent Moisture	3.45	0	0	3.535				2.29	30	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	R	RPD outside accepted control limits
	DF	Dilution Factor	RL	Reporting Limit
	J	Analyte detected between MDL and RL	S	Spike Recovery outside control limits
	MDL	Method Detection Limit	J	Analyte detected between SDL and RL
	ND	Not Detected at the Method Detection Limit	N	Parameter not NELAC certified

1-28-10 J. Padilla

Delivered 2 - one cubic yard pallet box's from MPOL drilling project and STRC drilling. Also delivered decon water and P.P.E. from above projects.

	Drum #	Delivered	Weight	Contents
MP POL	20100018	19 Jan. DTD	2460 lbs.	Soil Cuttings
STRC	20100039		1780 lbs.	Soil Cuttings
	20100040		11 lbs.	P.P.E.
	20100039		135 lbs	Decon Water

3-10-10 *

DELIVERED 1-5GAL, PPE, 1-5GAL PURGE WATER FROM THE GROUNDWATER SAMPLING AT THE MPL #3 LANDFILL WILL BE HELD PENDING ANALYSIS

Drum #	Weight	Content
20100090	44 LBS	PURGE WATER
20100091	7 LBS	P.P.E

4-1-10 G. GARCIA J. PADILLA

TURN IN THREE 20GAL CONTAINERS WITH PURGE WATER FROM THE MCSTT SAMPLING EVENT, DIESEL / LANDFILL / CHROME.

DRUM #	WEIGHT	CONTENTS
DIESEL 5GAL BUCKET		PPE
20100113	8 LBS	P.P.E
CHROME 5GAL BUCKET		
20100114	8 LBS	PPE
LANDFILL 5GAL BUCKET		
20100115	12 LBS	PPE
LANDFILL 15GAL		
20100116	79 LBS	PURGE WATER
DIESEL 20GAL		
20100118	184 LBS	PURGE WATER
CHROME 20GAL		
20100117	116 LBS	PURGE WATER

PENDING WASTE PROFILES FOR THE ABOVE DRUMS

4-13-10 G. GALLA, J. PAPOCCA

DELIVERED TWO 20 GAL OPEN TOP DRUMS WITH SOIL FROM MP-PAL / SRC FFTA TO THE HMMC

DRUM #	WEIGHT	CONTENT
201000150 - MPAL	248 LBS	SOIL CUTTINGS
SRC FFTA 201000151 - SRC	421 LBS	SOIL CUTTINGS

* WAITING FOR ANALYTICAL RESULTS

5-13-16 GABRIEL GALLA

DISPOSED OF 1 PALLET SOIL BORINGS AND 1-2½ GAL BUCKET P.P.E. FROM THE LAWSIP PROPELLANT DILLC DITCH. CONTENTS PENDING ANALYSIS.

CONTAINER	WEIGHT	
SOIL BORINGS	1320 LBS	2010225
P.P.E.	30 LBS	2010226

Appendix E

Risk Assessments

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Appendix E. Risk Assessment for Main Post POL AST Release Site

SWMU 219 (CCWS-77)

September 2010 (revised May 2011)

Appendix E. Risk Assessment for Main Post POL AST Release Area

SWMU 219 (CCWS-77)

Prepared for:
U.S. Army, White Sands Missile Range
Directorate of Public Works –
Environment Division
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Date:
September 2010 (revised May 2011)

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Attachment

A Site Photographs

B Risk Assessment Data Sets

C Ecological Characterization Worksheets

D ProUCL Output

1. Introduction

The purpose of this report is to evaluate current and reasonably anticipated future risks to human health and ecological receptors from exposure to constituents detected in environmental media at the Petroleum, Oil, and Lubricant (POL) Above Ground Storage Tank (AST) release site located within the Main Post of the White Sands Missile Range (WSMR).

The risk assessment for the Main Post POL AST Release area (Site) was conducted in a manner consistent with current New Mexico Environmental Department (NMED) guidance (NMED, 2009a,b) and the United States Environmental Protection Agency (USEPA) Risk Assessment Guidance for Superfund (RAGS) (USEPA, 1989), and in compliance with the Resource Conservation and Recovery Act (RCRA).

2. Main Post POL AST Release Area

2.1 Site Description and History

The Site is located at the WSMR Main Post (Figure 2-1), within the Main Post POL Storage Area. The POL Storage Area provides storage and a fueling point for the Main Post official vehicles and consists of a number of ASTs, underground piping, and a filling station.

The POL Storage Area has been in service since the 1960s. Currently, there are eight fuel pumps located at the fueling island. Two of the eight pumps are used to dispense diesel fuel while the remaining six pumps dispense gasoline. As shown in Figure 2, there are three 6,000 gallon diesel ASTs located to the northwest of the fueling island and three 6,000 gallon gasoline ASTs located to the west of the fueling island. On the east side of Wesson Street, there are three 25,000 gallon diesel ASTs and three 25,000 gallon gasoline ASTs. The ASTs are located within containment areas which are constructed of concrete walls with a concrete floor. The ASTs are elevated on saddles within the containment to allow for routine inspection.

On December 7, 2005, a release of approximately 1,370 gallons of gasoline occurred while transferring gasoline between one of the 25,000 gallon gasoline ASTs to the 6,000 gallon gasoline ASTs. The 6,000 gallon ASTs are filled simultaneously at an even rate by the transfer system. According to WSMR personnel knowledgeable about the release, one of the tanks was overtopped during the transfer and gasoline was released to the concrete secondary containment. The identification of the actual tank

that overtopped was not recorded. The concrete walls of the containment prevented the release of the gasoline to the surrounding ground surface. However, a crack in the southeastern corner of the floor of the concrete containment allowed fuel to escape and be released to the subsurface below. According to base personnel, some of the gasoline was pumped out of the containment following the release, but the volume of gasoline recovered was not recorded. The release was verbally reported to the Petroleum Storage Tank Bureau (PSTB) and the NMED Hazardous Waste Bureau (HWB) in December of 2005. Following this incident, the concrete containment was repaired to prevent a similar release in the future. Photographs of the Site are provided in Attachment A.

2.2 Risk Assessment Data Set Evaluation

Soil data generated from the site characterization activities were used in the risk assessment. The risk assessment data sets (Attachment B) for soil were evaluated following USEPA guidance for risk assessments (USEPA, 1989; 1992; 2002a). The data evaluation guidelines are summarized as follows:

- All soil sample types (i.e., hand auger, continuous core, direct-push technique) were considered usable for the risk assessment.

- Analytical results from soil samples collected from different depths at the same sampling location during the same sampling event were evaluated as independent samples.

- Constituents that were not detected in a medium and have sample quantitation limits (SQLs) below screening levels were not included in the data evaluation for that medium. Constituents that were not detected and have SQLs above screening levels were further evaluated.

- Analytical results reported as detected or estimated values were considered to be present at the reported value. Analytical results that are “U” or “UB” qualified were considered non-detect. Analytical results rejected during the data validation process (i.e., “R” qualified), or where the chemical identity is uncertain (i.e., “N” qualified) were not qualitatively or quantitatively evaluated.

- For duplicate samples, the result to be used in the risk assessments was selected as follows: (1) if both samples reported positive detects, the higher measured analytical concentration was used, (2) if only one result was a positive detect, that

concentration was used, or (3) if both samples reported non-detects, the lower SQL was used as the proxy concentration. The lower SQL was used because it is not reasonable to use the higher SQL when the duplicate analysis for the sample indicated that the constituent was not present at the lower SQL.

For purposes of the risk assessment, the soil data were divided by sample depth interval based on the exposure pathways identified for the site. In brief, the soil data were categorized as follows:

- Surface soil data, including soil samples collected from depths of 0 to 2 ft bgs, were used to evaluate potential exposure of human (current/future site worker; hypothetical future resident) and ecological receptors;

- Surface and subsurface soil data (0 to 10 ft bgs) were used to evaluate potential exposure of human (future construction worker) and ecological receptors that could be exposed to subsurface soil (e.g., burrowing wildlife); and

- Total soil data (vadose zone) were used to evaluate potential exposure of human receptors through the vapor intrusion exposure pathway.

The risk assessment data sets summarize the following: the number of detects, number of samples, frequency of detection (FOD), minimum and maximum detected concentrations, location of maximum detected concentration, minimum and maximum reporting limits, and upper confidence limit on the mean, and are presented in the attached Tables Data-1 (surface soil 0 to 2 ft bgs), Data-2 (combined surface and subsurface soil 0 to 10 ft bgs), and Data-3 (total soil).

2.2.1 Surface Soil (0 to 2 ft bgs)

Three soil samples were collected in the 0 to 2 foot depth interval as part of the January 2010 and April 2010 investigations. Analytical results for these soil samples are summarized in Table Data-1. Surface soil was analyzed for volatile organic compounds (VOCs), Total Petroleum Hydrocarbons (TPHs)-Gasoline Range Organics (GRO), and lead. Benzene, ethylbenzene, toluene, xylenes, TPH-GRO and lead were detected within this data set.

2.2.2 Combined Surface and Subsurface Soil (0 to10 ft bgs)

Seventeen soil samples were collected in the 0 to 10 foot depth interval as part of the January 2010 and April 2010 investigations. Analytical results for these soil samples are summarized in Table Data-2. Combined surface and subsurface soil was analyzed for VOCs, TPH-GRO, and lead. Benzene, ethylbenzene, toluene, xylenes, TPH-GRO and lead were detected within this data set.

2.2.3 Total Soil (0 to 20 ft bgs)

Twenty-nine soil samples were collected in the total soil depth interval as part of the January 2010 and April 2010 investigations. Analytical results for these soil samples are summarized in Table Data-3. Total soil was analyzed for VOCs, TPH-GRO, and lead. Benzene, ethylbenzene, toluene, xylenes, TPH-GRO and lead were detected within this data set.

2.3 Human Health Risk Assessment

The purpose of this human health risk assessment (HHRA) is to evaluate the potential current and future risks and hazards to human health associated with constituents detected in soil samples collected from the Site. Methods and parameters used in the HHRA are in compliance with NMED and USEPA guidance for risk assessments (NMED, 2009a; 2010; USEPA, 1989; 1991a,b; 1992; 1993b; 1999; 2002a,b; 2003a; 2005a,b).

2.3.1 Selection of Constituents of Potential Concern

The selection of constituents of potential concern (COPCs) is based primarily on the magnitude of the measured concentrations in the relevant environmental media, in relation to the appropriate screening level. Detected constituents for which a screening level is not available are also considered in the screening process. Non-detected constituents with sample quantitation limits (SQLs) exceeding their screening levels are identified during the screening process and discussed in the uncertainty section.

COPCs in soil were identified by comparing maximum detected concentrations to the NMED (2009a,b) Soil Screening Levels (SSLs) for residential soil, industrial soil, and construction worker soil (Table HHRA-1). In the event that the NMED guidance does not have a screening level for a given constituent, the USEPA Regional Screening Levels (RSLs) (USEPA, 2009) for residential soil and industrial soil were used. The

NMED SSLs are based on a carcinogenic target risk level of 1 x 10^{-5} and non-carcinogenic target hazard quotient of 1. The USEPA (2009) RSLs are based on a carcinogenic target risk level of 1 x 10^{-6} and a non-carcinogenic target hazard quotient of 1. To be consistent with NMED guidance and target risk level of 1 x 10^{-5}, the carcinogenic USEPA (2009) RSLs were adjusted upward by a factor of 10. The data screening tables for soil present residential, industrial, and construction worker screening levels. This was done because the current land use on-site includes industrial use, and future hypothetical land use on-site may include construction activity, as well as residential use per the unrestricted land use scenario.

For screening data at sites with multiple constituents, the following procedure was followed in accordance with NMED guidance (NMED, 2009a): separate the constituents by carcinogens and non-carcinogens, take the site-specific constituent concentration (represented by the maximum reported concentration), and divide by the screening level concentration for each constituent. For multiple constituents, simply add the ratio for each constituent and multiply by 1x10^{-5} for carcinogens or multiply by 1 for non-carcinogens. If the total screening risk is greater than the target risk level of 1 x 10^{-5} for carcinogens and/or greater than the target hazard index of 1 for non-carcinogens, then the concentrations at the site warrant further, site-specific evaluation in a risk assessment. Screening risk and hazard indices less than the target levels indicate that the concentrations at the site are unlikely to result in adverse health impacts (NMED, 2009a).

2.3.1.1 Surface Soil

Surface soil COPCs were selected by comparing the analytical data with the appropriate screening level as presented in Table HHRA-1 and applying the NMED screening method as described above. Table HHRA-2 presents the results of the screening process.

The maximum concentrations of constituents in surface soil (0 to 2 ft bgs) at the Site were compared to the residential and industrial SSLs. The total screening risks for carcinogenic effects were 2 x 10^{-6} and 3 x 10^{-7} for residential and industrial scenarios, respectively. These total risks are less than the NMED target risk of 1 x 10^{-5}. The total screening hazard indices for non-carcinogenic effects were 0.1 and 0.02 for residential and industrial scenarios, respectively. These total hazard indices are less than the NMED target hazard index of 1.

As summarized in Table HHRA-2, no COPCs were identified for surface soil at the Site. This indicates that the constituent concentrations in surface soil at the Site are unlikely to result in adverse health impacts to current and future site workers, and to hypothetical future residents. Therefore, potential exposure to surface soil at the Site is not evaluated further in this HHRA.

2.3.1.2 Combined Surface and Subsurface Soil

Combined surface and subsurface soil COPCs were selected by comparing the analytical data with the appropriate screening levels as presented in Table HHRA-1 and applying the NMED screening method. Table HHRA-3 presents the selection of the combined surface and subsurface soil COPCs for the HHRA.

The maximum concentrations of constituents in surface and subsurface soil (0 to 10 feet bgs) at the Site were compared to the construction worker SSLs. The total screening risk for carcinogenic effects was 1×10^{-8}. This total risk is less than the NMED target risk of 1×10^{-5}. The total screening hazard index for non-carcinogenic effects was 0.02 for the construction worker scenario. This total hazard index is less than the NMED target hazard index of 1.

As summarized in Table HHRA-3, no COPCs were identified for combined surface and subsurface soil at the Site. This indicates that the constituent concentrations in combined surface and subsurface soil at the Site are unlikely to result in adverse health impacts to future construction workers. Therefore, potential exposure to combined surface and subsurface soil at the Site is not evaluated further in this HHRA.

2.3.1.3 Total Soil

All detected VOCs in total soil (i.e., vadose zone) were selected as COPCs for the vapor intrusion evaluation because there are no NMED or USEPA soil screening levels for the vapor intrusion pathway. Table HHRA-4 presents the selection of the total soil COPCs for the HHRA. As summarized in Table HHRA-4, the following four constituents were identified as COPCs for the vapor intrusion evaluation: benzene, ethylbenzene, toluene, and xylenes.

2.3.2 Summary of Selected Constituents of Potential Concern

No COPCs were selected for surface soil or for combined surface and subsurface soil for direct contact exposure. Four VOCs (benzene, ethylbenzene, toluene, and xylenes)

were identified as COPCs for total soil to evaluate inhalation via vapor migration into a hypothetical future building.

2.3.3 Toxicity Assessment

The toxicity assessment discusses the two general categories of toxic effects (non-carcinogenic and carcinogenic) and constituent-specific toxicity values used to calculate potential risks for these two types of toxic effects. Toxicity values for potential non-carcinogenic and carcinogenic effects are determined from available databases. For this HHRA, toxicity values were obtained from the following sources in order of priority as recommended by USEPA (2003a):

- Tier 1: USEPA's Integrated Risk Information System (IRIS) (USEPA, 2010);
- Tier 2: National Center for Environmental Assessment (NCEA) Provisional Peer Reviewed Toxicity Values (PPRTV); and
- Tier 3: Additional USEPA and non-USEPA sources including the Agency for Toxic Substances and Disease Registry (ATSDR), the USEPA (2004a,b), and USEPA's Health Effects Assessment Summary Tables (HEAST) (USEPA, 1997).

2.3.3.1 Toxicity Values for Non-carcinogenic Constituents

For many non-carcinogenic effects, protective mechanisms must be overcome before an adverse effect is manifested. Therefore, a finite dose (threshold), below which adverse effects will not occur, exists for non-carcinogens. Depending on the dose, a single compound might elicit several adverse effects within a given exposure route or during the duration of exposure. The susceptibility of the individual may also influence the adverse effect caused by various constituents. Constituents may exhibit their toxic effects at the point of application or contact (local effect) or at other sites (systemic effects) after they have been distributed throughout the body. Most constituents can produce more than one type of toxic effect, depending on the dose and the susceptibility of the exposed individual or receptor. The goal of toxicity studies for application in risk assessment is to identify the most sensitive toxic effect and the exposure levels that are expected to be safe. The potential for non-carcinogenic effects is estimated by comparing a calculated exposure dose with a reference dose (RfD) for each individual constituent. The RfD represents a daily exposure level that is designed to be protective of human health, even for sensitive individuals or subpopulations.

For a given constituent, the dose or concentration that elicits no adverse effect when evaluating the most sensitive response in the most sensitive species is referred to as the "no observed adverse effect level" (NOAEL). The NOAEL is used to establish non-cancer toxicity values (called RfDs and RfCs). The RfD represents a daily exposure level that is not expected to cause adverse non-carcinogenic health effects. Chronic RfDs are used to assess long-term exposures ranging from 7 years to a lifetime. The RfC represents an estimate of a continuous inhalation exposure concentration to people (including sensitive subgroups) that is likely to be without risk of deleterious effects during a lifetime.

Table HHRA-5 presents the RfCs used to assess inhalation exposure. USEPA confidence values and uncertainty factors associated with the RfCs also are listed (USEPA, 2009). The uncertainty factor represents areas of uncertainty inherent in the extrapolation from the available data. The confidence levels (low, medium, high) assess the degree of confidence in the extrapolation of available data.

2.3.3.2 Toxicity Values for Carcinogenic Constituents

Cancer induction in humans and animals due to exposure to carcinogenic constituents proceeds through a complex series of reactions and processes. Carcinogenic constituents may produce tumors at the point of application or contact, or they may produce tumors in other tissues after they have been distributed throughout the body. Some constituents are associated only with one or two tumor types while others may cause tumors at many different sites.

Constituents are classified as known, probable, or possible human carcinogens based on a USEPA weight-of-evidence scheme in which they are systematically evaluated for their ability to cause cancer in humans or laboratory animals. The USEPA classification scheme (USEPA, 1989) contains five classes based on the weight of available evidence, as follows:

- A known human carcinogen;
- B probable human carcinogen:
  - B1 probable human carcinogen—limited evidence in humans;
  - B2 probable human carcinogen—sufficient evidence in animals and inadequate data in humans;
- C possible human carcinogen—limited evidence in animals;

D inadequate evidence to classify; and

E evidence of noncarcinogenicity.

Constituents in Classes A, B1, and B2 generally are evaluated as carcinogens in risk assessments; however, Class C carcinogens may be evaluated on a case-by-case basis (USEPA, 1989).

For most carcinogens, USEPA (2005a) uses an extremely conservative approach in which it is assumed that any level of exposure could cause cancer. Based on this assumption, USEPA extrapolates from laboratory animal data using a mathematical model known as the linear multi-stage model. This model plots a line through the zero point and, based on the slope of this dose-response line, assigns a risk level for increasingly smaller doses of a particular compound. The 95 percent upper confidence limit for the slope of this line, called the cancer slope factor (CSF), is used to calculate the probability of an effect associated with a given dose. Inhalation unit risk factors (URFs) are generally used to evaluate cancer risks through inhalation. A URF is a toxicity value used for carcinogens that estimate the increased risk of getting cancer that is associated with the concentration of the chemical in air. USEPA's CSFs and URFs are determined by methodologies that are likely to overestimate real risk.

Table HHRA-6 presents the carcinogenic toxicity values for inhalation exposure for the COPCs at the Site. The carcinogenic toxicity value used in the calculation of potential cancer risks is the CSF, which is derived from the conservative assumption that any dose level has a possibility of causing cancer.

2.3.4 Exposure Assessment

The purpose of the exposure assessment is to evaluate the ways receptors might be exposed to constituents at a site. Without exposure there is no risk; thus, the exposure assessment is a key element of the risk assessment. The exposure assessment includes characterization of the physical environment, identification of exposure pathways (including migration pathways, exposure points, and exposure routes), and identification of potentially exposed individuals and populations.

2.3.4.1 Receptors and Exposure Pathways

Exposure pathways were identified based on the site characterization information and the fate and transport properties of the constituents detected on-site to identify likely points where human receptors may come in contact with affected media under current

or potential future conditions at the Site. The principal pathways by which exposure could occur at the site were identified for human receptors.

An exposure pathway consists of the following four elements: (1) a source and mechanism of constituent release to the environment, (2) a retention or transport medium for the released constituent, (3) a point of potential contact by the receptor with the impacted medium (the exposure point), and (4) a route of exposure to the receptor at the exposure point (e.g., ingestion, inhalation, or dermal contact).

2.3.4.2 Potential Receptors

This element of the exposure assessment identifies potential receptors present at the Site. Based on the COPC selection process where only VOCs from total soil were selected to evaluate inhalation via vapor migration into a hypothetical future building, a hypothetical future site worker and a hypothetical future resident were identified as potential receptors for the Site.

The Main Post is wholly contained within an operating military installation, and based on past, present, and anticipated future land use for the Main Post, it is reasonable to assume that the Site will remain in military use as opposed to other commercial or residential development. This logic is supported by the USEPA/ Office of Solid Waste and Emergency Response (OSWER) “Land Use Directive” (USEPA, 1995). Nevertheless, for purposes of conducting a comprehensive exposure assessment and in accordance with NMED guidance, it is assumed that a hypothetical future resident (child and adult) could be exposed to site-related COPCs in affected media at the sites.

The following receptors were identified for quantitative analysis at each site:

- Future Site Worker; and
- Hypothetical Future Adult and Child Resident.

2.3.4.3 Exposure Parameters

This element of the exposure assessment identifies potentially complete pathways of exposure (e.g., incidental ingestion, dermal contact, and inhalation of vapor and dust from soil) to site-related constituents in soil by human receptors. This HHRA evaluated the potential for vapor intrusion to occur under potential future conditions. Potential exposure pathways associated with each receptor are identified below.

2.3.4.3.1 Future Site-Worker

Hypothetical future workers may be exposed to COPCs via inhalation of volatiles migrating to indoor air from subsurface soils. This pathway is only applicable for a hypothetical future scenario in which a building is placed over the affected soil containing VOCs. The potential for exposure to vapors migrating to indoor air from total soil was evaluated for the hypothetical future site worker using the Screening-Level Johnson and Ettinger Model.

The exposure factors and equations that are used to calculate the chronic daily intake for hypothetical future site worker exposure to indoor vapors from exposure to soil are presented in Table HHRA-7 (soil, future land-use conditions). These exposure factors are summarized as follows:

- Exposure duration of 25 years (NMED, 2009a);
- Exposure frequency of 225 days/year (NMED, 2009a); and
- Exposure time of 8 hours/day (USEPA, 1991b).

2.3.4.3.2 Future Adult Resident

As discussed previously, the Main Post is wholly contained within an operating military installation, and based on past, present, and anticipated future land use for the Main Post, it is reasonable to assume that sites will remain in military use as opposed to other commercial/industrial or residential development. This logic is supported by the USEPA/OSWER “Landuse Directive” (USEPA, 1995). Nevertheless, for purposes of conducting a comprehensive exposure assessment and in accordance with NMED guidance for the unrestricted future land use scenario, it is assumed that a hypothetical future resident (child and adult) could be exposed to site-related COPCs in affected media at the Main Post. Therefore, the potential for exposure to vapors migrating to indoor air from total soil was evaluated for the hypothetical future resident using the Screening-Level Johnson and Ettinger Model.

The exposure factors and equations that were used to calculate the chronic daily intake for future hypothetical adult resident exposure to indoor vapors from soil are presented in Table HHRA-8. The adult exposure parameters are summarized as follows:

- Exposure frequency of 350 days per year (NMED, 2009a);

- Exposure duration of 30 years (NMED, 2009a); and
- Exposure time of 24 hours/day.

2.3.4.3.3 Future Child Resident

The exposure factors and equations that are used to calculate the noncancer chronic daily intake for future hypothetical child resident exposure to indoor vapors from soil are presented in Table HHRA-9. The child exposure parameters are summarized as follows:

- Exposure frequency of 350 days per year (NMED, 2009a);
- Exposure duration of 6 years (NMED, 2009a); and
- Exposure time of 24 hours/day.

2.3.4.4 Calculation of Exposure Point Concentrations

USEPA (1989) defines the exposure point concentration (EPC) as “the arithmetic average of the concentration that is contacted over the exposure period.” To ensure that the estimate of the average (or mean) is conservative and not underestimated, USEPA (1989, 1992) recommends using the 95% upper confidence limit of the mean (95UCL) as an estimate for the EPC for each exposure area of a site. However, due to the fact that COPCs were only detected in one of the twenty nine samples in total soil, 95UCLs could not be calculated. The maximum concentrations are used as EPCs in total soil. EPCs are presented in Table HHRA-10.

2.3.4.5 Indoor Air

The potential for exposure to vapors from indoor air resulting from vapor intrusion from total soil was evaluated for the hypothetical future site worker and hypothetical future resident using the USEPA vapor intrusion model (USEPA, 2004b). This is a very conservative model that utilizes default parameters to evaluate potential risks from vapor inhalation in indoor air. There are no buildings currently on or near the Site. Therefore, there is no potential for vapor intrusion to be a complete pathway under current conditions. The vapor intrusion scenarios evaluated in this HHRA are applicable for hypothetical future conditions in which buildings might be constructed overlying VOC impacted soil. Tables HHRA-11 and HHRA-12 present the vapor intrusion model and estimated vapor concentrations in indoor air.

2.3.5 Risk Characterization

Potential risks to human health are evaluated quantitatively by combining calculated daily intakes and toxicity data. A distinction is made between non-carcinogenic and carcinogenic endpoints, and two general criteria are used to describe risk: the hazard quotient (HQ) for non-carcinogenic effects and excess lifetime cancer risk (ELCR) for constituents evaluated as human carcinogens.

2.3.5.1 Non-carcinogenic Effects – Hazard Quotients and Hazard Indices

Exposure doses are averaged over the expected exposure period to evaluate non-carcinogenic effects. For inhalation exposure, the HQ is the ratio of the estimated exposure concentration and the RfC. An HQ greater than 1 indicates that the estimated exposure concentration for that constituent is greater than the RfC. This ratio does not provide the probability of an adverse effect. Although an HQ of less than 1 indicates that adverse health effects should not occur, an HQ that is greater than 1 does not imply that health effects will occur, but that health effects are possible.

The sum of the HQs is the hazard index (HI). A limitation with the HI approach is the assumption of dose additivity is applied to compounds that may induce different effects by different mechanisms of action. Consequently, the summing of HIs for a number of compounds that are not expected to induce the same type of effects or that do not act by the same mechanism may overestimate the potential for toxic effects (USEPA, 1989). Consistent with NMED and USEPA risk assessment guidelines for constituent mixtures, in the event that the total HI for an exposure scenario is greater than 1, it is incumbent on a risk assessor to segregate HQs by target organ/critical effect (NMED, 2009a; USEPA, 1989). Therefore, if the calculated HI is greater than 1 as a consequence of summing several HQs for constituents not expected to induce the same type of effects or that do not act by the same mechanism, the HIs may be segregated by effect and mechanism of action to derive separate HIs for each target-organ/critical-effect group (NMED, 2009a; USEPA, 1989). Where target organ HIs exceeded one, the COPCs contributing to those HIs are identified.

2.3.5.2 Carcinogenic Effects - Excess Lifetime Cancer Risk

The ELCR is an estimate of the potential increased risk of cancer that results from lifetime exposure, at specified average daily dosages, to COPCs at a site. Estimated doses or intakes for each COPC are averaged over the average lifetime of 70 years. It is assumed that a large dose received over a short period is equivalent to a smaller

dose received over a longer period, as long as the total doses are equal. For inhalation exposure, the ELCR is calculated as the product of the exposure concentration and the URF. The use of upper percentile EPC and reasonable maximum exposure (RME) parameters result in a risk estimate that is considered to be an upper-bound estimate; in other words, the true risk is less than that predicted by the model.

2.3.5.3 Human Health Risk Characterization

The toxicity values used to evaluate excess lifetime cancer risks and non-cancer hazards for the COPCs are presented in Tables HHRA-5 and HHRA-6. The exposure assumptions used to evaluate potentially exposed receptors are presented in Tables HHRA-7 through HHRA-9. The equations used in the risk characterization calculations are presented in Tables HHRA-7 through HHRA-9. Estimated EPCs in indoor air are presented in Table HHRA-13.

Volatile COPCs for total soil were evaluated for inhalation via vapor migration into hypothetical future buildings. Since no buildings currently exist at the Site, the potential for vapor intrusion is an incomplete exposure pathway under current conditions, and would only be considered a potentially complete pathway in a future scenario that would involve the construction of a building on-site. Therefore, potential exposures of a future site worker, and hypothetical future adult and child residents were evaluated for the Site. The excess lifetime cancer risks and non-cancer hazards for each potentially exposed receptor included in the risk assessment for the Site are summarized in the tables and subsections below.

2.3.5.4 Future Site Worker - Vapor Intrusion Scenario

A future site worker could be present at the Site, and could be exposed to VOCs in total soil via vapor migration to indoor air (vapor concentrations in indoor air are calculated in Table HHRA-13). The ELCR and HI for site worker exposure to indoor air are presented in Table HHRA-14.

The total cumulative ELCR for a future site worker exposed to indoor air at the Site is 2×10^{-5}, which is within the acceptable target risk range of 1×10^{-6} to 1×10^{-4}. The total cumulative HI for site workers is 6, which is above the benchmark of 1. When the HI is segregated into COPC-specific target organ sites and critical effects, the HI for central nervous system (CNS), whole body and immune system is 5, which is above the benchmark of 1.

2.3.5.5 Hypothetical Future Residents - Vapor Intrusion Scenario

A hypothetical future adult or child resident could be present at the Site and could be exposed to VOCs in total soil via vapor migration into indoor air. The ELCR and HI for hypothetical future adult or child resident exposure to indoor air are presented in Table HHRA-15.

The total cumulative ELCR for a hypothetical future resident exposed to indoor air at the Site is 9×10^{-5}, which is within the acceptable target risk range of 1×10^{-6} to 1×10^{-4}. The total cumulative HI for a hypothetical future child resident is 26, which is above the benchmark of 1. When the HI is segregated into COPC-specific target organ sites and critical effects, the HI for CNS, whole body and immune system is 25, which is above the benchmark of 1.

2.3.5.6 Discussion of Risk Characterization

Although unacceptable hazards were calculated for the future site worker and hypothetical future resident scenarios, it is important to reiterate that no unacceptable risks and/or hazards to current receptors (i.e., site workers) at the Site were calculated. The primary contributor to the unacceptable hazards (i.e., xylenes) was further examined to determine their significance in terms of hypothetical future exposure.

Xylenes

While xylenes are identified as the primary contributor to the calculated hazard, a closer examination of the detected and non-detected concentrations and their spatial extent indicates that it is unlikely that xylenes would represent a significant exposure risk to hypothetical future site worker or resident receptors.

Xylenes were detected in only 1 of 29 samples, with a maximum concentration of 66 mg/kg. This sample was reported for sample location MPOL-SB-006 and was collected from 0.5 to 1 ft bgs underneath the concrete pavement area adjacent to the 6,000 gallon gasoline ASTs where the release occurred. Of the 29 total samples that were collected from surface and shallow soil (i.e., from 0 to 20 bgs) at the Site, xylenes were not detected in any other sample, including the four samples collected at 4 ft bgs, 10 ft bgs, 15 ft bgs , and 20 ft bgs from MPOL-SB-006. Xylenes are considered unlikely to represent a significant future exposure concern because of the following reasons:

- The evaluated scenarios (i.e., hypothetical future worker and residential exposure via vapor intrusion) are unlikely because they would involve a significant land use change in the future (i.e., from an operating military installation to commercial/industrial or a single-family residential development); and

- Elevated xylenes concentration was only detected at 0.5 to 1 ft bgs underneath concrete pavement at the release area. In the event that future redevelopment at the site involves construction of a building over soil containing xylenes, xylenes concentration in surface soil will significantly decrease due to volatilization into ambient air during reconstruction. Given the extremely low frequency of detection (i.e., 3 percent), and that the one detection was limited to surface soil (i.e., 1 ft bgs) from a sample obtained from underneath concrete pavement, it is unlikely that this detection represents a significant source of vapors that could migrate into an overlying structure at some point in the future.

Based on this evaluation, xylenes are unlikely to represent a significant exposure risk via vapor intrusion under future land use conditions.

2.3.6 Uncertainties in the HHRA

The risk estimates presented herein are a conservative estimate of potential risks associated with exposure to constituents detected in soil at the Site. Each of the three basic building blocks for risk assessment (monitoring data, exposure scenarios, and toxicity values) contributes to uncertainties. Each of the uncertainties is accounted for by using conservative assumptions wherever site-specific data are unavailable.

This risk assessment is based on the assumption that the available monitoring data adequately describe the occurrence of constituents in media at the site. Environmental sampling itself introduces uncertainty. This source of uncertainty can be reduced through a well-designed sampling plan, use of appropriate sampling techniques, and implementation of laboratory data validation and quality assurance and quality control (QA/QC). The data utilized in this report meet QA/QC requirements and are appropriate for use in a risk assessment.

The assumption that the concentrations will remain constant throughout the exposure period is a conservative approach, since ongoing natural attenuation and degradation processes likely will reduce the concentrations over time. Using the UCL or the maximum concentration as the EPC is also conservative. It is highly unlikely that

receptors would be exposed to those upper bound concentrations over an extended period of time.

The toxicity values and other toxicological information used in this report likewise are associated with significant uncertainty. Many toxicity values are developed using results of studies in which laboratory animals are exposed to massively high doses of particular constituents over an entire lifetime. As such, these studies do not represent realistic examples of environmental exposures. In addition, humans are different than laboratory animals. Many, if not most, animals used for laboratory studies are genetically designed to be more sensitive than humans to specific compounds. In addition, the effects shown by the animals in the high-dose studies are often very different than effects reported by humans in parallel epidemiological studies. This is because a particular compound may have a different mechanism of action in laboratory animals than it does in humans. Even epidemiological studies, which are generally preferable to animal toxicity studies, are characterized by several uncertainties, such as differential exposures and unknown (and uncontrolled) doses. Furthermore, some toxicity values are based on draft toxicity values and therefore may also produce uncertainty within the results.

Uncertainty is also associated with constituent mixtures. Information on the toxicity of specific mixtures is rarely available. The procedure generally applied to a potential event of simultaneous exposure to multiple constituents from a variety of sources assumes dose additivity, although it is possible that the interaction of multiple constituents could be synergistic or antagonistic.

Potential exposure scenarios contribute uncertainty to the risk assessment as well. The hypothetical future residential scenarios which assumes that receptors will be exposed to site soil is highly unrealistic since the site will most likely not be used for residential use. Exposure scenarios were developed based on site-specific information, NMED and USEPA exposure guidance documents, and professional judgment. Although uncertainty is inherent in the exposure assessment, and the exposure assumptions also were chosen to err on the side of conservatism, this uncertainty could lead to an overestimation or underestimation of potential risk.

TPH-GRO was detected in surface soil and in combined surface and subsurface soil at the Site. TPH-GRO soil screening levels were not available nor were toxicity values for TPH-GRO; therefore a quantitative risk evaluation of TPH-GRO could not be conducted. However, the major components of TPH-GRO for which toxicity

information exists (e.g., benzene, ethylbenzene, toluene, and xylenes) were evaluated in this HHRA, therefore TPH-GRO was not evaluated further in the HHRA.

2.3.7 Human Health Risk Summary

2.3.7.1 Soil Exposure Scenarios

In accordance with NMED guidance (NMED, 2009a), constituent concentrations in surface soil, and in combined surface and subsurface soil were compared to health-based screening levels and the calculated ratios summed and multiplied by $1x10^{-5}$ for carcinogens or by 1 for non-carcinogens. The total screening risks for carcinogenic effects were less than the NMED target risk of 1×10^{-5}. The total screening hazard indices were less than the NMED target hazard index of 1. The results of this data screening process indicate that after comparison to health-based soil screening levels for industrial worker exposure, residential exposure, and construction worker exposure, no COPCs were selected for surface soil, or for combined surface and subsurface soil at the Site. This demonstrates that the constituent concentrations in surface soil and in combined surface and subsurface soil at the Site are unlikely to result in adverse health impacts to the following potential receptors via direct contact exposure (i.e., ingestion, inhalation of vapor/dust, dermal):

- Current and future site workers;
- Future residents (adults and children); and
- Future construction workers.

2.3.7.2 Vapor Intrusion Scenarios

All detected VOCs in total soil (i.e., vadose zone) were selected as COPCs for the future vapor intrusion evaluation because there are no NMED or USEPA soil screening levels that are protective of the vapor intrusion pathway. The total ELCR values for the future vapor intrusion exposure pathway for the site worker scenario and for the residential scenario are within the acceptable target risk range of 10^{-6} to 10^{-4} for carcinogenic effects. The total HI value for the vapor intrusion exposure pathway for the future site worker is above the benchmark of 1. When the HI for a future site work exposure to indoor air is segregated by target organ and critical effects, the HI for CNS, whole body and immune system effects is above the benchmark of 1. The total HI value for the future resident is above the benchmark of 1. When the HI for a future

resident exposure to indoor air is segregated by target organ and critical effects, the HI for CNS, whole body and immune system effects is above the benchmark of 1.

It is important to reiterate that the scenarios for which unacceptable hazards were calculated are all hypothetical future scenarios. There are no unacceptable risks and/or hazards to current receptors (i.e., site workers) at the Site. In addition, as discussed above, the unacceptable hazards were calculated for extremely unlikely future scenarios using highly conservative exposure assumptions. Therefore, the potential for COPCs at the Site to represent a significant concern in the future is considered low, and additional evaluation is considered unnecessary.

2.4 Ecological Risk Assessment

The purpose of the ecological risk assessment (ERA) is to evaluate whether ecological receptors may be adversely impacted by exposure to site-related constituents detected in surface soil and combined surface and subsurface soil at the Site. The ERA was conducted in a manner consistent with NMED and USEPA guidance for ecological risk assessment (NMED, 2008; USEPA 2001a; 2000a; 1997c). This ERA is intended to provide input for risk management decision-making for the Site, while maintaining a conservative approach protective of wildlife populations and communities.

In accordance with USEPA guidance, this ERA is comprised of a screening level ecological risk assessment (SLERA) and a baseline ecological risk assessment (BERA) (NMED, 2008; USEPA, 2000a; 1997c). The SLERA evaluates the potential risk to terrestrial ecological receptors exposed to constituents in surface and subsurface soil. The SLERA provides a conservative estimate of potential ecological risks and compensates for uncertainty by incorporating numerous conservative assumptions. The purpose of the SLERA is to determine whether or not there is a high probability that there are no ecologically significant risks that would merit additional evaluation as provided by a BERA (USEPA, 2000a; 1997c). If the results of the SLERA warrant a BERA, the information developed in the SLERA is used to help focus the BERA. The BERA is more complex than the SLERA and uses more realistic and site-specific information about potential exposures and effects in order to evaluate potential ecological risks.

The approach used to assess ecological risks associated with the Site is based on the USEPA eight-step process (USEPA, 2001a; 2000a; 1997c), as summarized in Figure 2-2. An expanded view of the USEPA eight-step process is provided in Figure 2-3. As illustrated on Figure 2-3, the USEPA paradigm divides Step 3 into two pieces, Step 3a

and Step 3b (USEPA, 2000a). Step 3a allows for a more refined analysis of available information, while Steps 3b and beyond focus on further evaluation(s) for only those receptors, media, and constituents that are identified in previous steps. According to the USEPA (2000a), "for the majority of sites, ERA activities will cease after the completion of Step 3a." The details of each step and how they relate to the site ERA are described in this section.

The ERA process culminates in clearly defined scientific management decision points (SMDPs). The SMDPs represent critical steps where risk management decision-making occurs. Generally, the following types of decisions are considered at the SMDPs.

- Whether the available information is adequate to conclude that ecological risks (if any) are negligible and, therefore, there is no need for further action on the basis of ecological risk.

- Whether the available information is inadequate to make a decision at this point and the ecological risk assessment process should continue.

- Whether the available information indicates a potential for adverse ecological effects and a more thorough assessment or remediation is warranted.

The remainder of this section presents the methods used in the ERA and is organized as follows:

- Screening Level Ecological Risk Assessment – this section discusses the steps taken in the SLERA and identifies results that would indicate the need for a more refined BERA; and

- Baseline Ecological Risk Assessment– this section discusses the steps taken in the BERA.

2.4.1 Screening Level Ecological Risk Assessment

A SLERA conservatively estimates potential risks that may affect ecological receptors, including terrestrial and aquatic organisms. The SLERA typically compensates for uncertainty in a precautionary manner, by incorporating numerous conservative assumptions. The outcome of the SLERA is the conclusion that either there is a high probability that ecologically significant risks are not posed to receptors, or further

investigation in the form of a BERA is warranted. The SLERA is comprised of the following steps:

- Step 1: Screening-Level Problem Formation and Effects Evaluation;
- Step 2: Screening Level Exposure Estimate and Risk Calculation; and
- Scientific Management Decision Point (SMDP).

Step 1: Screening-Level Problem Formulation and Screening Level Ecological Effects Evaluation

Step 1 of a SLERA consists of both a screening level problem formulation and a screening level ecological effects evaluation. The screening-level problem formulation presents background information on site characterization, receptors, ecosystem characteristics, as well as information on the sources and effects of the stressors (USEPA, 1998). This information is used to develop a conceptual site model (CSM) that illustrates the potential relationships between stressors, pathways, and receptors such as:

- Environmental Setting;
- Identification of Constituents Detected;
- Description of Constituent Fate and Transport Pathways;
- Description of Constituent Mechanisms of Ecotoxicity;
- Description of Potentially Exposed Receptors;
- Identification of Potentially Complete Exposure Pathways; and
- Selection of Generic Assessment and Measurement Endpoints.

2.4.1.1 Environmental Setting

The Site is located within the WSMR Main Post area in Otero County, New Mexico. The POL Storage Area consists of a fueling station and storage area and is primarily

covered with either asphalt or concrete. There are drainage ditches that parallel the roadways to the east and north of the POL Storage Area. A small drainage ditch is located west of the AST area where the investigation was performed. The Site consists of an area of approximately 3.4 acres located within the Main Post of the White Sands Missile Range. The entire area is surrounded by a chain-link fence.

The following section describes the habitat at the Site. An ecological reconnaissance of the Main Post sites occurred on March 19, 2009.

2.4.1.1.1 Terrestrial Habitat

No significant terrestrial habitat occurs within the Site. The POL Storage Area consists of a fueling station and storage area and is primarily covered with either asphalt or concrete. Site photographs are presented in Attachment A and the Ecological Characterization Worksheet is provided in Attachment C.

It is important to note here that due to its location within an active military facility and current landcover (i.e., cement, gravel), the Site does not provide any significant habitat for ecological receptors and there are no complete exposure pathways to potentially affected media (i.e., soil) under current conditions. The potential risks described below are only associated with hypothetical future use conditions where no exposure barriers exist (i.e., where the current land cover has been removed).

2.4.1.2 Identification of Constituents Detected

The soil depth horizon of interest defined by NMED (2008) is from the ground surface to a depth of 10 ft bgs. While many wildlife species would only be exposed to near surface soils (e.g., 0 to 2 ft bgs), the subsurface soils down to a depth of 10 ft bgs were included in the evaluation to address potential exposure scenarios in the event there are burrowing wildlife or vegetation with deep rooting zones. The range of detected concentrations and other relevant statistics for the soil data (0 to 2 ft bgs, and 0 to 10 ft bgs) were summarized for the site. Subsurface soil (i.e., soil at a depth greater than 10 ft bgs) was not evaluated with regard to ecological risks due to limited potential for wildlife exposures.

Soil data for the Site were evaluated as discussed in Section 2.2 and data summaries were prepared. The data summary tables present the frequency of detection, the range of sample quantitation limits, the range of detected concentrations, and the EPC for each detected constituent in each medium.

2.4.1.3 Description of Constituent Fate and Transport Pathways

Knowledge about the potential constituent fate and transport pathways is vital to understanding which constituents and receptors are associated with potentially complete current and future exposure pathways. This is because a constituent may reach an ecological receptor in a variety of ways. In addition, the pathway and route of exposure may have a strong influence on the ecological effect of a constituent. This information is used in the development of a CSM for potential ecological receptors.

2.4.1.4 Description of Constituent Mechanisms of Ecotoxicity

The mechanisms of ecotoxicity for constituents vary depending on a wide range of factors, such as constituent concentrations, the receptor species exposed, the exposure route (e.g., ingestion or direct contact), and physical factors (e.g., pH, soil type). Some of the effects that could be observed in wildlife are mortality, reduced reproductive ability, decreased fertility, decreased offspring survival, alteration of immune and behavioral function, decreased hatching success of eggs/larvae, and retarded growth (Sample et al., 1996; USEPA, 2001b). The remainder of this subsection discusses mechanisms of ecotoxicity for the classes of constituents detected at the Site. These descriptions of constituent mechanisms of toxicity are presented without consideration of constituent concentrations, as the descriptions are intended to convey an understanding of possible effects, rather than to describe the concentrations at which these effects might occur.

Volatile Organic Compounds

VOCs tend to attenuate rapidly in surface soil due to their inherent volatility. Although the effects of VOCs on ecological receptors are not well-understood, there have been extensive inhalation studies of the effects of VOCs under laboratory conditions. Inhaled volatile organics are typically metabolized in the body (often the liver), which may cause liver damage (depending on the organism) or the release of more toxic secondary metabolites. The VOCs or their metabolites may also cause neurological damage, and many are mutagenic or carcinogenic. Additionally, some VOCs are fetotoxic and/or teratogenic (USEPA, 1993a, 2003b, 2010; Sample et al., 1996; ATSDR, 2010).

Lead

Lead is a mutagen and a teratogen and has carcinogenic properties (Eisler, 1988). Lead adversely affects survival, growth, reproduction, development, behavior, learning, and metabolism in living organisms (Eisler, 1988). Lead can cause reproductive

impairment, reduced biomass, and reduced survival in aquatic invertebrates and fish (Eisler, 1988). Adsorption and retention of lead from the gastrointestinal tract, the major pathway of intake, varies widely because of the age, sex, and diet of the organism (Eisler, 1988). Diet is the major modifier of lead absorption and toxic effects (Eisler, 1988).

2.4.1.5 Description of Potentially Exposed Receptors

The identification of the categories of receptors most likely to be exposed helps to focus the SLERA. Potentially exposed receptors are designated based on the available habitat associated with the Site. As described above, potentially exposed receptors include terrestrial wildlife (including mammals, birds, reptiles, and invertebrates), and terrestrial plants.

This section also provides an evaluation of potential exposures to individual organisms of threatened and endangered species at the sites. The New Mexico Department of Game and Fish (NMDFG) biennial review of threatened and endangered species in New Mexico does list several birds, plants, fish, amphibians and reptiles as species of conservation concern in Otero County. However, previous ecological evaluations of the facility have determined that there are no rare, threatened or endangered species known or expected to occur in the habitat present at the Site (White Sands Technical Services, 2008). Furthermore, it has been reported that the habitat present at the site is not considered rare or sensitive by any of the regulatory agencies that oversee these issues, including the U.S. Fish and Wildlife Service (USFWS), NMDGF, and the White Sands Missile Range Directorate of Environment and Safety. Therefore, additional consideration of species and habitats of concern is not included in this risk assessment.

2.4.1.6 Identification of Potentially Complete Exposure Pathways

A complete exposure pathway is "one in which the chemical can be traced or expected to travel from the source to a receptor that can be affected by the chemicals" (USEPA, 2001c). Therefore, a constituent, its release and migration from the source, a receptor, and the mechanisms of toxicity of that constituent must be demonstrated before a complete exposure pathway can be identified. The table below illustrates possible exposure routes for the two general types of terrestrial receptors at the Site (USEPA, 1999).

Organism	Possible Exposure Routes
Terrestrial animals	Ingestion, inhalation, dermal contact, food chain
Terrestrial plants	Direct contact, leaf absorption of soil vapor, leaf absorption of constituents deposited on leaves, root uptake

Although inhalation is listed as a possible exposure route, under most exposure conditions inhalation pathways do not represent a significant contribution to receptor risk (USEPA, 2005c), and are not evaluated quantitatively in this risk assessment. Surface water and sediment habitats are not present on or adjacent to the Site; thus, no aquatic organisms are evaluated.

2.4.1.7 Identification of Generic Assessment and Measurement Endpoints

Assessment endpoints are the explicit expression of the ecological values to be protected (USEPA, 1999). The selection of assessment endpoints depends on knowledge of the receiving environment, knowledge about the constituents released (including their toxicological properties and the relevant concentrations), and understanding of the values that will drive risk management decisions (Suter et al., 1995). Consistent with USEPA (1998) guidance, two elements are required to define an assessment endpoint: the specific valued ecological entity and the characteristic about the entity that is important to protect.

The USEPA (1997c) guidance states “For the SLERA, assessment endpoints are any adverse effects on ecological receptors, where receptors are plant and animal populations and communities, habitats, and sensitive environments. Many of the screening ecotoxicity values are based on generic assessment endpoints (e.g., protection of communities from changes in structure or function) and are assumed to be widely applicable to sites around the United States”. However, the identification of assessment endpoints is limited by the availability of ecotoxicity screening values for all media.

USEPA guidance provides that remedial actions should be designed not to protect organisms on an individual basis, but to protect local populations and communities of biota (USEPA, 1999). Thus, the first management principle for conducting an ERA is to provide a basis for selecting a response action “that will result in the recovery and/or maintenance of healthy local populations/communities of ecological receptors that are or should be present at or near the site” (USEPA, 1999).

For the Site, hypothetical assessment endpoints include the following:

- Sustainability of small mammal populations;
- Sustainability of avian populations;
- Sustainability of terrestrial plant communities; and
- Sustainability of soil invertebrate communities.

Because direct measurement of assessment endpoints is often difficult or impossible, surrogate endpoints called measurement endpoints are used to provide the information necessary to evaluate whether the values associated with the assessment endpoint are being protected. A measurement endpoint is defined as a measurable ecological characteristic and/or response to a stressor (USEPA, 1998). Hazard quotients typically serve as the measurement endpoints for SLERAs and are further discussed in Section 2.4.3.

2.4.2 Screening-Level Ecological Effects Evaluation

The screening-level ecological effects evaluation involves the identification of ecological screening levels (ESLs) for each constituent found in soil at the Site (Table ERA-1). ESLs are generally based on effects such as mortality and reproductive impairment, and are assumed to be widely applicable to sites around the United States for screening purposes (USEPA, 1997c). For most constituents and receptors, the data available to generate ESLs are limited and related to effects on individual organisms, rather than populations or communities. Given these limitations, conservative assumptions are typically used to ensure that the ESLs are protective. ESLs available in the literature are screening values and do not constitute remediation goals, as they are sometimes based on highly conservative exposure assumptions and/or wildlife receptors that may not be applicable to a particular site. As such, their robustness and biological association with the assessment endpoint may be limited. However, conservative benchmarks provide a starting point for the SLERA in that they may provide an indication of the worst-case measure of the potential for adverse effects. Typically in a SLERA, ESLs are gathered from a few sources leaving constituents without ESLs to be evaluated in the BERA. Ecological soil screening levels have not been developed by NMED or USEPA Region 6. Therefore, the following hierarchy was used to identify soil ESLs for the SLERA:

- USEPA Ecological Soil Screening Levels (EcoSSLs) (USEPA, 2008c; http://www.epa.gov/ecotox/ecossl/);
- USEPA Region 4 Ecological Soil Screening Values (USEPA, 2001d); and
- USEPA Region 5 Ecological Soil Screening Levels (USEPA, 2003b).

To date, ecological screening levels for TPH have not been developed by USEPA or other state agencies, including NMED. Therefore, additional sources (e.g., Efroymson, et al., 2004; Wong et al., 1999) were obtained that provide additional information on the toxicity of TPH and suggest possible ecological benchmarks. The American Petroleum Institute (API) notes in a 1997 publication that "disposed wastes containing crude oil are generally protective of water, plants and soil microbes if they contain no more than 10,000 mg/kg of oil and grease or TPH in soil" (Efroymson et al., 2004). At this concentration, plant growth and yield should not be impaired (Deuel, 1991; Overcash and Pal, 1981). A benchmark protective of plants and invertebrates of 10,000 mg/kg is used in this report.

Additionally, in this step, constituents that have a tendency to bioaccumulate were also identified if they are included in the USEPA list of bioaccumulative compounds (USEPA, 2000b).

2.4.3 Screening-Level Exposure Estimate and Risk Calculation

The screening-level exposure assessment is comprised of the identification of exposure estimates, risk calculations, and the evaluation of uncertainties (USEPA, 2001a; 1999). These components form the lines of evidence necessary to support the SMDP at the conclusion of the SLERA.

The exposure concentrations that are used in the SLERA are the maximum concentrations (NMED, 2008; USEPA, 2000a; 2001a). The data sets from which the maximum concentrations are drawn are the same site specific data sets used in the human health risk assessment.

Risks to ecological receptors are calculated by dividing the exposure estimates (i.e., the maximum detected concentrations) by the conservative ESLs. The resulting ratio, the "maximum HQ", is a highly conservative surrogate for the assessment endpoints. HQs equal to or less than a value of 1 (to nearest whole number) indicate that adverse or significant ecological effects are unlikely (USEPA, 1997c). Maximum HQs greater

than 1 indicate that further evaluation is warranted to evaluate the potential for adverse ecological effects. Therefore, the constituents with HQs greater than 1 are identified as Constituents of Potential Ecological Concern (COPECs) and carried forward into Step 3a of the BERA. Detected constituents were also identified as COPECs if no ESL was available.

2.4.3.1 Surface Soil

Surface soil COPECs were selected by comparing the analytical data with ESLs from sources identified in Section 2.4.2 (Screening Level Ecological Effects Evaluation). Table ERA-2 presents the selection of surface soil COPECs for the ERA.

As summarized in Table ERA-2, benzene, ethylbenzene, toluene, and xylenes were identified as COPECs in surface soil at the Site because their HQs were greater than 1.

2.4.3.2 Combined Surface and Subsurface Soil

Combined surface and subsurface soil COPECs were selected by comparing the analytical data with ESLs from sources identified in Section 2.4.2. Table ERA-3 presents the selection of surface and subsurface soil COPECs for the ERA.

As summarized in Table ERA-3, benzene, ethylbenzene, toluene, xylenes, and lead were identified as COPECs in combined surface and subsurface soil at the Site because their HQs were greater than 1.

2.4.4 Scientific Management Decision Point and Reporting

This first SMDP is purposefully flexible (per the USEPA paradigm) to occur after Steps 2 or 3a, depending on the results obtained at Step 2 (Figure 2-3). The purpose of the flexibility of the first SMDP is so that additional evaluation of risks can occur and reporting can be streamlined into a single report. The results of the SLERA were expressed in terms of the following conclusions or recommended actions:

1. There is adequate information to conclude that ecological risks are unlikely and no further action is warranted.

2. The information is not adequate to make a decision at this point. The ecological risk assessment process will continue to Step 3a – the initial step of the BERA.

3. Remedial actions may be considered for the media and constituents that are identified at the end of Step 2, to determine if cost-effective actions can be implemented to reduce or prevent risks to wildlife.

Based on the results of the SLERA, the following conclusions regarding the potential for adverse ecological risks at the Site can be drawn: the ERA should continue at this time. As such, a BERA is presented in the following sections.

2.4.5 Baseline Ecological Risk Assessment

The BERA is designed to more realistically identify the nature and extent of ecological risks to support informed risk management decision-making (USEPA, 2000a; 1997c). This approach contrasts with the SLERA, which is designed to conservatively rule out further evaluation of constituents and media that clearly do not pose a significant ecological risk.

The BERA was conducted in a manner consistent with the following guidance:

- "Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment" (NMED, 2008);
- "Ecological Risk Assessment Guidance for Superfund" (USEPA, 1997c; 1999);
- "Amended Guidance on Ecological Risk Assessment at Military Bases: Process Considerations, Timing of Activities, and Inclusion of Stakeholders" (USEPA, 2000a);
- "ECO-Update: Role of Screening-level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments," (USEPA, 2001a); and
- "Guidelines for Ecological Risk Assessment" (USEPA, 1998).

Step 3a of the BERA for the Site is a refinement of the Step 2 exposure estimates and risk characterization, focused only on the constituents and media that progress beyond the SLERA. The assumptions used in Step 3a are refinements of the conservative estimates of exposure and toxicological impacts, to site-specific (or receptor-specific) estimates of exposure, and more relevant ecotoxicity screening values, if available (USEPA, 2001a). Risks are recalculated using these refined assumptions. The

outcome of this refined screening process is a list of COPECs to be retained for further evaluation in the BERA process. This effort was conducted as part of the Step 3a, BERA Problem Formulation. Step 3a involves the refinement of the following:

- Media of Concern;
- Constituents of Potential Ecological Concern (COPECs);
- Risk Calculations for Direct Contact COPECs;
- Assessment and Measurement Endpoints for Bioaccumulative COPECs;
- Bioaccumulative COPECs by Preliminary Food Chain Modeling;
- Risk Characterization by Evaluation of Weight of Evidence and Ecological Significance; and
- Uncertainties.

Step 3a is followed by a SMDP that involves the reporting of results of Steps 1 through 3a.

2.4.5.1 Refinement of Media of Concern

The process of refining media of concern helps focus the BERA on the media that may be associated with potentially significant ecological exposure pathways, and therefore, potentially contribute to significant ecological risks. This methodology is consistent with the concepts addressed in American Society for Testing and Materials (ASTM) Ecological Risk-Based Corrective Action (Eco-RBCA) guidance (ASTM, 2002), which was developed in partnership with the USEPA. Eco-RBCA demonstrates that there are criteria that can be used to refine the media of concern for an ERA. The states of Pennsylvania, Massachusetts, Louisiana, and Texas (among others) have a component of their ERA guidance that allows for refinement of media of concern based on specified criteria (Pennsylvania Department of Environmental Protection [PADEP], 1998; Massachusetts Department of Environmental Protection [MADEP], 1996; Louisiana Department of Environmental Quality [LDEQ], 1999; and TCEQ, 2001).

The process for refining the media of concern results in a detailed discussion of how key practical considerations are incorporated into the decision-making process.

2.4.5.1.1 Spatial Extent

The spatial extent of the release area is also considered in the decision logic. The size or space of a contaminated area is directly related to the potential for ecological exposure if ecological habitat is present. Spatial scale can be useful as a screening criterion if used in conjunction with other considerations, such as the valued ecological resources that may be present, current and future land use, the likelihood for contaminant migration from the site, and the proximity to a valued or sensitive ecological habitat.

Spatial scale screening criteria are used widely in ERA. Although New Mexico does not have any guidance on spatial scale criteria, several states' guidance address the importance of spatial scale in ecological assessments, as does the ASTM Standard Guide for Risk-Based Corrective Action for Protection of Ecological Resources. E-2205-02 (ASTM, 2002). For example, the following spatial scale screening criteria are used by the following states: 1 to 2 acres for Minnesota (the smaller scale for bioaccumulative compounds); 1 acre for Texas and Mississippi; 2 acres for Pennsylvania; and 5 acres for Louisiana. (Minnesota Pollution Control Agency [MPCA], 1998; TCEQ, 2001; Mississippi Department of Environmental Quality [MDEQ], 1997; LADEQ, 1999; PADEP, 1998). Massachusetts' Stage I screening recommends evaluating the size of the terrestrial habitat and the extent to which it is connected with other habitats: no action recommended for less than 2 acres (and some considerations for affected areas greater than 2 acres but less than 6 acres, dependent on an evaluation of "significant exposure pathways"). Pennsylvania actually provides the rationale for the criteria, discussing how population-level exposures are unlikely to occur at small spatial scales such as less than 2 acres (PADEP, 1998). This criterion has often been referred to as *de minimis* because it is not expected to cause adverse impacts to the population, community, or ecosystem, providing other conditions are met (Suter et al., 1995; Henning and Shear, 1998; Efroymson et al., 2003).

A 1-acre screening criterion was used at the Site to refine the media of concern, providing the following additional *de minimis* criteria are met:

- Similar but unimpacted habitat must be available adjacent to the impacted area;
- Sensitive habitat must not be present within ¼ mile if the COPECs will migrate off site; and
- COPEC fate and transport must be unlikely to increase the spatial extent to greater than 1 acre.

2.4.5.2 Refinement of Risk Calculations for Direct Contact Constituents of Potential Ecological Concern

The refinement of the COPECs identified in the SLERA is necessary to help focus further risk assessment activities on the constituents which pose the greatest potential risk to ecological receptors. USEPA guidance for this approach (USEPA, 2000a; 2001a; 1999;1997c) indicates that the refinement of COPECs streamlines the overall ERA process by using realistic criteria to focus the risk assessment on those constituents that may pose unacceptable ecological risks. It is intended as an "incremental iteration of exposure, effects, and risk characterization" (USEPA, 2001a). The outcome of this screening is that constituents are either excluded as COPECs or retained for further evaluation in the BERA process.

The refinement of COPECs is focused on refining the ecological exposure assumptions. An EPC is calculated for each constituent separately. These EPCs are compared with the relevant SLERA screening toxicity values. To the extent appropriate, the 95 percent UCL on the mean concentration is used as the EPC for the refinement of COPECs. The UCL for each COPEC is calculated using the USEPA's ProUCL 4.00.04 statistical software (USEPA, 2007b). The ProUCL outputs are provided in Attachment D.

The UCL represents an upperbound estimate of average exposure conditions, which is an appropriate estimate for mobile terrestrial wildlife species and for exposures of plant and animal communities (rather than individuals). However, the UCL may not be considered the appropriate comparative statistic if the data sets are small. In cases where the UCL is greater than the maximum detected concentration, the maximum detected concentration is used as the EPC. Constituents with EPCs greater than the SLERA screening ecotoxicity value, and analytes for which there are no screening ecotoxicity values, are retained for further consideration.

Each of the constituents identified as a COPEC is considered a COPEC for direct contact exposures. A subset of these COPECs is also considered for bioaccumulative exposures. A list of bioaccumulative constituents prepared by the USEPA is used to identify potential bioaccumulative COPECs (i.e., those constituents that will magnify in the food chain). Table ERA-1 identifies bioaccumulative constituents as defined in the USEPA guidance *Bioaccumulative Testing and Interpretation for the Purpose of Sediment Quality Assessment, Status and Needs* (USEPA, 2000b). Direct contact COPECs that are listed as bioaccumulative compounds are also considered and evaluated as bioaccumulative COPECs.

The COPECs identified for the Site SLERA were re-evaluated for the surface soil and for the combined surface and subsurface soil data sets by calculating refined HQs. The

refined HQs were calculated for the COPECs using refined EPCs (shown in Tables ERA-5 and ERA-6). Since lead is bioaccumulative, it was carried forward into the food chain models. The results of the refined HQ calculations for Site are summarized in the subsections below.

2.4.5.2.1 Surface Soil

Four COPECs (i.e., benzene, ethylbenzene, toluene, and xylenes) in surface soil were carried forward into the BERA. Due to small data set sizes, UCLs could not be calculated for all surface soil COPECs. Therefore, the refined EPCs for benzene, ethylbenzene, toluene, and xylenes equal the maximum detection and the refined HQs are greater than 1. The BERA results for the surface soil COPECs at the Site are presented in Table ERA-5 and are discussed below:

- Benzene, ethylbenzene, toluene, and xylenes – One sample reported detected concentrations of benzene, ethylbenzene, toluene, and xylenes above the conservative ESLs. The detected concentrations were reported in one of three samples, therefore the UCLs were not calculable and the refined HQs are based on the maximum concentrations. The maximum concentrations were reported for sample location MPOL-SB-006 (0.5-1.0). This sample location is covered by concrete pavement and therefore provides a physical barrier that prevents any exposure to the underlying soil by animals or plants. Considering that the overall limited areal extent of affected soil, and that the sample is covered with concrete pavement, adverse impacts are not expected for terrestrial wildlife potentially exposed to benzene in surface soil at the Site.

2.4.5.2.2 Combined Surface and Subsurface Soil (0 to 10 ft bgs)

Five COPECs (benzene, ethylbenzene, toluene, xylenes, and lead) in combined surface and subsurface soil were carried forward into the BERA. Four of the COPECs including benzene, ethylbenzene, toluene, and xylenes, were detected in only one sample. UCLs could not be calculated. Therefore, the refined EPCs for benzene, ethylbenzene, toluene, and xylenes equal the maximum detection and the refined HQs are greater than 1. A UCL was calculated for lead. When the refined EPC for lead (17.96 mg/kg) was compared with the ESL (11 mg/kg), lead had a refined HQ equal to 2 (rounded to nearest whole number). The BERA results for the combined surface and subsurface soil COPECs at the Site are presented in Table ERA-6 and are discussed below:

- Benzene, ethylbenzene, toluene, and xylenes – One of seventeen combined surface and subsurface soil samples reported detected concentrations of benzene,

ethylbenzene, toluene, and xylenes above the conservative ESLs. Based on the data collected from the site, the areal extent of these constituents above the ESLs is limited. In addition, the detected concentrations were reported in one of seventeen samples, therefore the UCL was not calculable and the refined HQ is based on the maximum concentration. Furthermore, the maximum concentrations were reported for sample location MPOL-SB-006 (0.5-1.0). This sample location is covered by concrete pavement and therefore provides a physical barrier that prevents any exposure to the underlying soil by animals or plants. Considering that the overall limited areal extent of affected soil, and that the sample is covered with concrete pavement, adverse impacts are not expected for terrestrial wildlife potentially exposed to benzene in the combined surface and subsurface soil at the Site.

- Lead – Four of thirteen combined surface and subsurface soil samples reported a detected lead concentration above the ESL (11 mg/kg). The maximum concentration (47.5 mg/kg) was reported for sample location MPOL-SB-002 (4-5). The areal extent of affected soil is very small. An HQ of 2 was calculated using the UCL (17.96 mg/kg) and the USEPA Eco SSL (11 mg/kg). The calculated HQ of 2 is based on an EcoSSL for a woodcock (avian insectivore) which was calculated assuming a diet of earthworms. EcoSSLs for herbivorous and carnivorous birds range from 46 mg/kg to 510 mg/kg. Mammalian EcoSSLs for lead range from 56 mg/kg (based on insectivore diet of earthworms) to 1,200 mg/kg (herbivorous mammal). For all practical purposes, earthworms do not occur in the desert southwest (Werner and Olson, 1994). Therefore, the EcoSSL of 46 mg/kg (based on avian herbivore) may be more appropriate for the site. Using a screening level of 46 mg/kg and the UCL of 17.96 mg/kg, the HQ for lead is less than the benchmark of 1. In addition, as discussed in the sections below, when this COPEC was further evaluated in the site-specific terrestrial food chain model, the calculated HQ values were less than 1. Based on these considerations, adverse impacts are not expected for wildlife potentially exposed to lead in combined surface and subsurface soil at the Site.

2.4.5.3 Assessment and Measurement Endpoints for Bioaccumulative COPECs

The assessment and measurement endpoints from the SLERA are refined for bioaccumulative COPECs listed in Tables ERA-1. Bioaccumulative COPECs are those COPECs that may have toxic effects when they transfer through the food chain. No bioaccumulative COPEC was identified in surface soil at the Site. The bioaccumulative COPEC indentified in combined surface and subsurface soil at the

Site is lead. The SLERA assessment and measurement endpoints were refined for bioaccumulative COPECs because the SLERA endpoints are general in nature and do not necessarily identify receptors that are susceptible to food chain exposures. BERA assessment endpoints for bioaccumulation are based on receptors appropriate to the habitat present at the site, as well as the media in which bioaccumulative COPECs are identified (i.e., combined surface and subsurface soil). The food chain assessment and measurement endpoints considered appropriate for the Site are as follows:

Assessment Endpoint	Measurement Endpoint	Effects Measured
Survival and reproductive success of mammals exposed to bioaccumulative compounds in the terrestrial food chain	Changes in survival and reproduction as indicated by food chain modeling for mammalian indicator species	NOAELs and LOAELs related to chronic effects such as reduced survival and reduced litter size

NOAEL no-observed-adverse-effect-level LOAEL lowest-observed-adverse-effect-level

2.4.5.4 Terrestrial Food Chain Modeling

Ingestion-based food chain modeling was used in Step 3a of the BERA to evaluate bioaccumulative COPECs. The purpose of the food chain modeling is to characterize potential exposures to COPECs via the food chain and to identify potential adverse effects for mammals. The remainder of this section provides general information regarding the following components of the model:

- Wildlife receptors and exposure parameters;
- Bioaccumulation and bioconcentration factors;
- Food chain ingestion modeling;
- Ecotoxicity benchmarks and extrapolation approach; and
- Risk characterization for food chain modeling.

2.4.5.4.1 Terrestrial Wildlife Receptors and Exposure Parameters

Indicator species were chosen to represent a cross-section of feeding guilds for selected assessment endpoints.

The indicator species selected is as follows:

- carnivorous mammal: desert kit fox (Vulpes macrotis).

The indicator species was selected to represent burrowing mammalian populations that might reside or forage in habitats present at the site and surrounding area, and would dig to soil deeper than 2 feet.

Selection of Carnivorous Mammalian Receptor – The desert kit fox is carnivorous, preying on black-tailed hare, desert cottontails, rodents, birds, and reptiles. They are residents of arid regions, and live in annual grasslands or grassy open stages of vegetation dominated by scattered brush, shrubs, and scrub. They dig dens in open, level areas of sandy soil. Kit fox dens/burrows on average range from 1.5 to 3 meters deep (Arjo, et al., 2003). Home range size has been reported as approximately 9.8 km^2 and 12.3 km^2, for females and males, respectively (Zoellick and Smith, 1992). Pups are born February through April with an average of four per litter.

The desert kit fox was chosen as a representative species for the following reasons:

- Desert kit fox are a protected fur-bearing species (i.e., hunting is regulated) in New Mexico;
- Desert kit fox are a common carnivorous species present in desert habitats;
- Suitable habitat for desert kit fox is available near the Site;
- It preys on small mammals, which may bioaccumulate COPECs;
- COPEC bioaccumulation data are available for small mammals;
- It plays an important role in providing cover for other species by its burrowing activity; and
- Desert kit fox dens range from 1.5 to 3 meters deep and therefore are exposed to subsurface soil.

Indicator receptor exposure parameters are presented in Table ERA-7.

2.4.5.4.2 Bioaccumulation and Bioconcentration Factors

The processes of bioaccumulation and bioconcentration are important to an ERA because they provide a basis of prediction and discussion regarding the potential for constituent uptake into flora and fauna. Constituents in tissues of organisms in the

food chain are likely to be ingested by the species which feed on them (i.e., those occupying higher trophic levels), the result of which may be the expression of toxicological effects by the higher trophic level species.

Bioaccumulation and bioconcentration factors used for the food chain modeling are obtained from USEPA, 2007c, and are presented in Table ERA-8.

If a bioaccumulation factor (BAF) or bioconcentration factor (BCF) obtained from the literature was in dry weight, it was converted to wet weight in the estimated ingestion calculation using the following conversion factors: 0.167 for invertebrates; 0.12 for plants and 0.32 for mammals.

*BAF (wet weight) = BAF (dry weight) * Conversion Factor*

2.4.5.4.3 Food Chain Ingestion Modeling

Food chain ingestion-based exposure calculations were performed for the identified representative receptor species to characterize potential exposures to combined surface and subsurface soil constituents via the food chain and to identify potential adverse effects for wildlife at the Site. Ingestion modeling is based on species-specific exposure parameters and ingestion intake requirements. Arithmetic mean and UCL concentrations were used to evaluate the range of potential ingestion-based exposures. The use of mean concentrations is appropriate because birds and mammals are highly mobile and consume prey items containing varying levels of COPECs. The use of UCL concentrations is intended to represent, in effect, a reasonable maximum exposure estimate. The following model is used to calculate the ingestion based exposure for each indicator receptor:

$$\text{Ingestion (mg/kg - day)} = \left(\frac{\{(P_{MEDIUM} \times C_{MEDIUM} \times (IR_M)) + ((P_{FOOD1} \times C_{FOOD1}) + (P_{FOOD2} \times C_{FOOD2}) \times (IR_F))\} \times (SUF) \times (ED)}{BW} \right)$$

Where:

P_{MEDIUM}	=	Proportion of the diet comprised of the medium (unitless)
C_{MEDIUM}	=	Concentration of the constituent in the medium (mg/kg)
P_{FOOD1}	=	Proportion of the diet comprised of the first food item (unitless)
C_{FOOD1}	=	Concentration of the constituent in the first food item (mg/kg)
P_{FOOD2}	=	Proportion of the diet comprised of the second food item (unitless)

C_{FOOD2} = Concentration of the constituent in the second food item (mg/kg)

IR_F = Ingestion rate of food (kg/day)

IR_M = Ingestion rate of media (kg/day)

SUF = Site use factor (unitless)

ED = Exposure duration (unitless)

BW = Body weight of the organism (kg)

and:

$C_{FOOD1} = C_{MEDIUM} \times BAF_{FOOD1}$

$C_{FOOD2} = C_{MEDIUM} \times BAF_{FOOD2}$

BAF_{FOOD1} = Bioaccumulation factor for first food item (unitless)

BAF_{FOOD2} = Bioaccumulation factor for second food item (unitless)

2.4.5.4.4 Use Factor Approach

A site use factor (SUF) of 1 was employed in this ERA for the maximum scenario under the assumption that the receptors obtain their entire diet from the Site. However, for the refined scenarios, SUFs were adjusted based on literature values for the foraging/home range of a measurement receptor. For the evaluated receptor (i.e., desert kit fox), that home range is larger than the area evaluated for the Site. The SUF calculation is represented by a simple ratio where the size of the affected area is divided by the size of the home or foraging range of the receptor. As a conservative measure in this report, the size of the affected area was based on the boundary of the POL. The calculated SUF for the Site is based on the receptor's home range and the approximate size of the Site (i.e., 3.4 acres). Table ERA-7 provides the home range obtained from the literature for desert kit fox.

2.4.5.4.5 Ecotoxicity Benchmarks and Extrapolation Approach

Ecological risk assessment uses constituent-specific toxicity reference values (TRVs) for the purpose of estimating risk. For the most part, TRVs are based on studies using laboratory species because toxicological studies have not been conducted on most wildlife species. TRVs are available from a variety of sources such as USEPA (2010; 2005c); Sample, et al., (1996 and 1997); ATSDR, and many constituent-specific scientific sources and publications. Toxicological benchmarks are typically reported as no observed adverse effect levels (NOAELs) and lowest observed adverse effect levels (LOAELs). Both NOAELS and LOAELs for each COPEC are used in the food chain modeling so that a range of predicted food chain impacts can be evaluated. A list of ecotoxicity values for the specific COPECs associated with the site are provided

in the site-specific BERA and presented in Table ERA-9. These ecotoxicity values will vary depending on the species, as described below.

Toxicity values must be carefully selected, and may require mathematical adjustment in order to represent the species selected for a site. In order to have a toxicity value representative of specific mammalian wildlife species rather than a mammalian laboratory species, an extrapolation (i.e., a mathematical formula based on differences in body weights) is needed (Sample, et al., 1997). The extrapolation is necessary because the laboratory mammalian species and wildlife species are of varying sizes.

A generic approach for modeling a constituent-specific reference toxicity value for the purpose of estimating risk to a generic mammalian "wildlife species," is shown below (Sample, et al., 1996):

$$\text{NOAEL}_{\text{Wildlife Species}} = \text{NOAEL}_{\text{Test Species}} \times \left[\frac{\text{BW}_{\text{TestSpecies}}}{\text{BW}_{\text{WildlifeSpecies}}} \right]^{\frac{1}{4}}$$

Where:

$\text{NOAEL}_{\text{Wildlife Species}}$	=	NOAEL for the wildlife species (i.e., the TRV)
$\text{NOAEL}_{\text{Test Species}}$	=	NOAEL for the laboratory test species (i.e., the toxicological benchmark)
$\text{BW}_{\text{Test Species}}$	=	Body weight of the laboratory test species
$\text{BW}_{\text{Wildlife Species}}$	=	Body weight of the wildlife species

No body size scaling extrapolation was applied to toxicity values obtained from USEPA EcoSSL guidance (2005c) since those values are derived using multiple mammal test species.

2.4.5.5 Terrestrial Food Chain Modeling Risk Characterization

As summarized in Table ERA-13, the refined scenario LOAEL and NOAEL HQs for the desert kit fox potentially exposed to combined surface and subsurface soil were less than 1 for the Site. These results indicate that if kit foxes (or other similar burrowing mammals) are exposed to COPECs, they are not expected to experience adverse effects.

Based on the overall analysis of terrestrial food chain modeling HQs, including the limited spatial extent of the affected soil, if exposure to the bioaccumulative COPEC was to occur, then adverse effects are not expected for wildlife.

2.4.5.6 Evaluation of Uncertainties

Uncertainty is "the imperfect knowledge concerning the present or future state of the system under consideration; a component of risk resulting from imperfect knowledge of the degree of hazard or of its spatial and temporal distribution," (USEPA, 1997c). Uncertainties that may lead to either an overestimate or underestimate of risk are associated with each stage of risk assessment. Uncertainty is inherent to ERA, in part, because the sciences of ecology and ecotoxicology are relatively young and not yet fully developed (Kapustka and Landis, 1998; Newman, 1998; Emlen and Springman, 2007; Kapustka, 2008; Suter, 2008). Uncertainty also exists in many aspects of the toxicology relied upon for conducting ERAs (Newman, 1998; Lovett Doust, et al., 1993; Dale, et al., 2008). General uncertainties associated with the SLERA are identified on Table ERA-4.

2.4.6 Ecological Risk Summary

A SLERA and BERA were completed for the Site. After the SLERA, four constituents (i.e., benzene, ethylbenzene, toluene, and xylenes) were selected as COPECs in surface soil. Five constituents (i.e., benzene, ethylbenzene, toluene, xylenes, and lead) were selected as COPECs in combined surface and subsurface soil because their HQs were greater than 1. In the BERA, lead in combined surface and subsurface soil was retained for further evaluation in the food chain modeling since it was identified as bioaccumulative.

Table ERA-13 summarizes the COPEC in combined surface and subsurface soil that was carried through the BERA and evaluated in the terrestrial food chain model. Based on the overall analysis of terrestrial food chain modeling HQs, including the limited spatial extent of the affected soil, if exposure to the bioaccumulative COPEC was to occur, then adverse effects are not expected for wildlife.

2.5 Main Post POL AST Release Area Summary and Conclusions

A HHRA was conducted to evaluate exposure to COPCs in surface soil, combined surface and subsurface soil, and total soil for site workers under current and future

land-use conditions, and construction workers and residents (adult and child) under hypothetical future land-use conditions.

In accordance with NMED guidance (NMED, 2009a), constituent concentrations in surface soil and in combined surface and subsurface soil were compared to health-based screening levels and the calculated ratios summed. The ratios were multiplied by $1x10^{-5}$ for carcinogens and by 1 for non-carcinogens. The results of this data screening process indicate that after comparison to health-based soil screening levels for industrial worker exposure, residential exposure, and construction worker exposure, no COPCs were selected for surface soil or for combined surface and subsurface soil at the Site. This demonstrates that the constituent concentrations in surface soil and in combined surface and subsurface soil at the Site are unlikely to result in adverse health impacts to the following potential receptors via direct contact exposure (i.e., ingestion, inhalation of vapor/dust, dermal):

- Current and future site workers;
- Future residents (adults and children); and
- Future construction workers.

All the VOCs detected in total soil were selected as COPCs for the vapor intrusion evaluation. The findings of the vapor intrusion evaluation indicate that potential future industrial use or residential use of the site may result in potential exposures to indoor air that are above the regulatory benchmark for non-cancer hazards. However, after further examination of the primary contributor to the unacceptable hazards at the Site, the potential for the site to represent a significant concern via the vapor intrusion pathway in the future is considered low, and additional evaluation is considered unneccessary.

A SLERA and BERA were completed for the Site to evaluate whether ecological receptors may be adversely impacted by exposure to site-related constituents detected in surface soil and subsurface soil, and to conduct food chain modeling for the COPECs identified as bioaccumulative. The results of the SLERA and BERA for direct contact exposure and for food chain modeling indicate there is adequate information to conclude that adverse impacts are unlikely to occur for ecological receptors potentially exposed to constituents in soil. Therefore, no further ecological evaluation of the Site is warranted.

There are no adverse environmental impacts associated with the Site as a result of historical site activities and no restrictions need to be applied to current or potential future land use at the site. Accordingly, the site is recommended for no further action and should be closed out of the RCRA process.

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Tables

Table Data-1
Soil Risk Assessment Dataset
Soil 0-2 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent [a]	Frequency of Detection [b]				Detects			Sample Quantitation Limits			Maximum Location	Arithmetic Average	Upper Confidence Limit on the Mean [c]
	number of detects / number of samples			FOD %	Min (mg/kg)	-	Max (mg/kg)	Min (mg/kg)	-	Max (mg/kg)			
Volatile Organic Compounds													
Benzene	1	-	3	33.3	0.487	-	0.487	0.00483	-	0.00487	MPOL-SB-006(0.5 - 1)	0.166	–
Ethylbenzene	1	-	3	33.3	9.68	-	9.68	0.0145	-	0.0146	MPOL-SB-006(0.5 - 1)	3.24	–
Toluene	1	-	3	33.3	17	-	17	0.0145	-	0.0146	MPOL-SB-006(0.5 - 1)	5.68	–
Xylenes	1	-	3	33.3	66	-	66	0.0145	-	0.0146	MPOL-SB-006(0.5 - 1)	22.0	–
Total Petroleum Hydrocarbons (TPH)													
Gasoline Range Organics (GRO)	1	-	3	33.3	511	-	511	0.197	-	0.21	MPOL-SB-006(0.5 - 1)	170	–
Inorganics													
Lead	1	-	1	100	8.09	-	8.09	–	-	–	MPOL-SB-006(0.5 - 1)	8.09	–

Notes:

– = Not analyzed/ not applicable.

mg/kg = Milligrams per kilogram.

[a] Only constituents analyzed are presented.
For duplicate samples, the highest detected value or the lowest sample quantitation limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

[c] "–" indicates that the upper confidence limit on the mean (UCL) cannot be calculated due to small data set size.

Table Data-2
Soil Risk Assessment Dataset
Soil 0-10 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent [a]	Frequency of Detection [b]				Detects			Sample Quantitation Limits			Maximum Location	Arithmetic Average	Upper Confidence Limit on the Mean [c]
	number of detects / number of samples			FOD %	Min (mg/kg)	-	Max (mg/kg)	Min (mg/kg)	-	Max (mg/kg)			
Volatile Organic Compounds													
Benzene	1	-	17	5.88	0.487	-	0.487	0.00483	-	0.00556	MPOL-SB-006(0.5 - 1)	0.0334	–
Ethylbenzene	1	-	17	5.88	9.68	-	9.68	0.00556	-	0.016	MPOL-SB-006(0.5 - 1)	0.583	–
Toluene	1	-	17	5.88	17	-	17	0.00556	-	0.016	MPOL-SB-006(0.5 - 1)	1.01	–
Xylenes	1	-	17	5.88	66	-	66	0.00556	-	0.016	MPOL-SB-006(0.5 - 1)	3.90	–
Total Petroleum Hydrocarbons (TPH)													
Gasoline Range Organics (GRO)	2	-	17	11.8	1.04	-	511	0.19	-	0.217	MPOL-SB-006(0.5 - 1)	30.3	–
Inorganics													
Lead	13	-	13	100	4.9	-	47.5	–	-	–	MPOL-SB-002(4 - 5)	12.7	17.96

Notes:

– = Not analyzed/ not applicable.

mg/kg = Milligrams per kilogram.

[a] Only constituents analyzed are presented.
For duplicate samples, the highest detected value or the lowest sample quantitation limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

[c] "–" indicates that the upper confidence limit on the mean (UCL) cannot be calculated due to small data set size. The upper confidence limit on the mean (UCL) was calculated using ProUCL 4.0.

Table Data-3
Soil Risk Assessment Dataset
Total Soil Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent [a]	Frequency of Detection [b]				Detects			Sample Quantitation Limits			Maximum Location	Arithmetic Average	Upper Confidence Limit on the Mean [c]
	number of detects / number of samples			FOD %	Min (mg/kg)	-	Max (mg/kg)	Min (mg/kg)	-	Max (mg/kg)			
Volatile Organic Compounds													
Benzene	1	-	29	3.45	0.487	-	0.487	0.00463	-	0.00556	MPOL-SB-006(0.5 - 1)	0.0216	–
Ethylbenzene	1	-	29	3.45	9.68	-	9.68	0.00556	-	0.0164	MPOL-SB-006(0.5 - 1)	0.348	–
Toluene	1	-	29	3.45	17	-	17	0.00556	-	0.0164	MPOL-SB-006(0.5 - 1)	0.600	–
Xylenes	1	-	29	3.45	66	-	66	0.00556	-	0.0164	MPOL-SB-006(0.5 - 1)	2.29	–
Total Petroleum Hydrocarbons (TPH)													
Gasoline Range Organics (GRO)	2	-	29	6.90	1.04	-	511	0.19	-	0.217	MPOL-SB-006(0.5 - 1)	17.8	–
Inorganics													
Lead	25	-	25	100	4.9	-	47.5	–	-	–	MPOL-SB-002(4 - 5)	10.4	13.48

Notes:

– = Not analyzed/ not applicable.

mg/kg = Milligrams per kilogram.

[a] Only constituents analyzed are presented.
For duplicate samples, the highest detected value or the lowest sample quantitation limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

[c] "–" indicates that the upper confidence limit on the mean (UCL) cannot be calculated due to small data set size. The upper confidence limit on the mean (UCL) was calculated using ProUCL 4.0.

Table HHRA-1
Screening Levels for the Protection of Human Health - Soil
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	NMED Soil Regional Screening Level [a]						Adjusted Soil Regional Screening Level (Soil RSL) [b]				Site Soil Regional Screening Level [c]					
	Residential Soil		Industrial/ Occupational Soil		Construction Worker Soil		Residential		Industrial		Residential		Industrial		Construction	
	mg/kg		mg/kg		mg/kg		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)	
Volatile Organic Compounds																
Benzene	1.55E+01	c	8.54E+01	c	4.71E+02	n	1.10E+01	c	5.40E+01	c	1.55E+01	c	8.54E+01	c	4.71E+02	n
Ethylbenzene	6.97E+01	c	3.85E+02	c	6.63E+03	cs	5.40E+01	c	2.70E+02	c	6.97E+01	c	3.85E+02	c	6.63E+03	cs
Toluene	5.57E+03	ns	5.79E+04	ns	2.11E+04	ns	5.00E+03	ns	4.50E+04	ns	5.57E+03	ns	5.79E+04	ns	2.11E+04	ns
Xylenes	1.09E+03	ns	3.61E+03	ns	3.13E+03	ns	6.30E+02	ns	2.70E+03	ns	1.09E+03	ns	3.61E+03	ns	3.13E+03	ns
Total Petroleum Hydrocarbons (TPH)																
GRO	NA		NA		NA		NA		NA		NA		NA		NA	
Inorganics																
Lead	4.00E+02	IEUBK	8.00E+02	IEUBK	8.00E+02	IEUBK	4.00E+02	n	8.00E+02	n	4.00E+02	IEUBK	8.00E+02	IEUBK	8.00E+02	IEUBK

Notes:

mg/kg =	Milligrams per kilogram.
c =	carcinogen.
n =	noncarcinogenic.
cs =	carcinogenc, NMED soil screening level (SSL) may exceed saturation.
ns =	noncarcinongen, NMED soil screening level (SSL) may exceed saturation.
IEUBK =	Integrated Exposure Uptake Biokinetic.
NA =	Not available.
[a]	Values are from New Mexico Environment Department (NMED), "Soil Screening Levels" (December 2009a,b).
[b]	The adjusted screening levels were regional screening levels for the residential and industrial scenarios from USEPA (2009). Screening levels based on cancer effects were adjusted by a factor of 10 to reflect a target risk of 1 $x10^{-5.}$
	c = cancer; n = noncancer; m = Concentration may exceed ceiling limit; s = Concentration may exceed saturation concentration (Csat).
	The screening level for lead is based on noncancer effects but uses blood lead level estimates rather than a hazard quotient.
[c]	Site screening levels were selected from following critieria: NMED SSLs then adjusted USEPA RSLs.

Table HHRA-2
Selection of Constituents of Potential Concern in Soil - Based on Maximum Detected Concentration
Soil 0-2 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	Frequency of Detection (FOD) number of detects / number of samples			FOD %	Max Detect [a] (mg/kg)		Max SQL (mg/kg)	Site Screening Level (SL) [b] Residential Scenario (mg/kg)		Site Screening Level (SL) [b] Industrial Scenario (mg/kg)		Is Maximum > Screening Level? Residential Scenario	Is Maximum > Screening Level? Industrial Scenario	Residential Scenario Max / SL (cancer)	Residential Scenario Max / SL (noncancer)	Industrial Scenario Max / SL (cancer)	Industrial Scenario Max / SL (noncancer)	Constituent of Potential Concern (COPC)? Residential	Constituent of Potential Concern (COPC)? Industrial
Volatile Organic Compounds																			
Benzene	1	/	3	33.3	0.487		0.0049	1.55E+01	c	8.54E+01	c	no	no	3.14E-02	–	5.70E-03	–	no	no
Ethylbenzene	1	/	3	33.3	9.68		0.0146	6.97E+01	c	3.85E+02	c	no	no	1.39E-01	–	2.52E-02	–	no	no
Toluene	1	/	3	33.3	17		0.0146	5.57E+03	n	5.79E+04	n	no	no	–	3.05E-03	–	2.94E-04	no	no
Xylenes	1	/	3	33.3	66		0.0146	1.09E+03	n	3.61E+03	n	no	no	–	6.08E-02	–	1.83E-02	no	no
Total Petroleum Hydrocarbons (TPH)																			
Gasoline Range Organics (GRO)	1	/	3	33.3	511	!	0.21	NA	n	NA	n	NA	NA	–	–	–	–	no	no
Inorganics																			
Lead	1	/	1	100	8.09		–	4.00E+02	IEUBK	8.00E+02	IEUBK	no	no	–	–	–	–	no	no
Total Maximum / Screening Level Ratios														0.2	0.06	0.03	0.02		
Total Maximum / Screening Level Risk (multiply cancer ratio by 1E-5 and non cancer ratio by 1)														2.E-06	0.1	3.E-07	0.02		

Target Organ Max/SL Ratios	Residential Scenario Max / SL (noncancer)	Industrial Scenario Max / SL (noncancer)
Kidney and Liver	0.003	0.0003
Brain	NA	NA
Nasal	NA	NA
Eyes	NA	NA
Skin	NA	NA
Lungs	NA	NA
Gastrointestinal Tract and Forestomach	NA	NA
Whole Body	0.06	0.02
Blood	NA	NA
Nervous System	0.06	0.02
Dental	NA	NA
Red Blood Cells	NA	NA
Glands	NA	NA
Fetus	NA	NA
Immune System	NA	NA
Development	NA	NA
Reproduction	NA	NA
Bone	NA	NA
Not Available/ Not Reported	NA	NA

Notes:

– = Not applicable.
! = Constituent was detected and screening level/ toxicity information is not available.
Max = Maximum concentration.
mg/kg = Milligrams per kilogram.
NA = Not available.
SQL = Sample Quantification Limit.

[a] Maximum detected concentration.
[b] See Table HHRA-1 for sources of soil screening levels and explanation of notes.

Table HHRA-3
Selection of Constituents of Potential Concern in Soil - Based on Maximum Detected Concentrations
Soil 0-10 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	Frequency of Detection (FOD) number of detects / number of samples			FOD %	Max Detect [a] (mg/kg)		Max SQL (mg/kg)	Site Screening Level (SL) [b] Construction Scenario (mg/kg)		Is EPC > Screening Level? Construction Scenario	Construction Scenario Max / SL (cancer)	Construction Scenario Max / SL (noncancer)	Constituent of Potential Concern (COPC)? Construction
Volatile Organic Compounds													
Benzene	1	/	17	5.88	0.487		0.0056	4.71E+02	n	no	–	1.03E-03	no
Ethylbenzene	1	/	17	5.88	9.68		0.016	6.63E+03	c	no	1.46E-03	–	no
Toluene	1	/	17	5.88	17		0.016	2.11E+04	n	no	–	8.05E-04	no
Xylenes	1	/	17	5.88	66		0.016	3.13E+03	n	no	–	2.11E-02	no
Total Petroleum Hydrocarbons (TPH)													
Gasoline Range Organics (GRO)	2	/	17	11.8	511	!	0.217	NA	n	NA	–	–	no
Inorganics													
Lead	13	/	13	100	47.5		–	8.00E+02	IEUBK	no	–	–	no
Total Maximum / Screening Level Ratios											0.001	0.02	
Total Maximum / Screening Level Risk (multiply cancer ratio by 1E-5 and non cancer ratio by 1)											1.E-08	0.02	

Target Organ Max/SL Ratios	
Kidney and Liver	0.0008
Brain	NA
Nasal	NA
Eyes	NA
Skin	NA
Lungs	NA
Gastrointestinal Tract and Forestomach	NA
Whole Body	0.02
Blood	0.001
Nervous System	0.02
Dental	NA
Red Blood Cells	NA
Glands	NA
Fetus	NA
Immune System	NA
Development	NA
Reproduction	NA
Bone	NA
Not Available/ Not Reported	NA

Notes:

– =	Not applicable.
! =	Constituent was detected and screening level/ toxicity information is not available.
Max =	Maximum concentration.
mg/kg =	Milligrams per kilogram.
NA =	Not available.
SQL =	Sample Quantification Limit.

[a]	Maximum detected concentration.
[b]	See Table HHRA-1 for sources of soil screening levels and explanation of notes.

Table HHRA-4
Selection of Constituents of Potential Concern in Soil for the Vapor Intrusion Pathway
Total Soil Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Volatile Constituent [a]	Frequency of Detection (FOD) number of detects / number of samples			FOD %	Max Detect (mg/kg)	Constituent of Potential Concern for Vapor Inhalation [a]
Volatile Organic Compounds						
Benzene	1	/	29	3.45	0.487	YES
Ethylbenzene	1	/	29	3.45	9.68	YES
Toluene	1	/	29	3.45	17	YES
Xylenes	1	/	29	3.45	66	YES

Notes:
Max = Maximum concentration.
mg/kg = Milligrams per kilogram.

[a] All detected volatile constituents were selected as COPCs for the vapor inhalation pathway. Lab contaminants were not retained as COPCs for the vapor inhalation pathway if they are the only detected VOCs in soil.

Table HHRA-5
Noncarcinogenic Toxicity Values for Inhalation Exposure
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	Inhalation RfC (mg/m^3) Chronic	[ref]	Target Site/ Critical Effect	Confidence Level/ Uncertainty Factor
Volatile Organic Compounds				
Benzene	3.0E-02	/	blood	medium/100
Ethylbenzene	1.0E+00	/	developmental	medium/100
Toluene	5.0E+00	/	CNS	medium/300
Xylenes	1.0E-01	/	CNS	medium/300

References [ref]:

/	USEPA, Integrated Risk Information System (IRIS; USEPA, 2009).

CNS	Central nervous system.
mg/m^3	Milligrams per cubic meter.
RfC	Reference Concentration.

Table HHRA-6
Carcinogenic Toxicity Values for Inhalation Exposure
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	Inhalation Unit Risk Factor $(mg/m^3)^{-1}$	[ref]	Tumor Site	Weight of Evidence Classification [a]
Volatile Organic Compounds				
Benzene	7.8E-03	*I*	leukemia	A
Ethylbenzene	NA		–	D
Toluene	NA		–	D
Xylenes	NA		–	D

References [ref]:

I USEPA, Integrated Risk Information System (IRIS; USEPA, 2009).

– Not applicable.

$(mg/m^3)^{-1}$ Inverse milligrams per cubic meter.

NA Not available.

[a] USEPA cancer weight-of-evidence categories are as follows:

Group A: Human Carcinogen (sufficient evidence of carcinogenicity in humans)
Group B: Probable Human Carcinogen
Group C: Possible Human Carcinogen (limited evidence of carcinogenicity in animals and inadequate or lack of human data)
Group D: Not Classifiable as to Human Carcinogenicity (inadequate or no evidence)
Group E: Evidence of Noncarcinogenicity for Humans (no evidence of carcinogenicity in adequate studies)

Table HHRA-7
Values Used for Daily Intake Calculations – Potential Current/Hypothetical Future Site Worker Exposure to Indoor Vapors from Soil
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation of volatiles migrating to indoor air	CA	Chemical Concentration in Air	mg/m3	TBD	--	Chronic Daily Intake (CDI) (mg/m^3)=
	EF	Exposure Frequency	days/year	225	NMED, 2009a	CA x EF x ED x ET x CF x 1/AT
	ED	Exposure Duration	years	25	NMED, 2009a	
	ET	Exposure Time	hrs/day	8	USEPA, 1991b	
	CF	Conversion Factor	days/hour	0.042	--	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA, 1989	

Table HHRA-8

Values Used for Daily Intake Calculations – Potential Hypothetical Future Adult Resident Exposure to Indoor Vapors from Soil
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation of volatiles migrating to indoor air	CA	Chemical Concentration in Air	mg/m^3	TBD	--	CDI (mg/m^3)=CA x EF x ED x ET x CF x 1/AT
	CF	Conversion Factor	days/hour	0.042	--	
	EF	Exposure Frequency	days/year	350	NMED, 2009a	
	ED	Exposure Duration	years	30	NMED, 2009a	
	ET	Exposure Time	hrs/day	24	Assumed	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	

Table HHRA-9

Values Used for Daily Intake Calculations – Potential Hypothetical Future Child Resident Exposure to Indoor Vapors from Soil
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation of Volatiles Migrating to Indoor Air	CA	Chemical Concentration in Air	mg/m^3	TBD	--	SDI (mg/m^3)=CA x CF x EF x ED x ET x 1/AT
	CF	Conversion Factor	days/hour	0.042	--	
	EF	Exposure Frequency	days/year	350	NMED, 2009a	
	ED	Exposure Duration	years	6	NMED, 2009a	
	ET	Exposure Time	hrs/day	24	NMED, 2009a	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	

Table HHRA-10
Summary of Constituents of Potential Concern and Exposure Point Concentrations
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent of Potential Concern (COPC)	COPC?				Exposure Point Concentrations [a]		
	Soil (0-2)		Soil (0-10)	Soil	Soil (0-2)	Soil (0-10)	Soil (All Depths)
	Residential	Industrial	Construction	All Depths	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds							
Benzene	no	no	no	YES	–	–	4.87E-01 m
Ethylbenzene	no	no	no	YES	–	–	9.68E+00 m
Toluene	no	no	no	YES	–	–	1.70E+01 m
Xylenes	no	no	no	YES	–	–	6.60E+01 m

Notes:
– = Not detected/ not analyzed/ not applicable.
mg/kg = Milligrams per kilogram.
mg/L = Milligrams per liter.

[a] The exposure point concentration (EPC) was the upper confidence level on the mean (UCL) or the maximum concentration where the UCL was incalculable.
EPCs marked with "m" are based on the maximum detected concentration.

Table HHRA-11
Summary of Input Parameters
Estimating Vapors Concentrations in Indoor Air Migrating from Total Soil
Future Scenario
Main Post POL AST Release Area
White Sand Missile Range, New Mexico

Chemical CAS No. (numbers only, no dashes)	Initial Soil Concentration C_R (µg/kg)	Chemical
71432	4.87E+02	Benzene
100414	9.68E+03	Ethylbenzene
108883	1.70E+04	Toluene
1330207	6.60E+04	Xylenes (total)

ENTER Average soil temperature, T_S (^oC)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
				Totals must add up to value of L_t (cell G45)					
16.7	15	15.24	0	15.24			SIL		

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)
SIL	1.55	0.440	0.26	0.0015					

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	244	0.1	0.25	

Table HHRA-12
Intercalculations
Estimating Vapors Concentrations in Indoor Air Migrating from Total Soil
Future Scenario
Main Post POL AST Release Area
White Sand Missile Range, New Mexico

Constituent	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Source vapor conc., C_{source} (μg/m^3)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m^3)
Benzene	8,053	3.75E-03	1.58E-01	1.77E-04	1.51E-03	1.51E-03	2.80E+05	1.65E+00	1.51E-03	7.57E+11	9.74E-05	2.73E+01
Ethylbenzene	10,078	4.83E-03	2.03E-01	1.77E-04	1.29E-03	1.29E-03	2.67E+06	1.65E+00	1.29E-03	8.85E+13	9.74E-05	2.60E+02
Toluene	9,082	4.27E-03	1.80E-01	1.77E-04	1.49E-03	1.49E-03	6.61E+06	1.65E+00	1.49E-03	1.05E+12	9.74E-05	6.44E+02
Xylenes (total)	10,158	4.06E-03	1.71E-01	1.77E-04	1.22E-03	1.22E-03	2.63E+07	1.65E+00	1.22E-03	4.34E+14	9.74E-05	2.57E+03

Table HHRA-13

Estimates of Vapors in Indoor Air Migrating from Total Soil

Main Post POL AST Release Area

White Sands Missile Range, New Mexico

Constituent	Exposure Point Concentration in Soil (EPCs) [a] (mg/kg)		Exposure Point Concentration in Indoor Air due to Soil (EPCair_s) [b] ($\mu g/m^3$)
Volatile Organic Compounds			
Benzene	4.87E-01	m	2.73E+01
Ethylbenzene	9.68E+00	m	2.60E+02
Toluene	1.70E+01	m	6.44E+02
Xylenes	6.60E+01	m	2.57E+03

References:

USEPA. 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. Office of Solid Waste and Emergency Response (OSWER). Washington, D.C. November.

USEPA. 2003. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings. Office of Emergency and Remedial Response. June.

USEPA. 2004a. Spreadsheet for the Johnson and Ettinger Model - Soil Screen. Version 3.1. Last modified 02/2004.

Notes:

$\mu g/m^3$ Micrograms per cubic meter.

mg/kg Milligrams per kilogram.

m Maximum.

[a] EPCs are presented in Table HHRA-10.

[b] Concentrations of vapors in indoor air were estimated using USEPA's Spreadsheet for the Johnson and Ettinger Vapor Intrusion Model (USEPA, 2004b), as directed by the User's Guide (USEPA, 2003c), consistent with methods in the vapor intrusion guidance (USEPA, 2002c).

Table HHRA-14
Risk and Hazard Calculations for Hypothetical Future Commercial/Industrial Worker Receptor from Exposure to Vapor Concentrations in Indoor Air Migrating from Total Soil
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Constituent	EPCair [a] ($\mu g/m^3$)		CANCER RISK URF $(mg/m^3)^{-1}$	CANCER RISK Calculated Risk	Percent Total ELCR	NON-CANCER HAZARD RfC (mg/m^3)	NON-CANCER HAZARD Calculated Hazard	Percent Total HI
				ELCRi			HQi	
Volatile Organic Compounds								
Benzene	2.73E+01	m	7.80E-03	1.6E-05	100%	3.0E-02	1.9E-01	3%
Ethylbenzene	2.60E+02	m	NA	NA	–	1.0E+00	5.3E-02	<1%
Toluene	6.44E+02	m	NA	NA	–	5.0E+00	2.6E-02	<1%
Xylenes	2.57E+03	m	NA	NA	–	1.0E-01	5.3E+00	95%
			Total ELCR	2E-05	100%	Total HI **	6	100%

** HI Segregated by Target Site/Critical Effect:	HI (liver, kidney) =	NA	HI (gastrointestinal tract) = NA
CNS - Central nervous system	HI (CNS, whole body, immune system) =	5	HI (nasal, lung) = NA
NA - Not available	HI (blood) =	0.2	HI (eyes, nails, hair, skin) = NA
NR - None reported	HI (fetus, developmental) =	0.05	HI (NA, NR) = NA

[a] From Table HHRA-13.

—	Not applicable.	m	EPC based on maximum.
URF	Inhalation cancer unit risk factor.	mg/m^3	Milligrams per cubic meter.
ELCR	Excess lifetime cancer risk.	$\mu g/m^3$	Micrograms per cubic meter.
EPCair	Calculated exposure point concentration in indoor air.	NA	Not available.
HI	Hazard index (sum of the HQs).	RfC	Inhalation noncancer reference concentration.
HQ	Hazard quotient for non-cancer effects.		

Equations:

ELCRi = (EPCair × 0.001 x 8 × 0.042 × 225 × 25 × URF) / (25,550)

HQi = (EPCair × 0.001 x 8 × 0.042 × 225 × 25) / (9,125 × RfC)

Table HHRA-15
Risk and Hazard Calculations for Hypothetical Future Resident Receptor (Adult and Child) from Exposure to Vapor Concentrations in Indoor Air Migrating from Total Soil
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Constituent	EPCair [a] ($\mu g/m^3$)		CANCER RISK URF $(mg/m^3)^{-1}$	CANCER RISK Calculated Risk	Percent Total ELCR	NON-CANCER HAZARD RfC (mg/m^3)	NON-CANCER HAZARD Calculated Hazard	Percent Total HI
				ELCRi			HQi	
Volatile Organic Compounds								
Benzene	2.73E+01	m	7.80E-03	8.7E-05	100%	3.0E-02	8.7E-01	3%
Ethylbenzene	2.60E+02	m	NA	NA	–	1.0E+00	2.5E-01	<1%
Toluene	6.44E+02	m	NA	NA	–	5.0E+00	1.2E-01	<1%
Xylenes	2.57E+03	m	NA	NA	–	1.0E-01	2.5E+01	95%
			Total ELCR	9E-05	100%	Total HI **	26	100%

** HI Segregated by Target Site/Critical Effect:	HI (liver, kidney) =	NA	HI (gastrointestinal tract) =	NA
CNS - Central nervous system	HI (CNS, whole body, immune system) =	25	HI (nasal, lung) =	NA
NA - Not available	HI (blood) =	0.2	HI (eyes, nails, hair, skin) =	NA
NR - None reported	HI (fetus, developmental) =	0.1	HI (NA, NR) =	NA

[a] From Table HHRA-13.

—	Not applicable.	m	EPC based on maximum.
URF	Inhalation cancer unit risk factor.	mg/m^3	Milligrams per cubic meter.
ELCR	Excess lifetime cancer risk.	$\mu g/m^3$	Micrograms per cubic meter.
EPCair	Calculated exposure point concentration in indoor air.	NA	Not available.
HI	Hazard index (sum of the HQs).	RfC	Inhalation noncancer reference concentration.
HQ	Hazard quotient for non-cancer effects.		

Equations:

ELCRi = (EPCair × 0.001 x 24 × 0.042 × 350 × 30 × URF) / (25,550)

HQi = (EPCair × 0.001 x 24 × 0.042 × 350 × 6) / (2,190 × RfC)

Table HHRA-16
Summary of Calculated Human Health Risks and Hazards
Main Post POL AST Release Area

Excess Lifetime Cancer Risk and Total non-cancer Hazard Index

RECEPTOR Exposure Medium - Scenario	Calculatio Table	Total Excess Lifetime Cancer Risk	Total Non-Cancer Hazard
Hypothetical Future Commercial/Industrial Worker Receptor			
Vapor Migration to Indoor Air		2E-05	**6**
TOTAL SITE RISKS:		2E-05	**6**
Hypothetical Future Child and Adult Resident Receptor			
Vapor Migration to Indoor Air		9E-05	**26**
TOTAL SITE RISKS:		9E-05	**26**

[a] Cancer risk estimates exceeding $1x10^{-4}$ and non-cancer hazard estimates exceeding one are in bold.

Table ERA-1
Ecological Screening Levels
Main Post POL AST Release Area Ecological Risk Assessment
White Sands Missile Range, New Mexico

Constituent	Potential Surrogate [a]	Soil SLs [a] (mg/kg) Value	Soil SLs [a] (mg/kg) *Source*	Bioaccumulation [b] (Yes/no)
Volatile Organic Compounds				
Benzene		5.00E-02	R4	no
Ethylbenzene		5.00E-02	R4	no
Methylbenzene		5.00E-02	R4	no
Xylenes		5.00E-02	R4	no
Total Petroleum Hydrocarbons (TPH)				
GRO	TPH (total)	1.00E+04	API	no
Inorganics				
Lead		1.10E+01	EcoSSL	YES

Notes:
mg/kg = Milligrams per kilogram.
USEPA = United States Environmental Protection Agency.

[a] Ecological soil screening levels were from the following sources in order of priority:
USEPA Ecological Soil Screening Levels (USEPA, 2008c; EcoSSL).
Region 4 Ecological Screening Values (USEPA, 2001d; R4).
Region 5 Ecological Screening Values (USEPA, 2003b; R5).
For EcoSSL SLs, the lowest value for all available endpoints was selected.
The EcoSSL for TPHs were obtained from American Petroleum Institute (1997).

[b] The following source was consulted to identify bioaccumulation potential: USEPA, 2000b.

Table ERA-2
SLERA Constituents of Potential Ecological Concern in Soil
0-2 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	Frequency of Detection (FOD) number of detects / number of samples			FOD %	Maximum Concentration Detect (mg/kg)	Maximum Concentration SQL (mg/kg)	Ecological Screening Level (ESLs) [a] (mg/kg) Value	Ecological Screening Level (ESLs) [a] (mg/kg) *Source*	Maximum Hazard Quotient (HQ) [b] (unitless)	SLERA COPEC? [c] (YES/no)	SLERA COPEC? [c] Rational
Volatile Organic Compounds											
Benzene	1	/	3	33.3	0.487	0.00487	0.05	*R4*	10	**YES**	HQ > 1
Ethylbenzene	1	/	3	33.3	9.68	0.0146	0.05	*R4*	194	**YES**	HQ > 1
Toluene	1	/	3	33.3	17	0.0146	0.05	*R4*	340	**YES**	HQ > 1
Xylenes	1	/	3	33.3	66	0.0146	0.05	*R4*	1320	**YES**	HQ > 1
Total Petroleum Hydrocarbons (TPH)											
Gasoline Range Organics (GRO)	1	/	3	33.3	511	0.21	10,000	*API*	0.05	no	HQ ≤ 1
Inorganics											
Lead	1	/	1	100	8.09	–	11	*EcoSSL*	0.7	no	HQ ≤ 1

Notes:
mg/kg = Milligrams per kilogram.
SLERA = Screening Level Ecological Risk Assessment.
SQL = Sample Quantitation Limit.

[a] See Table ERA-1 for sources of ecological screening levels (ESLs).
[b] The hazard quotient (HQ) is the ratio of the maximum detected concentration to the surface soil screening level. HQs are rounded to the nearest whole number.
[c] Constituents with a hazard quotient (HQ) greater than 1 (HQ > 1) were considered constituents of potential ecological concern (COPECs) for screening level assessment unless they were not detected (ND).

Table ERA-3
SLERA Constituents of Potential Ecological Concern in Soil
0-10 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	Frequency of Detection (FOD) number of detects / number of samples			FOD %	Maximum Concentration Detect (mg/kg)	Maximum Concentration SQL (mg/kg)	Ecological Screening Level (ESLs) [a] (mg/kg) Value	Ecological Screening Level (ESLs) [a] (mg/kg) *Source*	Maximum Hazard Quotient (HQ) [b] (unitless)	SLERA COPEC? [c] (YES/no)	SLERA COPEC? [c] Rational
Volatile Organic Compounds											
Benzene	1	/	17	5.88	0.487	0.00556	0.05	*R4*	10	**YES**	HQ > 1
Ethylbenzene	1	/	17	5.88	9.68	0.016	0.05	*R4*	194	**YES**	HQ > 1
Toluene	1	/	17	5.88	17	0.016	0.05	*R4*	340	**YES**	HQ > 1
Xylenes	1	/	17	5.88	66	0.016	0.05	*R4*	1320	**YES**	HQ > 1
Total Petroleum Hydrocarbons (TPH)											
Gasoline Range Organics (GRO)	2	/	17	11.8	511	0.217	10,000	*API*	0.05	no	HQ ≤ 1
Inorganics											
Lead	13	/	13	100	47.5	–	11	*EcoSSL*	4	**YES**	HQ > 1

Notes:
mg/kg = Milligrams per kilogram.
SLERA = Screening Level Ecological Risk Assessment.
SQL = Sample Quantitation Limit.

[a] See Table ERA-1 for sources of ecological screening levels (ESLs).
[b] The hazard quotient (HQ) is the ratio of the maximum detected concentration to the surface soil screening level. HQs are rounded to the nearest whole number.
[c] Constituents with a hazard quotient (HQ) greater than 1 (HQ > 1) were considered constituents of potential ecological concern (COPECs) for screening level assessment unless they were not detected (ND).

Table ERA-4
Uncertainties in the Screening-Level and Baseline-Level Ecological Risk Assessments
Main Post POL AST Release Area Ecological Risk Assessment
White Sands Missile Range, New Mexico

Assumptions	Description And Discussion Related To Uncertainties in ERA	Uncertainty in SLERA	Uncertainty in BERA
Analytical Sampling and Data Analysis			
Limited number of samples	Frequently, there are only a limited number of samples used in ERAs, and very often they are collected in a biased manner (i.e., targeting "hot spots"). This type of sampling often lacks statistical power and does not likely represent the concentrations in the environment in which wildlife exposure occurs. Similarly, limited data used to estimate uptake into organisms may overestimate exposure via the food web.	Overestimate of exposure and risk	Overestimate of exposure and risk
Use of maximum concentrations	Maximum concentrations are used to represent the upper estimate exposures. This practice compensates for uncertainty contributed by limited numbers of samples, but overestimates exposure and risk.	Overestimate of exposure and risk	Overestimate of exposure and risk
Detection limits	Detection limits may exceed ESVs (e.g., PAHs) or thresholds for adverse impacts are well below the analytical methods used in ERA (e.g., compounds that are known or suspected to cause endocrine effects).	May underestimate risk or effect on risk estimate unknown	May underestimate risk or effect on risk unknown
Degradation of chemicals not considered	ERAs are almost exclusively based on concentrations of target compounds, and little if any attention is given to degradation compounds that could be more toxic than the original chemical. Conversely, chemical concentrations may decrease over time due to natural physical processes.	Effect on risk estimate unknown	Effect on risk estimate unknown
Toxicology and ESVs			
Toxicity and exposure data for a limited number of species	Uncertainties exist in many aspects of the toxicology relied upon for conducting ERAs (Newman, 1998; Lovett Doust et al., 1993). Toxicity and wildlife exposure data are only available for a limited number of species (most of them laboratory test species) under a strictly defined set of test conditions that deviate from natural conditions (Sample et al., 1996; Suter, 1996; Sample et al., 1997).	Effect on risk estimate unknown	Effect on risk estimate unknown
Laboratory testing	In current practice, more than 95 percent of the resources in toxicology are focused toward the study of single chemicals (Cassee et al., 1998), while wildlife exposures rarely occur on a chemical-specific basis. Simplistic extrapolations from laboratory species to wildlife species and testing conditions to field conditions are not likely accurate, and are rarely, if ever, validated against natural conditions (Power, 1996; Tannenbaum, 2003).	Effect on risk estimate unknown	Effect on risk estimate unknown
Adaptation and tolerance	There is little consistency and no quantitative methodology for the consideration of the diminished bioavailability (and, thereby, diminished toxicity) even though this process is well documented (e.g., Alexander and Alexander, 1999; Alexander, 2000). Similarly, tolerance and adaptation are not considered directly (Millward and Klerks, 2002; Grant, 2002). Furthermore, the white rat often used in toxicological testing is bred to minimize differences between lab animals, thereby diminishing the genetic variability that gives wildlife some capability for adaptation and tolerance (Tannenbaum, 2003).	Overestimate of risk	Overestimate of risk

Table ERA-4
Uncertainties in the Screening-Level and Baseline-Level Ecological Risk Assessments
Main Post POL AST Release Area Ecological Risk Assessment
White Sands Missile Range, New Mexico

Assumptions	Description And Discussion Related To Uncertainties in ERA	Uncertainty in SLERA	Uncertainty in BERA
Predator-prey interactions	There are relatively few studies that actually evaluate the effects of toxicity on predator-prey interactions, or on competition for scarce resources (Atchison et al., 1996), the very conditions within which all wildlife exists (Kapustka and Landis, 1998).	Effect on risk estimate unknown	Effect on risk estimate unknown
HQs			
HQs based on maximum	The SLERA HQ is based on the maximum detected concentrations and the most conservative ESVs available (USEPA, 1997c; 2000b). HQs in the BERA are based on the exposure point concentration (minimum of the 95% upper confidence limit on the mean and the maximum concentration).	Overestimate of risk	Overestimate of risk
Elevated HQs for background concentrations	HQs may exceed a value of 1 for background concentrations of naturally occurring metals (Tannenbaum, 2003). This is due to many of the toxicology and ESV uncertainties already discussed.	Overestimate of risk	Overestimate of risk
Interpretation of HQs	An HQ less than or equal to a value of 1 indicates that adverse impacts to wildlife are considered unlikely (USEPA, 2001c). However, there is no clear guidance for interpreting the HQs that exceed a value of 1, except that this point of departure indicates that adverse effects of some kind may have occurred or may occur in the future.	Effect on risk estimate unknown	Effect on risk estimate unknown
HQs for individual used to evaluate risks to populations	HQs are based on the types of impacts that could occur to individuals (i.e., those individuals exposed to maximum concentrations) and they completely fail to address ecological exposure and risk at spatial scale of populations (Tannenbaum, 2003; Durda and Preziosi, 1999).	Overestimate of risk to wildlife populations	Overestimate of risk to wildlife populations
HQs with unrealistic magnitudes	HQs are seen at magnitudes that suggest that every animal should die upon acute exposure (i.e., in the hundreds or thousands) (Tannenbaum et al., 2003). Often, physical conditions at a site demonstrate that this is not the case.	Overestimate of risk	Overestimate of risk
No evaluation of dermal or inhalation pathways	The dermal and inhalation exposure pathways are generally considered “insignificant” due to protective fur and feathers. Under certain conditions, these exposure pathways may occur, but adequate information is rarely available by which to evaluate them.	Not Applicable	Potentially an underestimate of risk

BERA = Baseline Ecological Risk Assessment.
COPC = Constituent of potential concern.
ERA = Ecological risk assessment.
ESV = Ecological screening value.
HQ = Hazard quotient.
PAH = Polynuclear aromatic hydrocarbon.
TRV = Toxicity reference value.
SLERA = Screening level ecological risk assessment.

Table ERA-5
BERA Constituents of Potential Ecological Concern in Soi
0-2 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	EPC [a] (mg/kg)		Ecological Screening Level (ESLs) [b] (mg/kg) Value	Source	Refined Hazard Quotient (HQ) [c] Detect (unitless)	Refined Constituent of Potential Ecological Concern (COPEC) [d] (YES/no)	Rational	Bioaccumulative ? [e] (YES/no)
Volatile Organic Compounds								
Benzene	0.487	m	0.05	*R4*	10	**YES**	**HQ > 1**	no
Ethylbenzene	9.68	m	0.05	*R4*	194	**YES**	**HQ > 1**	no
Toluene	17	m	0.05	*R4*	340	**YES**	**HQ > 1**	no
Xylenes	66	m	0.05	*R4*	1,320	**YES**	**HQ > 1**	no

Notes:

BERA = Baseline Ecological Risk Assessment.
mg/kg = Milligrams per kilogram.
SQL = Sample Quantitation Limit.

[a] The Exposure Point Concentrations (EPCs) based on the upper confidence limits on the mean (UCLs) were calculated using ProUCL 4.00.04, where calculable. EPCs marked with "m" are the maximum concentration.
[b] See Table ERA-1 for sources of ecological screening levels (ESLs).
[c] The refined hazard quotient (HQ) is the ratio of the EPC to the surface soil screening level. HQs are rounded to the nearest whole number.
[d] Constituents with a refined hazard quotient (HQ) greater than 1 (HQ > 1) or without a screening level (NSL) were considered constituents of potential ecological concern (COPECs) for the baseline risk assessment.
[e] See Table ERA-1 for source of bioaccumulation potential designation.

Table ERA-6
BERA Constituents of Potential Ecological Concern in Soil
0-10 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	EPC [a] (mg/kg)		Ecological Screening Level (ESLs) [b] (mg/kg) Value	Source	Refined Hazard Quotient (HQ) [c] Detect (unitless)	Refined Constituent of Potential Ecological Concern (COPEC) [d] (YES/no)	Rational	Bioaccumulative ? [e] (YES/no)
Volatile Organic Compounds								
Benzene	0.487	m	0.05	*R4*	10	**YES**	**HQ > 1**	no
Ethylbenzene	9.68	m	0.05	*R4*	194	**YES**	**HQ > 1**	no
Toluene	17	m	0.05	*R4*	340	**YES**	**HQ > 1**	no
Xylenes	66	m	0.05	*R4*	1,320	**YES**	**HQ > 1**	no
Inorganics								
Lead	17.96		11	*EcoSSL*	2	**YES**	**HQ > 1**	YES

Notes:

BERA = Baseline Ecological Risk Assessment.
COPEC = Constituent of Potential Ecological Concern.
mg/kg = Milligrams per kilogram.
SQL = Sample Quantitation Limit.

[a] The Exposure Point Concentrations (EPCs) based on the upper confidence limits on the mean (UCLs) were calculated using ProUCL 4.00.04, where calculable. EPCs marked with "m" are the maximum concentration.
[b] See Table ERA-1 for sources of ecological screening levels (ESLs).
[c] The refined hazard quotient (HQ) is the ratio of the EPC to the surface soil screening level. HQs are rounded to the nearest whole number.
[d] Constituents with a refined hazard quotient (HQ) greater than 1 (HQ > 1) or without a screening level (NSL) were considered constituents of potential ecological concern (COPECs) for the baseline risk assessment.
[e] See Table ERA-1 for source of bioaccumulation potential designation.

Table ERA-7
Exposure Assumptions for Ecological Receptors
Main Post POL AST Release Area Ecological Risk Assessment
White Sands Missile Range, New Mexico

			Terrestrial Receptor	
Exposure Parameter	**Acronym**	**Units**	**Desert Kit Fox**	
Body Weight (BW)	BW	kg	1.985	[e]
Proportion of Diet (P)	P	unitless		
Maximum Scenario:				
Soil		%	2.8%	[b]
Invertebrates		%	–	
Plants and Fungi		%	–	
Small Mammals		%	100.0%	[f]
Refined Scenario:				
Soil		%	2.8%	[b]
Invertebrates		%	1.3%	[f]
Plants and Fungi		%	0.7%	[f]
Small Mammals		%	98.0%	[f]
Food Ingestion Rate - dry weight (IRdf)	IRdf	kg/day	0.0702	[c]
Food Ingestion Rate - wet weight (IRwf)	IRwf	kg/day	0.219	[c]
Water Ingestion Rate (IRw)	IRw	L/day	–	
Home Range [a]	HR	acres	3,039	[g]
Site Use Factor - Maximum Scenario (SUFm)	SUFm	unitless	1	
Site Use Factor - Refine Scenario (SUFr) [d]	SUFr	unitless	0.001	
Exposure Frequency (EF)	EF	unitless	1	

Notes:
% = Percent.
kg = Kilogram.
L = Liter.

[a] Home ranges were converted to acres if presented in units other than acres in respective sources.

[b] Beyer et al., 1994.

[c] Nagy, 2001.

[d] Refined SUFs were calculated using a site acreage of 3.4 acres.

[e] From CalEPA. 2003. Office of Environmental Health Hazard Assessment (OEHHA). California Wildlife Biology, Exposure Factors and Toxicity Database (Cal/Ecotox). California Environmental Protection Agency. Available at: http://www.oehha.org/cal_ecotox/species_reports.htm

[f] From CalEPA. 2005. California Department of Fish and Game (CDFG). Biogeographic Data Branch: Wildlife Notes. California Environmental Protection Agency. Available at: http://www.dfg.ca.gov/bdb/html/cawildlife.html

[g] From Zoellick, B.W. and N.S. Smith. 1992. Size and spatial organization of home ranges of kit foxes in Arizona. J. Mammal. 73(1): 83-88.

Table ERA-8
Bioconcentration and Bioaccumulation Factors for Soil
Main Post POL AST Release Area Ecological Risk Assessment
White Sands Missile Range, New Mexico

	Soil Bioconcentration and Bioaccumulation Factors (BCFsl and BAFsl)		
	Invertebrates	**Vegetation**	**Mammalian**
Constituent	**$BCFsl_i$ [a]**	**$BCFsl_v$ [b]**	**$BAFsl_m$ [c]**
Inorganic			
Lead	ln(Ci) = 0.807 * ln(Cs) - 0.218 [d]	ln(Cp) = 0.561 * ln(Cs) - 1.328 [d]	ln(Cm) = 0.4422 * ln(Cs) + 0.0761 [d]

Notes:

BAF = Bioaccumulation Factor (unitless); BAF = (Tissue Concentration)/(Dietary Intake).

BCF = Bioconcentration Factor (unitless); BCF = (Tissue Concentration)/(Media Concentration).

[a] $BCFsl_i$ denotes BCFs for invertebrates. Unless otherwise noted, uptake equations for BCFs for earthworms were obtained from USEPA (2007). Values for phenanthrene and copper are presented in wet weight.

[b] $BCFsl_v$ denotes BCFs for vegetation. Unless otherwise noted, uptake equations for BCFs for vegetation were obtained from USEPA (2007) and are presented in dry weight.

[c] $BAFsl_m$ denotes BAFs for mammals. Unless otherwise noted, uptake equations for BCFs for small mammals were obtained from USEPA (2007) and are presented in dry weight.

[d] Uptake equations from USEPA EcoSSL guidance Attachment 4-1 (USEPA, 2007b).

Table ERA-9
Mammalian Toxicity Reference Values
Main Post POL AST Release Area Ecological Risk Assessment
White Sands Missile Range, New Mexico

Constituent	Test Species Chronic Toxicity Value (mg/kg BW-day) LOAEL		NOAEL	Test Species	Effect	Body Weight of Test Species	Reference	Desert Kit Fox LOAEL	NOAEL
Inorganics									
Lead	47	[b]	4.7	Multiple Mammals	Reproduction, growth, survival	NAP	USEPA, 2005c	47	4.7

LOAEL = Lowest Observed Adverse Effects Level.
mg/kg-BW-day = Milligrams per kilogram of body weight per day.
NAP = Not applicable because multiple mammals were used for LOAEL and NOAEL toxicity value determinations.
NOAEL = No Observed Adverse Effects Level.
TRV = Toxicity Reference Value.
USEPA = United States Environmental Protection Agency.

[a] Toxicity Reference Values$_{\text{wildlife species}}$ (TRV) = Chronic Toxicity Value for test species x $(BW_{\text{test species}} / BW_{\text{wildlife species}})^{1/4}$

[b] Acute LOAELs and NOAELs were extrapolated (converted) to chronic LOAELs and NOAELs by applying an acute-chronic ratio of 10 (Calabrese and Baldwin, 1993).

Table ERA-10
Summary of BERA Constituents of Potential Ecological Concern and
Uptake Model Exposure Point Concentrations in Soil
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

			Uptake Model Exposure Point Concentration (mg/kg) [a]			
	BERA COPEC?		0-2 ft bgs		0-10 ft bgs	
Constituent	**0-2 ft bgs**	**0-10 ft bgs**	**Maximum Scenario**	**Refined Scenario**	**Maximum Scenario**	**Refined Scenario**
Volatile Organic Compounds						
Benzene	YES	YES	NA	NA	NA	NA
Ethylbenzene	YES	YES	NA	NA	NA	NA
Toluene	YES	YES	NA	NA	NA	NA
Xylenes	YES	YES	NA	NA	NA	NA
Inorganics						
Lead	no	YES	NA	NA	17.96	12.7

Notes:

BERA = Baseline Ecological Risk Assessment.
COPEC = Constituent of Potential Ecological Concern.
ft bgs = Feet below ground surface.

mg/kg = Milligrams per kilogram.
SQL = Sample Quantitation Limit.

[a] The maximum scenario exposure point concentrations (EPCs) for uptake models were set at the lesser of the upper confidence limit (UCL) or the maximum concentration where the UCL was incalculable and those for the refined scenario were set at the arithmetic average (non detects were set at 1/2 the sample quantification limit). The UCLs were calculated using ProUCL 4.00.04; the UCL used is the one recommended by ProUCL 4.00.04. EPCs marked with "m" are based on the maximum detected concentration.

Table ERA-11
Maximum Scenario Food Chain Modeling for the Desert Kit Fox
Soil 0-10 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	Maximum Scenario EPC [a] (mg/kg)	Soil Bioconcentration Factors [b]	Estimated Dietary Tissue Concentrations [c] (mg/kg)	Maximum Estimated Dietary Ingestion [d]	Toxicity Reference Values [e] mg/kg-BW-day		Maximum Scenario HQ [f]	
		Mammal	Mammal	mg/kg-BW-day	LOAEL	NOAEL	LOAEL	NOAEL
Inorganics								
Lead	17.96	3.87E+00	1.24E+00	0.15	47	4.7	0.003	0.03

Notes:
HQ = Hazard Quotient.
LOAEL = Lowest observed adverse effect level.
mg/kg = Milligrams per kilogram.
mg/kg-BW-day = Milligrams per kilogram of body weight each day.
NA = Not applicable.
NOAEL = No observed adverse effect level.
TRV = Toxicity reference value.

[a] The exposure point concentrations (EPCs) for the maximum scenario were set at the upper confidence level on the mean (UCL) or the maximum concentration where the UCL was incalculable. EPCs marked with "m" are the maximum concentration.
[b] See Table ERA-8 for sources of soil bioaccumulation factors/uptake equations.
[c] Estimated tissue concentration = concentration in exposure medium x bioaccumulation factor (in wet weight) or Estimated tissue concentration = concentration in exposure medium x bioaccumulation factor x tissue percent dry weight (i.e., 12% for plants, 16.7% for invertebrates, and 32% for mammals).
[d] See Table ERA-7 for receptor exposure assumptions.
[e] See Table ERA-9 for sources of mammalian toxicity reference values.
[f] Maximum hazard quotient (HQ) = (estimated dietary ingestion)/(toxicity reference value). HQs are rounded to the nearest whole number.

Table ERA-12
Refined Scenario Food Chain Modeling for the Desert Kit Fox
Soil 0-10 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

Constituent	Refined Scenario EPC [a] (mg/kg)	Soil Bioconcentration Factors [b]			Estimated Dietary Tissue Concentrations [c] (mg/kg)			Refined Estimated Dietary Ingestion [d] mg/kg-BW-day	Toxicity Reference Values [e] mg/kg-BW-day		Refined Scenario HQ [f]	
		Invertebrate	Vegetation	Mammal	Invertebrate	Vegetation	Mammal	mg/kg-BW-day	LOAEL	NOAEL	LOAEL	NOAEL
Inorganics												
Lead	12.7	6.25E+00	1.10E+00	3.32E+00	1.04E+00	1.32E-01	1.06E+00	0.00014	47	4.7	0.000003	0.00003

Notes:
HQ = Hazard Quotient.
LOAEL = Lowest observed adverse effect level.
mg/kg = Milligrams per kilogram.
mg/kg-BW-day = Milligrams per kilogram of body weight each day.
NA = Not applicable.
NOAEL = No observed adverse effect level.
TRV = Toxicity reference value.

[a] The exposure point concentrations (EPCs) were set at the lower of the arithmetic average (non detects were set at 1/2 the sample quantification limit) and the maximum detected concentration. EPCs marked with "m" are the maximum concentration.
[b] See Table ERA-8 for sources of soil bioaccumulation factors/uptake equations.
[c] Estimated tissue concentration = concentration in exposure medium x bioaccumulation factor (in wet weight) or Estimated tissue concentration = concentration in exposure medium x bioaccumulation factor x tissue percent dry weight (i.e., 12% for plants, 16.7% for invertebrates, and 32% for mammals).
[d] See Table ERA-7 for receptor exposure assumptions.
[e] See Table ERA-9 for sources of mammalian toxicity reference values.
[f] Refined hazard quotient (HQ) = (estimated dietary ingestion)/(toxicity reference value). HQs are rounded to the nearest whole number.

Table ERA-13
Summary of Refined Ecological Risk Characterization Results - Terrestrial Habitat
Soil 0-10 foot Depth Interval
Main Post POL AST Release Area
White Sands Missile Range, New Mexico

	Soil				BERA Level Assessment			Results of Refined Food Chain Models [c]	
	Frequency of Detection			EPC	Hazard Quotient	Ecological Screening Level [b]		Desert Kit Fox	
Constituent	# detects / n samples			(mg/kg)	[a]	Source	Basis	LOAEL	NOAEL
Inorganics									
Lead	13	-	13	12.7	2	EcoSSL	avi	0.000003	0.00003

Notes:

– =	Not applicable.
COPEC =	Constituent of Potential Ecological Concern.
BERA =	Baseline Ecological Risk Assessment.
EPC =	The exposure point concentrations (EPCs) were set at the arithmetic average (non detects were set at 1/2 the sample quantification limit).
	EPCs marked with "m" are the maximum concentration.
ESL =	Ecological Screening Critiera.
FOD =	Frequency of Detection.
LOAEL =	Lowest observed adverse effect level.
mg/kg =	Milligrams per kilogram.
NA =	Not available.
NOAEL =	No observed adverse effect level.
[a]	Hazard quotients (HQs) greater than one are presented in bold font. HQs are rounded to the nearest whole number.
[b]	See Table ERA-1 for sources of ecological screening levels (ESLs).
	EcoSSL: USEPA Ecological Soil Screening Levels (USEPA 2005; EcoSSL).
	Where readily available (i.e., EcoSSLs), the basis of the ecological screening level is presented.
[c]	Food chain modeling was conducted for bioaccumulative COPECs.

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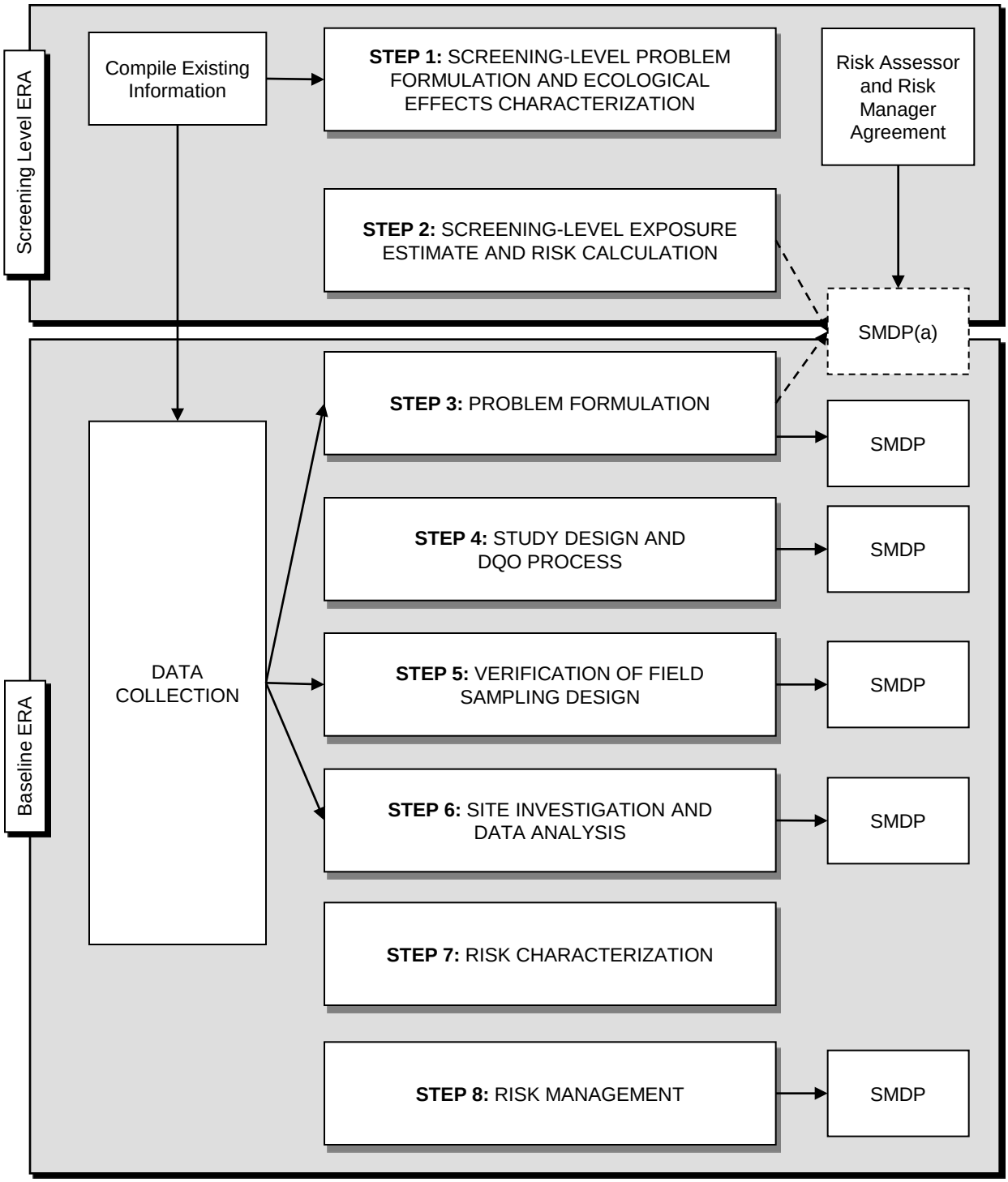
Figures

Aberdeen Ave
SWMU-14
SWMU-12
SWMU 10
SWMU-14
OS12
SWMU-12
SWMU 10
SWMU-14
Site
0064-MW-01
0064-MW-02
White Sands Missile Range
Saturn Ave
Atlas St
Zeus Dr
Pershing Dr
La Crosse St
Hawk St
Dart St
Ravenna Ave
Vanguard Dr
Hercules St
Zorn Dr
Thor St
Picatinny Ave
Red River Ave
Sergeant St
Loki St
Savanna Ave
Twin Cities Ave
Watervliet Ave
Corporal St
Mercury Ave
Lake City Ave
W Watervliet Cir
Annison Ave
Ripley St
Letterkenny Ave
Rossford Ave
Toodele Ave
Goddard Ave
Juneteenth Cir
Sierra St
Deacon Ave
Terrier Ave
Talos Ave
Viking St
E Aerobee Ave
Rock Island Ave
Red Stone St
Joliet St
Springfield St
Milan St
Frankford St
Detroit St
Radford St
Aberdeen Ave
Halsey St
Noble St
Parsons St
Dewey St
Indiana St
Zeus St
Raritan Ave
Blandy St
King St
Hor St
Flagler St
Crozier St
Dyer St
Benet St
Sioux St
Engineer Ave
Navajo St
Saint Louis St
Ramsey St
Craig St
Hughes Ave
Hughes St
Watertown Ave
Wsmr P
213
Toronto St
Toronto Ave
Toronto Cir
Toronto Dr
Toronto Pl
Toronto Ln
Toronto Ct
Toronto Way
Toronto Sq
Toronto Tr
Toronto Ter
Toronto Pkwy
Toronto Blvd
Toronto Rd
Toronto Pt

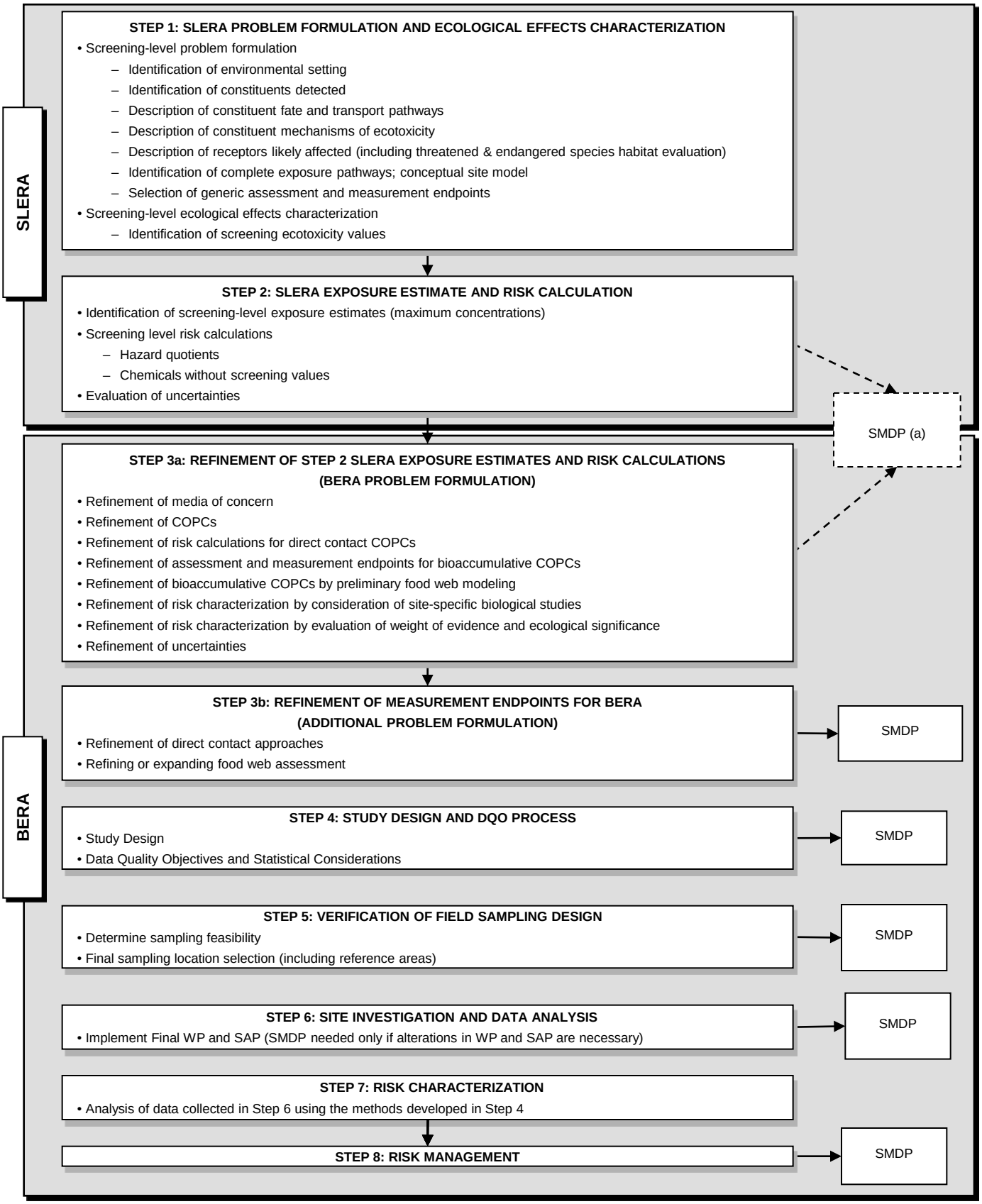
Figure 2-2
Eight-Step Ecological Risk Assessment Process



Notes:

(a) SMDP occurs EITHER after Step 2 or after Step 3a
ERA Ecological Risk Assessment
SMDP Scientific Management Decision Point
Source Adapted from USEPA, 2000a.

Figure 2-3
Expanded Eight-Step Ecological Risk Assessment Process



Notes:

(a)	SMDP occurs EITHER after Step 2 or after Step 3a	(Section)	Section number in parentheses corresponds with text of the Work Plan
COPCs	Constituents of Potential Concern	SMDP	Scientific Management Decision Point
DQO	Data Quality Objectives	SW/SD	Surface water and sediment
GW	Groundwater	WP	Work Plan
SAP	Sampling and Analysis Plan	BERA	Baseline ERA
Source: Adapted from USEPA, 1997 and 2000		SLERA	Screening-level ERA

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Attachments

Attachment **A**

Site Photographs

DIESEL FUEL
DIESEL FUEL
DIESEL FUEL
DIESEL FUEL
DANGER
2009 12 21

DIESEL FUEL
2009 12 21

2009 12 21

UNLEADED
25,000
2009 12 21

Attachment **B**

Risk Assessment Data Sets

Attachment B.1
Soil and Sludge Risk Assessment Data Set
0-2 foot Depth Interval
Main Post POL AST ReleaseArea, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	MPOL-SB-006 0.5 - 1 01/19/10 MNPA-MPOL-SB-006-(0.5-1.0)	MPOL-SB-007 0.5 - 1 04/06/10 MNPA-MPOL-SB-007-(0.5-1.0)	MPOL-SB-008 0.5 - 1 04/06/10 MNPA-MPOL-SB-008-(0.5-1.0)
TPHs				
Gasoline Range Organics	mg/kg	511	<0.197	<0.21
VOCs				
Benzene	mg/kg	*0.487*	<0.00483	<0.00487
Ethylbenzene	mg/kg	*9.68*	<0.0145	<0.0146
Toluene	mg/kg	17	<0.0145	<0.0146
Xylenes	mg/kg	*66*	<0.0145	<0.0146
Metals				
Lead	mg/kg	8.09	NA	NA

Attachment B.2
Soil and Sludge Risk Assessment Data Set
0-10 foot Depth Interval
Main Post POL AST Release Area
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	MPOL-SB-001 5 - 6 01/18/10 MNPA-MPOL-SB-001-(5.0-6.0)	MPOL-SB-001 9 - 10 01/18/10 MNPA-MPOL-SB-001-(9.0-10.0)	MPOL-SB-002 4 - 5 01/18/10 MNPA-MPOL-SB-002-(4.0-5.0)	MPOL-SB-002 9 - 10 01/18/10 MNPA-MPOL-SB-002-(9.0-10.0)	MPOL-SB-003 4 - 5 01/18/10 MNPA-MPOL-SB-003-(4.0-5.0)	MPOL-SB-003 9 - 10 01/18/10 MNPA-MPOL-SB-003-(9.0-10.0)
TPHs							
Gasoline Range Organics	mg/kg	<0.208	<0.203	1.04	<0.205	<0.216	<0.19
VOCs							
Benzene	mg/kg	<0.00521	<0.00519	<0.00521	<0.00488	<0.00498	<0.00483
Ethylbenzene	mg/kg	<0.0156	<0.0156	<0.0156	<0.0146	<0.0149	<0.0145
Toluene	mg/kg	<0.0156	<0.0156	<0.0156	<0.0146	<0.0149	<0.0145
Xylenes	mg/kg	<0.0156	<0.0156	<0.0156	<0.0146	<0.0149	<0.0145
Metals							
Lead	mg/kg	10.4	9.24	47.5	6.69	18.4	4.9

Attachment B.2
Soil and Sludge Risk Assessment Data Set
0-10 foot Depth Interval
Main Post POL AST Release Area
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	MPOL-SB-004 4 - 5 01/18/10 MNPA-MPOL-SB-004-(4.0-5.0)	MPOL-SB-004 9 - 10 01/18/10 MNPA-MPOL-SB-004-(9.0-10.0)	MPOL-SB-005 4 - 5 01/19/10 MNPA-MPOL-SB-005-(4.0-5.0)	MPOL-SB-005 9 - 10 01/19/10 MNPA-MPOL-SB-005-(9.0-10.0)	MPOL-SB-006 0.5 - 1 01/19/10 MNPA-MPOL-SB-006-(0.5-1.0)	MPOL-SB-006 3 - 4 01/19/10 MNPA-MPOL-SB-006-(3.0-4.0)
TPHs							
Gasoline Range Organics	mg/kg	<0.2	<0.217	<0.198	<0.198	511	<0.217
VOCs							
Benzene	mg/kg	<0.00532	<0.00493	<0.00502	<0.00512	*0.487*	<0.00556
Ethylbenzene	mg/kg	<0.016	<0.0148	<0.0151	<0.0154	*9.68*	<0.00556
Toluene	mg/kg	<0.016	<0.0148	<0.0151	<0.0154	17	<0.00556
Xylenes	mg/kg	<0.016	<0.0148	<0.0151	<0.0154	*66*	<0.00556
Metals							
Lead	mg/kg	7.54	8.77	15.7	6.89	8.09	12.9

Attachment B.2
Soil and Sludge Risk Assessment Data Set
0-10 foot Depth Interval
Main Post POL AST Release Area
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	MPOL-SB-006 9 - 10 01/19/10 MNPA-MPOL-SB-006-(9.0-10.0)	MPOL-SB-007 0.5 - 1 04/06/10 MNPA-MPOL-SB-007-(0.5-1.0)	MPOL-SB-007 4.5 - 5 04/06/10 MNPA-MPOL-SB-007-(4.5-5.0)	MPOL-SB-008 0.5 - 1 04/06/10 MNPA-MPOL-SB-008-(0.5-1.0)	MPOL-SB-008 4.5 - 5 04/06/10 MNPA-MPOL-SB-008-(4.5-5.0)
TPHs						
Gasoline Range Organics	mg/kg	<0.194	<0.197	<0.199	<0.21	<0.202 [<0.196]
VOCs						
Benzene	mg/kg	<0.00484	<0.00483	<0.00514	<0.00487	<0.00522 [<0.00508]
Ethylbenzene	mg/kg	<0.0145	<0.0145	<0.0154	<0.0146	<0.0157 [<0.0152]
Toluene	mg/kg	<0.0145	<0.0145	<0.0154	<0.0146	<0.0157 [<0.0152]
Xylenes	mg/kg	<0.0145	<0.0145	<0.0154	<0.0146	<0.0157 [<0.0152]
Metals						
Lead	mg/kg	7.99	NA	NA	NA	NA

Attachment B.3
Soil and Sludge Risk Assessment Data Set
Total Soil Depth Interval
Main Post POL AST Release Area
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	MPOL-SB-001 5 - 6 01/18/10 MNPA-MPOL-SB-001-(5.0-6.0)	MPOL-SB-001 9 - 10 01/18/10 MNPA-MPOL-SB-001-(9.0-10.0)	MPOL-SB-001 14 - 15 01/18/10 MNPA-MPOL-SB-001-(14.0-15.0)	MPOL-SB-001 19 - 20 01/18/10 MNPA-MPOL-SB-001-(19.0-20.0)	MPOL-SB-002 4 - 5 01/18/10 MNPA-MPOL-SB-002-(4.0-5.0)	MPOL-SB-002 9 - 10 01/18/10 MNPA-MPOL-SB-002-(9.0-10.0)
TPHs							
Gasoline Range Organics	mg/kg	<0.208	<0.203	<0.203	<0.203	1.04	<0.205
VOCs							
Benzene	mg/kg	<0.00521	<0.00519	<0.00476	<0.00491	<0.00521	<0.00488
Ethylbenzene	mg/kg	<0.0156	<0.0156	<0.0143	<0.0147	<0.0156	<0.0146
Toluene	mg/kg	<0.0156	<0.0156	<0.0143	<0.0147	<0.0156	<0.0146
Xylenes	mg/kg	<0.0156	<0.0156	<0.0143	<0.0147	<0.0156	<0.0146
Metals							
Lead	mg/kg	10.4	9.24	5.08	13.1	47.5	6.69

Attachment B.3
Soil and Sludge Risk Assessment Data Set
Total Soil Depth Interval
Main Post POL AST Release Area
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	MPOL-SB-002 14 - 15 01/18/10 MNPA-MPOL-SB-002-(14.0-15.0)	MPOL-SB-002 19 - 20 01/18/10 MNPA-MPOL-SB-002-(19.0-20.0)	MPOL-SB-003 4 - 5 01/18/10 MNPA-MPOL-SB-003-(4.0-5.0)	MPOL-SB-003 9 - 10 01/18/10 MNPA-MPOL-SB-003-(9.0-10.0)	MPOL-SB-003 14 - 15 01/18/10 MNPA-MPOL-SB-003-(14.0-15.0)	MPOL-SB-003 19 - 20 01/18/10 MNPA-MPOL-SB-003-(19.0-20.0)
TPHs							
Gasoline Range Organics	mg/kg	<0.2	<0.196 [<0.197]	<0.216	<0.19	<0.2	<0.194
VOCs							
Benzene	mg/kg	<0.00505	<0.00484 [<0.0051]	<0.00498	<0.00483	<0.00481	<0.00495
Ethylbenzene	mg/kg	<0.0151	<0.0145 [<0.0153]	<0.0149	<0.0145	<0.0144	<0.0148
Toluene	mg/kg	<0.0151	<0.0145 [<0.0153]	<0.0149	<0.0145	<0.0144	<0.0148
Xylenes	mg/kg	<0.0151	<0.0145 [<0.0153]	<0.0149	<0.0145	<0.0144	<0.0148
Metals							
Lead	mg/kg	7.6	6.97 [8.51]	18.4	4.9	5.96	6.28

Attachment B.3
Soil and Sludge Risk Assessment Data Set
Total Soil Depth Interval
Main Post POL AST Release Area
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	MPOL-SB-004 4 - 5 01/18/10 MNPA-MPOL-SB-004-(4.0-5.0)	MPOL-SB-004 9 - 10 01/18/10 MNPA-MPOL-SB-004-(9.0-10.0)	MPOL-SB-004 14 - 15 01/18/10 MNPA-MPOL-SB-004-(14.0-15.0)	MPOL-SB-004 19 - 20 01/18/10 MNPA-MPOL-SB-004-(19.0-20.0)	MPOL-SB-005 4 - 5 01/19/10 MNPA-MPOL-SB-005-(4.0-5.0)	MPOL-SB-005 9 - 10 01/19/10 MNPA-MPOL-SB-005-(9.0-10.0)
TPHs							
Gasoline Range Organics	mg/kg	<0.2	<0.217	<0.205	<0.216 [<0.208]	<0.198	<0.198
VOCs							
Benzene	mg/kg	<0.00532	<0.00493	<0.00522	<0.00512 [<0.00525]	<0.00502	<0.00512
Ethylbenzene	mg/kg	<0.016	<0.0148	<0.0157	<0.0154 [<0.0157]	<0.0151	<0.0154
Toluene	mg/kg	<0.016	<0.0148	<0.0157	<0.0154 [<0.0157]	<0.0151	<0.0154
Xylenes	mg/kg	<0.016	<0.0148	<0.0157	<0.0154 [<0.0157]	<0.0151	<0.0154
Metals							
Lead	mg/kg	7.54	8.77	8.05	10.7 [10.1]	15.7	6.89

Attachment B.3
Soil and Sludge Risk Assessment Data Set
Total Soil Depth Interval
Main Post POL AST Release Area
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	MPOL-SB-005 14 - 15 01/19/10 MNPA-MPOL-SB-005-(14.0-15.0)	MPOL-SB-005 19 - 20 01/19/10 MNPA-MPOL-SB-005-(19.0-20.0)	MPOL-SB-006 0.5 - 1 01/19/10 MNPA-MPOL-SB-006-(0.5-1.0)	MPOL-SB-006 3 - 4 01/19/10 MNPA-MPOL-SB-006-(3.0-4.0)	MPOL-SB-006 9 - 10 01/19/10 MNPA-MPOL-SB-006-(9.0-10.0)	MPOL-SB-006 14 - 15 01/19/10 MNPA-MPOL-SB-006-(14.0-15.0)
TPHs							
Gasoline Range Organics	mg/kg	<0.199	<0.208	511	<0.217	<0.194	<0.204
VOCs							
Benzene	mg/kg	<0.00482	<0.00548	*0.487*	<0.00556	<0.00484	<0.00463
Ethylbenzene	mg/kg	<0.0144	<0.0164	*9.68*	<0.00556	<0.0145	<0.0139
Toluene	mg/kg	<0.0144	<0.0164	17	<0.00556	<0.0145	<0.0139
Xylenes	mg/kg	<0.0144	<0.0164	*66*	<0.00556	<0.0145	<0.0139
Metals							
Lead	mg/kg	6.34	11.4	8.09	12.9	7.99	5

Attachment B.3
Soil and Sludge Risk Assessment Data Set
Total Soil Depth Interval
Main Post POL AST Release Area
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	MPOL-SB-006 19 - 20 01/19/10 MNPA-MPOL-SB-006-(19.0-20.0)	MPOL-SB-007 0.5 - 1 04/06/10 MNPA-MPOL-SB-007-(0.5-1.0)	MPOL-SB-007 4.5 - 5 04/06/10 MNPA-MPOL-SB-007-(4.5-5.0)	MPOL-SB-008 0.5 - 1 04/06/10 MNPA-MPOL-SB-008-(0.5-1.0)	MPOL-SB-008 4.5 - 5 04/06/10 MNPA-MPOL-SB-008-(4.5-5.0)
TPHs						
Gasoline Range Organics	mg/kg	<0.191 [<0.202]	<0.197	<0.199	<0.21	<0.202 [<0.196]
VOCs						
Benzene	mg/kg	<0.00487 [<0.0048]	<0.00483	<0.00514	<0.00487	<0.00522 [<0.00508]
Ethylbenzene	mg/kg	<0.0146 [<0.0144]	<0.0145	<0.0154	<0.0146	<0.0157 [<0.0152]
Toluene	mg/kg	<0.0146 [<0.0144]	<0.0145	<0.0154	<0.0146	<0.0157 [<0.0152]
Xylenes	mg/kg	<0.0146 [<0.0144]	<0.0145	<0.0154	<0.0146	<0.0157 [<0.0152]
Metals						
Lead	mg/kg	5.96 [6.31]	NA	NA	NA	NA

Notes for Attachments B.1-3
Risk Assessment Datasets
Main Post POL AST Release Area
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

Notes:

< =	Result is non-detect
[ ] =	Indicates field duplicate result
ft =	Foot
mg/kg =	Milligrams per kilogram
NA =	Not available
TPH =	Total petroleum hydrocarbon
VOC =	Volatile Organic Compound

Attachment **C**

Ecological Characterization Worksheets

I. SITE DESCRIPTION

Site Name: Main Post SWMU 77, 19, 20

Site Location: WSMR

The land use on the site is:		The land around the site is	
Urban	Agricultural	Urban	Agricultural
Rural	Recreational	Rural	Recreational
Residential	Undisturbed	Residential	Undisturbed
Industrial (light heavy)		Industrial (light heavy)	

Any movement of soil at site? (yes no)

Agricultural Use | Mining | Natural Events | Other:

Heavy Equipment | Erosion

Potentially sensitive environmental areas exist adjacent to or in proximity to the site? (yes | no)

What type of facility is located at the site?

active main post facility

What are the suspected contaminants at the site?

unknown

Potential routes of off-site migration of contaminants

Swales | Drainage ditches | Runoff | Other:

Depressions | Windblown particulates | Traffic

Where does surface runoff discharge?

Surface water | Groundwater | Sewer

Collection impoundment | Other

77 - containment
19 - containment
20 - drain in concrete pad

Navigable water body present or near site? (yes | no)

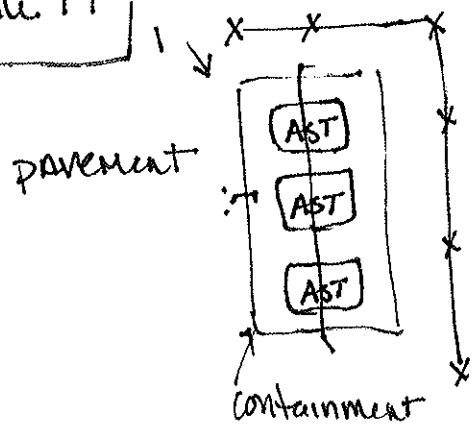
Evidence of flooding? None

Buttressing | Water marks | Debris line | Mud cracks

Indications of Human Disturbance: Area is covered with concrete, gravel or buildings

Notes:

SWMU 77



NO ECO. habitat

SWMUs 19 & 20: see figures

II. TERRESTRIAL HABITAT CHECKLIST

IIA. WOODED

What percentage of the site is wooded? 0%

What is the dominant type of vegetation in the wooded area? PHOTOGRAPH (Evergreen Deciduous Mixed)

Dominant Plant(s):

Dominant Tree Size DBH: 0-6 in. 6-12 in. > 12 in

Type of Understory PHOTOGRAPH:

Animals present:

Time spent identifying flora/fauna:

IIB. SHRUB/SCRUB

What percentage of the site is covered in shrub/scrub? 0%

What is the dominant type of vegetation? PHOTOGRAPH (Evergreen Deciduous Mixed)

Dominant Plant(s):

Approximate Height: 0-2 ft. 2-5 ft. > 5 ft.

Density of scrub/shrub vegetation? Dense Patchy Sparse

Animals present:

Time spent identifying flora/fauna:

IIC. OPEN FIELD

What percentage of the site is an open field? 0%

Prairie/plains Old field Savannah Other:

What is the dominant type of vegetation? PHOTOGRAPH (Evergreen Deciduous Mixed)

Dominant Plant(s):

Approximate Height: 0-0.5 ft. 0.5-2 ft. > 2 ft.

Density of vegetation? Dense Patchy Sparse

Animals present:

Time spent identifying flora/fauna:

IID. MISCELLANEOUS

Other Terrestrial Habitats:

Flora:

Fauna:

Time spent identifying flora/fauna:

Attachment **D**

ProUCL Output

Attachment D - ProUCL Output for Main Post POL
0-10 foot Depth Interval
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	H:\For Chris Day\White Sand Missile Range\2010\MainPost POL\0-10 ft for ProUCL.xls.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result (lead)

General Statistics

Number of Valid Observations	13	Number of Distinct Observations	13

Raw Statistics		Log-transformed Statistics	
Minimum	4.9	Minimum of Log Data	1.589
Maximum	47.5	Maximum of Log Data	3.861
Mean	12.69	Mean of log Data	2.341
Median	8.77	SD of log Data	0.582
SD	11.13		
Coefficient of Variation	0.877		
Skewness	2.933		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.609	Shapiro Wilk Test Statistic	0.871
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	18.19	95% H-UCL	17.83
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20.94
95% Adjusted-CLT UCL	20.45	97.5% Chebyshev (MVUE) UCL	24.75
95% Modified-t UCL	18.61	99% Chebyshev (MVUE) UCL	32.24

Gamma Distribution Test		Data Distribution
k star (bias corrected)	2.09	Data Follow Appr. Gamma Distribution at 5% Significance Level
Theta Star	6.072	
MLE of Mean	12.69	
MLE of Standard Deviation	8.779	
nu star	54.35	
Approximate Chi Square Value (.05)	38.41	**Nonparametric Statistics**
Adjusted Level of Significance	0.0301	95% CLT UCL 17.77
Adjusted Chi Square Value	36.51	95% Jackknife UCL 18.19
		95% Standard Bootstrap UCL 17.56
Anderson-Darling Test Statistic	1.05	95% Bootstrap-t UCL 29.04
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL 36.54
Kolmogorov-Smirnov Test Statistic	0.234	95% Percentile Bootstrap UCL 18.19
Kolmogorov-Smirnov 5% Critical Value	0.239	95% BCA Bootstrap UCL 21.66
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 26.15
		97.5% Chebyshev(Mean, Sd) UCL 31.97
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 43.4
95% Approximate Gamma UCL	17.96	
95% Adjusted Gamma UCL	18.9	

Potential UCL to Use	Use 95% Approximate Gamma UCL 17.96

Attachment D - ProUCL Output for Main Post POL
Soil Risk Assessment Dataset
Total Soil Depth Interval
Main Post POL Area, U.S. Army White Sands Missile Range
White Sands Missile Range, New Mexico

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	H:\For Chris Day\White Sand Missile Range\2010\MainPost POL\soil all for ProUCL.xls.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result (lead)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics		Log-transformed Statistics	
Minimum	4.9	Minimum of Log Data	1.589
Maximum	47.5	Maximum of Log Data	3.861
Mean	10.37	Mean of log Data	2.184
Median	8.05	SD of log Data	0.492
SD	8.434		
Coefficient of Variation	0.813		
Skewness	3.846		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.547	Shapiro Wilk Test Statistic	0.863
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	13.26	95% H-UCL	12.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.42
95% Adjusted-CLT UCL	14.53	97.5% Chebyshev (MVUE) UCL	16.35
95% Modified-t UCL	13.48	99% Chebyshev (MVUE) UCL	20.13

Gamma Distribution Test		Data Distribution
k star (bias corrected)	3.005	Data do not follow a Discernable Distribution (0.05)
Theta Star	3.453	
MLE of Mean	10.37	
MLE of Standard Deviation	5.985	
nu star	150.2	
Approximate Chi Square Value (.05)	122.9	**Nonparametric Statistics**
Adjusted Level of Significance	0.0395	95% CLT UCL 13.15
Adjusted Chi Square Value	121.2	95% Jackknife UCL 13.26
		95% Standard Bootstrap UCL 13.13
Anderson-Darling Test Statistic	1.565	95% Bootstrap-t UCL 17.2
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL 24.03
Kolmogorov-Smirnov Test Statistic	0.19	95% Percentile Bootstrap UCL 13.5
Kolmogorov-Smirnov 5% Critical Value	0.176	95% BCA Bootstrap UCL 14.94
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 17.73
		97.5% Chebyshev(Mean, Sd) UCL 20.91
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 27.16
95% Approximate Gamma UCL	12.68	
95% Adjusted Gamma UCL	12.86	

Potential UCL to Use	
Use 95% Student's-t UCL	13.26
or 95% Modified-t UCL	13.48